# CATALOGUE **IX**

THREADING DRILLING MILLING

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# INTRODUCTION

OSG Corporation is the world's largest manufacturer of round cutting tools. Established in 1938, OSG has a longstanding reputation as a total solution round shank cutting tools provider throughout the manufacturing industry.

OSG holds the No.1 position in the Japanese cutting tool market as well as a top-ranking position globally, with a production, sales and technical network spanning 33 countries.

## Beyond the Limit

OSG is a comprehensive cutting tool manufacturer known for its world-renowned taps and other product offering such as end mills, drills, and rolling dies. Moving toward an era of carbon neutrality, OSG will strive to achieve further growth as an essential player that contributes to the global manufacturing industry and the realization of a sustainable society based on its "global presence" corporate philosophy.

# shaping your dreams

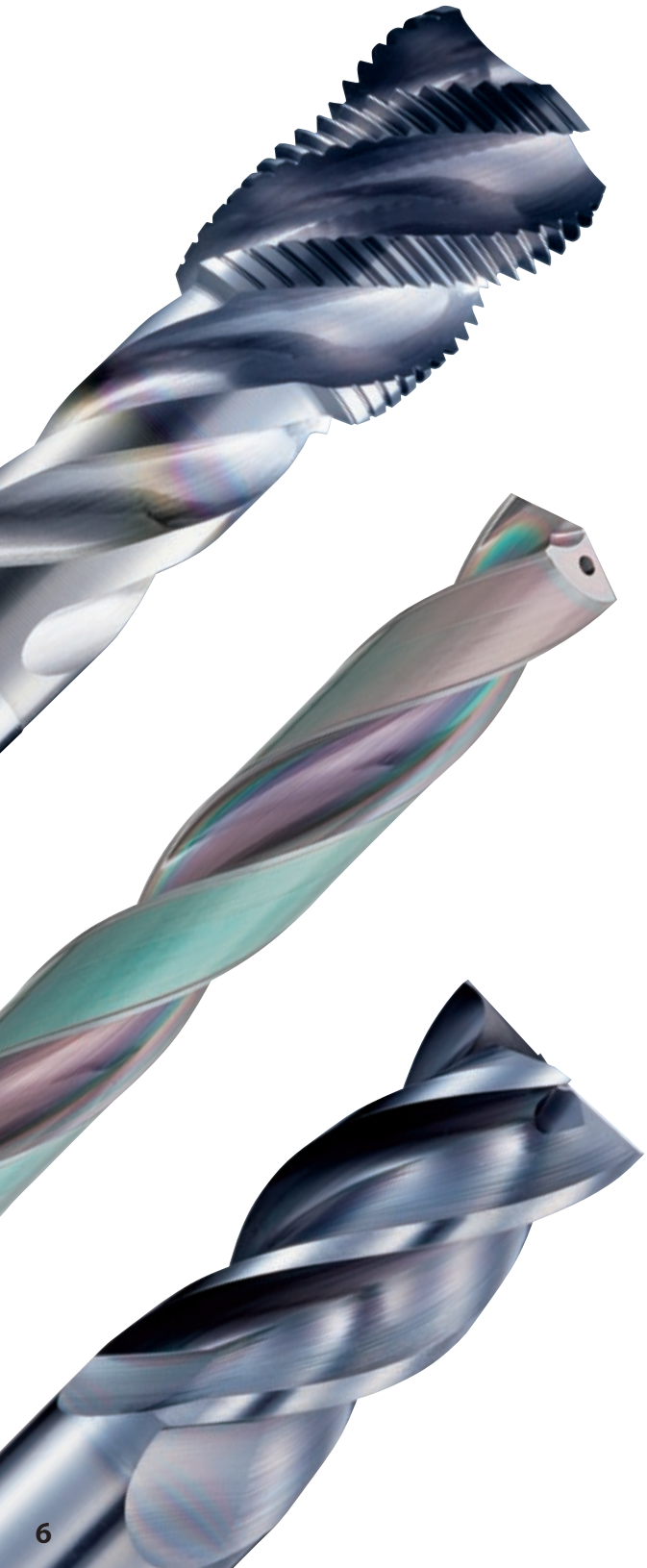
*We listen to our customers, think from our customers' perspective, develop products that meet customers' needs and get them to the market first. In addition, we offer fine-tuned after-sales service, while providing information feedback to customers.*

*OSG derives its strengths from a business model that integrates the sales of products, technology development and manufacturing, and makes active use of know-how gained through close communication with our customers.*

# PRODUCT GROUP

## Supporting global manufacturing with top class products and technology

OSG maintains absolute control over every aspect of its manufacturing capabilities. OSG products are produced in-house – from the production of tool material, creation of tool geometry, to the development of its own proprietary coatings – the 3 vital elements in the manufacturing of superior cutting tools.



## Taps

Taps are used to cut screw threads on the inside surfaces of holes, creating the "female" half (nut) of the screw. High precision is of vital importance, particularly in areas such as automobile engines, which require precision screws. OSG offers a lineup of taps with diameters in various sizes and with specifications suitable for a wide variety of uses.

## Drills

Drills are used to make holes in a wide range of surfaces. OSG has received high acclaim for the development of high-precision, high-value-added products for its use in automotive and aircraft part manufacture, which demands advanced processing techniques and zero margin of error.

## End Mills

End mills are used to cut and contour molds for plastic parts, which include electric home appliances, die-casting dies for automotive parts and stamping molds. To meet today's demanding requirements (smaller size, lower weight and reduced cost), OSG has developed many carbide end mills that are excellent in both processing accuracy and durability. To further enhance performance, efforts are made in the development of new products utilizing our advanced proprietary coating technique.

# Rolling Dies

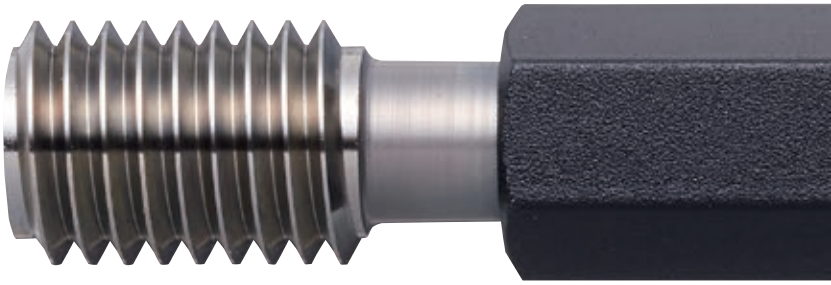
Thread rolling dies are used to copy threading onto "male" screws (bolts); the process consists of rolling a metal bar between two thread rolling dies tightly pressed to each side. OSG manufactures cylindrical and flat rolling dies for screws, worms and serrations, thread rolling planetary dies and counter-flow rolling dies, in accordance with their intended use.

# Indexable Tools

Indexable tools are used to shape metal molds and machine parts. While end mills are used for finishing, indexable tools are intended for rough cutting and contouring, and use disposable inserts attached to the tool body.

# Gauges

Gauges are used to inspect the final dimensions of screw threads and holes. OSG was an early adopter of changes in the Japan Industrial Standards (JIS). Today, we offer a range of screw gauges based on ISO standards. Precision checking is an extremely important process because of the trend toward increasing product precision and compliance with international standards.



# CORPORATE DATA

| | |
|---|---|
| Capital | 13.044 million yen |
| FY2025 Sales Amount | 160.619 million yen (consolidated) |
| Number of Employees | 7.563 (consolidated) |
| Stock Listings | 1st Section Tokyo & Nagoya Stock Exchange |
| Stock Code | 6136 |

OSG is our company name and trademark:

"O" stands for OSAWA, our founder
"S" stands for SCREW
"G" stands for GRINDING

OSG's first factory in 1938

# MILESTONES

**1938 — OSG Screw Grinding**
Hideo Osawa established Osawa Screw Grinding Co., Ltd.

**1963 — OSG Corporation**
Established OSG Corporation in Aichi, Japan as international headquarters.

**1968 — OSG USA**
Established OSG USA, Inc. in Chicago, USA as North American headquarters.

**1974 — OSG Sulamericana**
Established OSG OSG Ferramentas De Precisao Ltda. in Sao Paulo, Brazil as South American headquarters.

**1990 — OSG Asia**
Established OSG Asia PTE. Ltd. in Singapore as Asian headquarters.

**1999 — OSG Europe**
Established OSG Europe S.A. in Belgium as European headquarters.

**2001 — OSG Shanghai**
Established OSG (Shanghai) Corporation in Shanghai, China as Greater China headquarters.

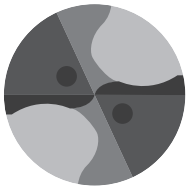
**2018 — OSG 80th Anniversary**
Celebrated 80 years of successes.

# PRODUCT DEVELOPMENT TIMELINE

**1938 — TAPS**
No. 1 Market Share in Japan
No. 1 Market Share Worldwide
(approximately 30%)

**1965 — HSS END MILLS**
No. 1 Market Share in Japan

**1975 — CARBIDE END MILLS**
No. 1 Market Share in Japan

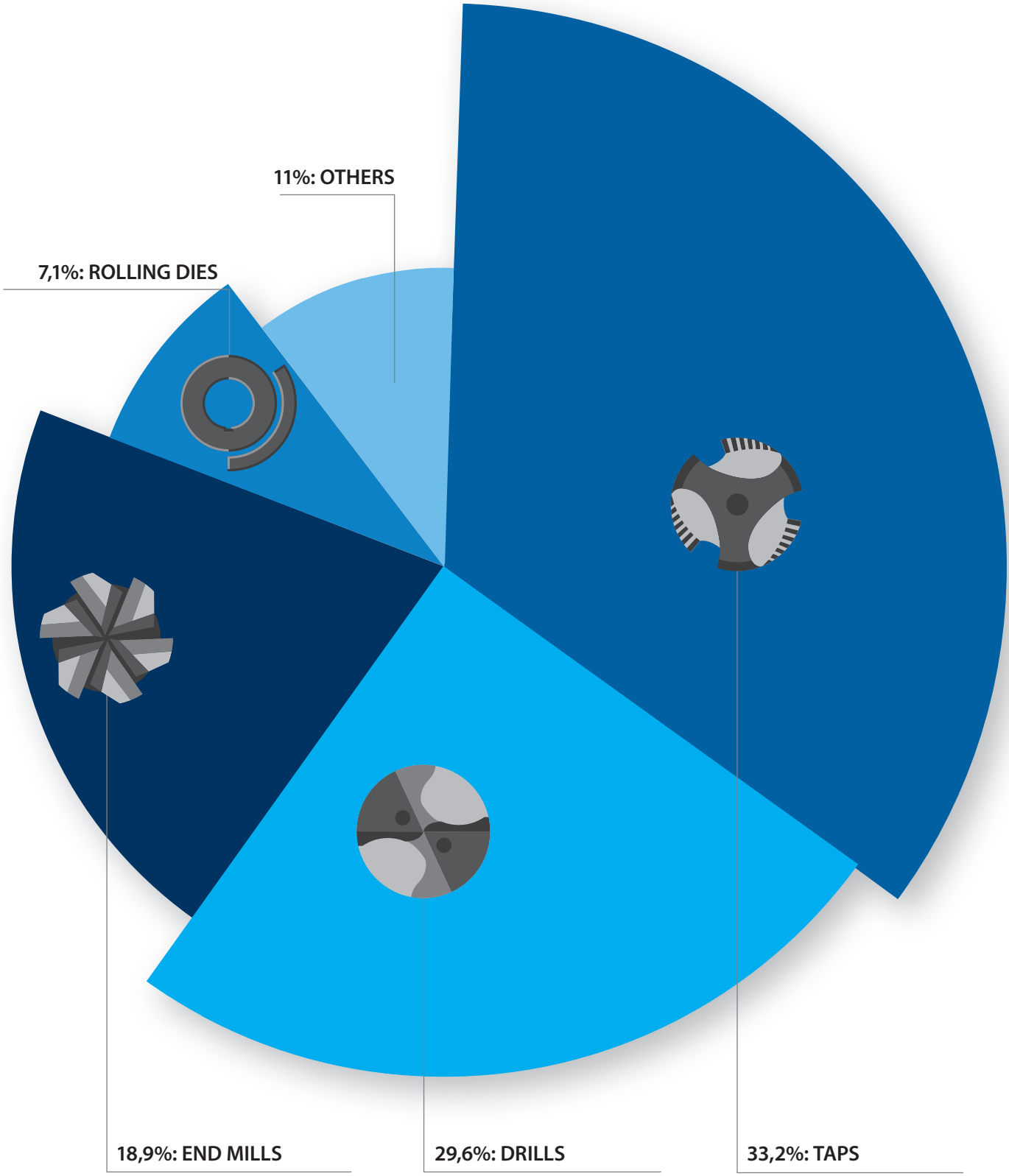


**1980 — DRILLS**
No. 2 Market Share in Japan

# NET SALES BY PRODUCT

OSG enjoys high market share globally in four of its core product offering - taps, rolling dies, drills and end mills.

FY2023 Consolidated Results
Internal Data



# ABSOLUTE QUALITY CONTROL

OSG maintains absolute control over every aspect of our manufacturing capabilities. OSG products are produced in-house – from the production of tool material, creation of tool geometry, to the development of our own proprietary coatings – the vital elements in the manufacturing of superior cutting tools.

**TOOL GEOMETRY**

Attribute for strength and performance

Provider: OSG Design Centre & Global Technology Centre

**TOOL MATERIAL**

Attribute for hardness and toughness

Provider: Nihon Hard Material

**TOOL COATING**

Attribute for heat and wear resistance

Provider: OSG Coating Service (OCS)

# The A-Brand

The A Brand is OSG's premium tooling brand. With a commitment to only the best, the A Brand emanates innovations essential for shaping the future of global manufacturing.

# A-SERIES TAPS

**AT-1** - One pass thread mill
**AT-2** - Thread mill for hardness steels
**A-SFT & A-POT** - High efficient multi-purpose tap
**A-CSF & A-CHT** - Carbide tap
**XPF** - X performer forming tap

# A-SERIES DRILLS

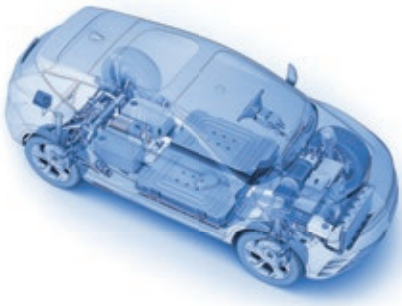
**ADF** - Carbide flat drill
**AD & ADO** - Carbide drill
**ADO-SUS** - Carbide drill for stainless steel & Titanium alloy
**ADO-TRS** - 3-flute carbide drill
**ADO-MICRO** - Micro carbide drill

# A-SERIES END MILLS

**AE-VM series** - Anti-vibration carbide end mill
**AE-N series** - Carbide end mill for Non-ferrous materials
**AE-H series** - Carbide end mill for hardness materials

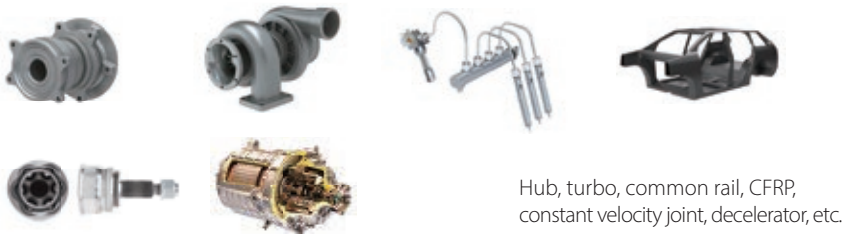
# BUSINESS DOMAINS

OSG has traditionally maintained a powerful marketing presence in manufacturing industries including automotive, aerospace and mold & die. OSG also supplies products to energy-related industries including the shipbuilding industry, construction equipment industry, as well as to the manufacturers of precision equipment, such as medical devices.



## AUTOMOTIVE

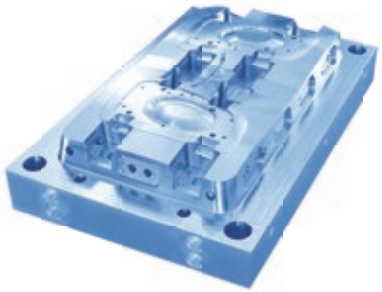
OSG not only supplies powerful cutting tools for the automotive industry, but also provides tailored application solutions to facilitate better processing with higher efficiency and longer durability.



Hub, turbo, common rail, CFRP, constant velocity joint, decelerator, etc.

## MEDICAL

OSG's cutting tools are able to achieve high precision and accuracy in the machining of titanium alloy, cobalt-chrome and stainless steel, all of which are common materials used in the processing of medical equipment components.



## DIE / MOLD

In mold and die manufacturing, a part's quality is highly correlated to the performance of the overall product. OSG's end mills supply speed with size variations and unrivalled quality even for the most complicated mold production.

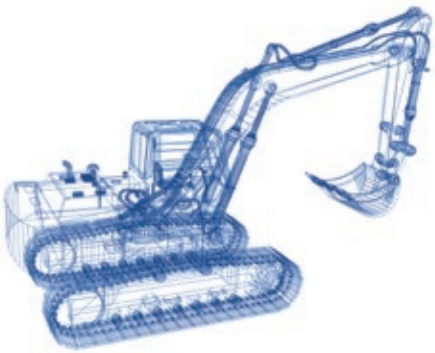
Work samples

## AEROSPACE

The aerospace industry's mission is to manufacture more environmentally progressive, longer-range and faster aircrafts that require lower operating costs. OSG's cutting tools share the same mission.

Wing rib, fitting, CFRP, etc.

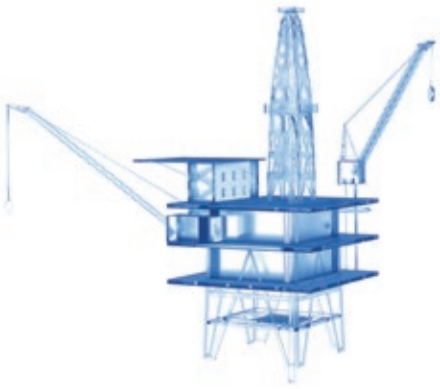
## HEAVY INDUSTRY



OSG offers large diameter tooling for the machining of big components, common in the heavy industry such as shipbuilding and construction machinery. OSG has developed a spectrum of products designated for various materials and sizes to help manufacturers achieve the best possible result.

Hydraulic control valve, slewing bearing, engine, etc.

## ENERGY



The energy industry provides fuel necessary for our daily lives and requires precision machining of large parts and difficult-to-machine materials that can withstand various hostile conditions. OSG offers optimized cutting tool solutions for the most demanding requirements of power generation metal cutting.

Turbine rotor, turbine blade, turning circuit, etc.

# THREADING

# ICONS LEGEND



## Thread type

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| M | Metric | G | G | EG UNJC | HELICOIL UNJC | EG M | HELICOIL M |
| UN | UN | Pg | PG | BSF | BSF | EG UNJF | HELICOIL UNJF |
| UNJC | UNJC | MF | Metric fine | Rc (PT) | Rc (PT) | BA | BA |
| EG MJ | HELICOIL MJ | UNF | UNF | UNC | UNC | NPSF | NPSF |
| NPT | NPT | BSW | BSW | UNJF | UNJF | MJ | MJ |

## Tool material

| | | | | | |
|---|---|---|---|---|---|
| CARBIDE | Carbide | HSS-Co | HSS Cobalt (Co8) | XPM | High grade powder metallurgy HSS (XPM) (Co10+V5) |
| HSSE | High Vanadium HSS-EV3 | PM | Powder metallurgy HSS (PM-T15) (Co5 + V5) | HSS | HSS |

## Coating / surface treatment

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CrN | Chromium nitride | HR | Coating HR | NI-OX | Nitride Oxide | OX | Steam oxide |
| WX | Multilayer composite TiAlN | SC | Smooth coating | V | Multilayer coating TiCN | TiN | Coating TiN |
| DLC-IGUSS | DLC IGUSS coating | DUROREY | DUROREY coating | WXS | Multilayer coating WXS | VI | VI coating |
| EgiAs | EgiAs coating | AlCrN | AlCrN coating | | | | |

## Helix angle

| | |
|---|---|
| 30° | Helix angle |

## Tool tolerance

| | | | |
|---|---|---|---|
| ISO 2 6H | Tool tolerance | 6H +0.1 | Oversized +0,1 mm thread tolerance |

## Chamfer length

| | | | | | |
|---|---|---|---|---|---|
| A/6 | Form A (6 pitch) | B/5 | Form B (5 pitch) | C/3 | Form C (3 pitch) |
| D/5 | Form D (5 pitch) | E/1,5 | Form E (1,5 pitch) | 8 THDS | 8 pitch |

# ICONS LEGEND



## Shank

Shank diameter tolerance

Suitable for Shrink fit system

Straight shank

Reinforced shank

Weldon shank

## Hole specification / thread depth

For blind holes

For through holes

Threading depth

For blind holes - helicoil

For through holes - helicoil

## Standard DIN

Standard DIN

Left-hand threads

## Coolant

Centre through

Side through

## Recommendation

Steel
Full recommendation

Stainless steel
Full recommendation

Cast iron
Full recommendation

Steel
Suitable

Stainless steel
Suitable

Cast iron
Suitable

Non-ferrous materials
Full recommendation

Super alloys
Full recommendation

Hardened material
Full recommendation

Non-ferrous materials
Suitable

Super alloys
Suitable

Hardened material
Suitable

## A-Brand

A-Brand product

## Page reference

Cutting conditions page reference

## Product group

Cutting taps

Thread mills

Gauges

Forming taps

Round dies

Synchrofit

# MATERIAL OVERVIEW

Threading | Overview DIN ISO 513

| | | Work Material | DIN |
|---|---|---|---|
| P | C: ≤0,2% | Low carbon steel | **1.0116** (S235J2G3)<br>**1.0401** (C15) |
| | C: 0,25-0,45% | Medium carbon steel | **1.0501** (C35) |
| | C: ≥0,45% | High carbon steel | **1.0535** (C55)<br>**1.0553** (S355J0) |
| | SCM | Alloy steel | **1.7225** (42CrMo4) |
| M | INOX | Stainless steel | **1.4301** (X5CrNi18-10) |
| K | GG | Cast iron | **0.6025** (EN-GJL-250/GG25) |
| | GGG | Ductile cast iron | **0.7040** (EN-GJS-400-15/GGG-40) |
| N | Al | Aluminium | **3.0205** (Al99) |
| | AC, ADC | Cast aluminium alloys | **3.2581** (G-AlSi12) |
| S | Ti | Titanium | **3.7164** (Ti6Al4V) |
| | Ni | Nickel alloys | **2.4816** (NiCr15Fe/Inconel® 600) |
| H | 25-35HRC | Hardened steel | |
| | 35-45HRC | | |
| | 45-52HRC | | |
| | 52-62HRC | | |

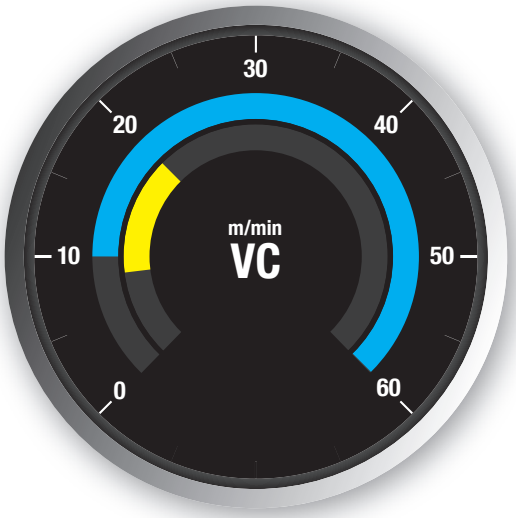
| | |
|---|---|
| **CFRP** | CFRP |
| **Honeycomb** | Honeycomb |
| **Graphite** | Graphite |

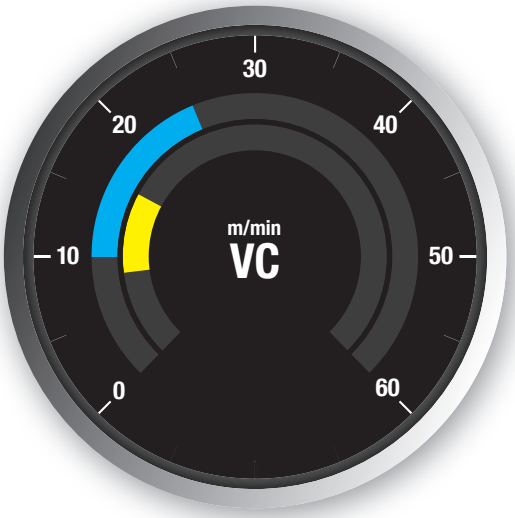
High-performance & Low-carbon Forming Tap

# GREEN TAP

GRT

High-performance &
Low-carbon Forming Tap






A V PM

## A-TAP Series

First choice in quality and performance

Powder metal cutting tap

Multilayer V coating: extreme wear resistance

High speed tapping in general steels, aluminium, stainless steels

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | M A.114 | MF A.173 | UNC A.199 | UNF A.205 | BSW A.230 | BSF A.232 | |
| BA A.234 | G A.237 | Rc (PT) A.247 | Rc (ISO) A.247 | Rp A.248 | NPSF A.249 | NPT A.249 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| M A.97 | MF A.168 | UNC A.197 | UNF A.204 | BSW A.229 | BSF A.231 | |
| BA A.233 | G A.235 | | | | | |

OX HSSE

## S-TAP Series

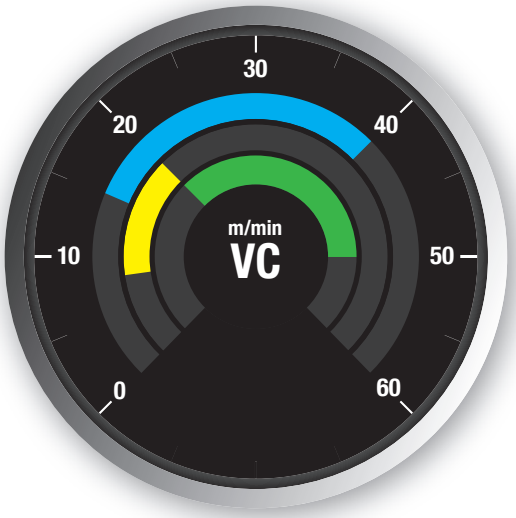
HSSE cutting tap

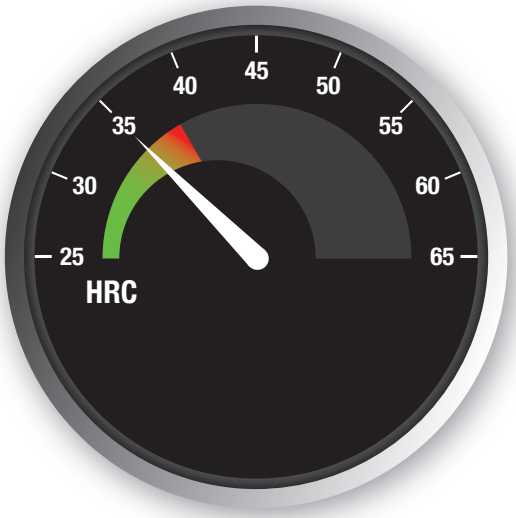
Steam oxide treatment

General purpose tapping in steels and stainless steels

| | | | | | | |
|---|---|---|---|---|---|---|
| M A.121 | MF A.178 | UNC A.199 | UNF A.206 | BSW A.231 | BSF A.233 | |
| BA A.235 | G A.238 | Rc (PT) A.248 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| M A.101 | MF A.170 | UNC A.198 | UNF A.204 | BSW A.230 | BSF A.232 | |
| BA A.234 | G A.236 | | | | | |




A | VI | PM

## A-XPF Series

First choice in quality and performance

Powder metal forming tap for through and blind holes

VI coating: extreme wear resistance

High speed tapping in general steels, aluminium, stainless steels

M A.149 | MF A.187 | G A.242

A | V | HSS-Co

## S-XPF Series

First choice in quality and performance

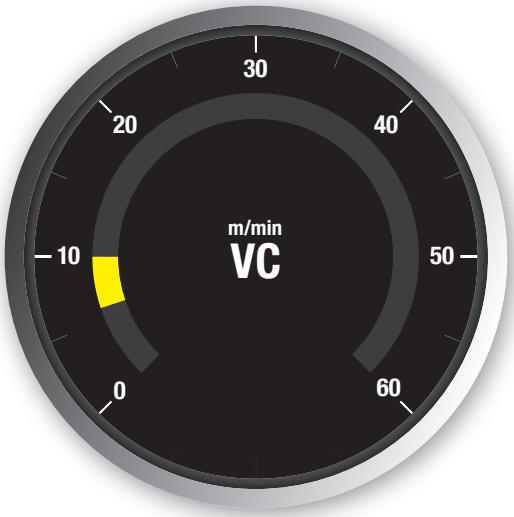
HSSE forming tap for through and blind holes

Multilayer V coating: extreme wear resistance

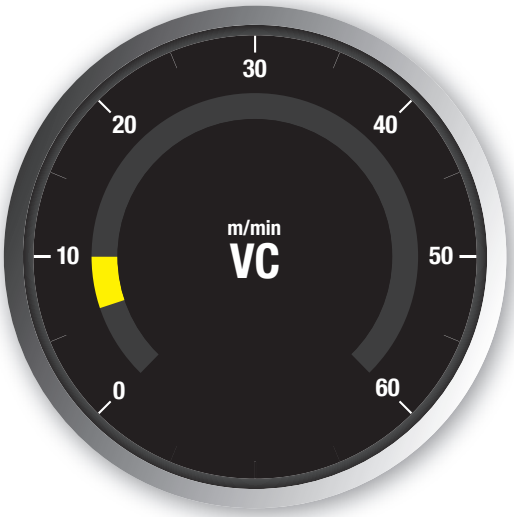
For general steels, stainless steels, aluminium

M A.152 | MF A.189 | UNC A.203 | UNF A.208 | G A.244

## 304 ▪ 304L ▪ 410 ▪ 430




## 316 ▪ 316L ▪ 17-4PH ▪ Super Duplex






A | V | PM

# A-TAP Series

First choice in quality and performance

Powder metal cutting tap

Multilayer V coating: extreme wear resistance

High speed tapping in general steels, aluminium, stainless steels

| | | | | | | |
|---|---|---|---|---|---|---|
| M A.114 | MF A.173 | UNC A.199 | UNF A.205 | BSW A.230 | BSF A.232 | |
| BA A.234 | G A.237 | Rc (PT) A.247 | Rc (ISO) A.247 | Rp A.248 | NPSF A.249 | NPT A.249 |

| | | | | | |
|---|---|---|---|---|---|
| M A.97 | MF A.168 | UNC A.197 | UNF A.204 | BSW A.229 | BSF A.231 |
| BA A.233 | G A.235 | | | | |

TiN | PM

# M-SFT-DUPLEX

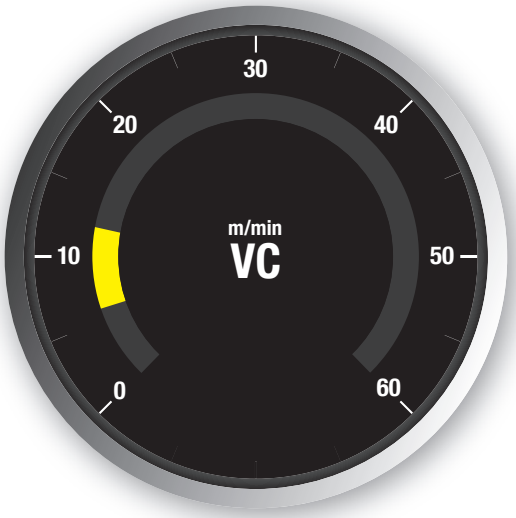
Powder metal cutting tap

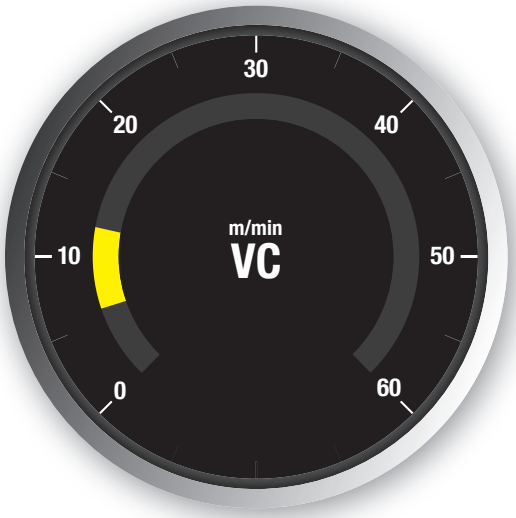
TiN coating

For stainless steels, DUPLEX and SUPER DUPLEX

Variable helix for better chip evacuation

| | | | |
|---|---|---|---|
| M A.132 | MF A.181 | UNC A.201 | UNF A.207 |
| UNJC A.214 | UNJF A.219 | UN A.201 | G A.240 |




AlCrN PM

## VA-XPF Series

Powder metal forming tap for through and blind holes

AlCrN coating

For general steel, stainless steels and aluminum

For higher-strength materials

M A.163 MF A.196 G A.246

TiN PM

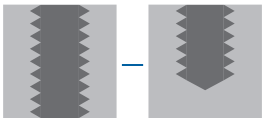
## M-NRT Series

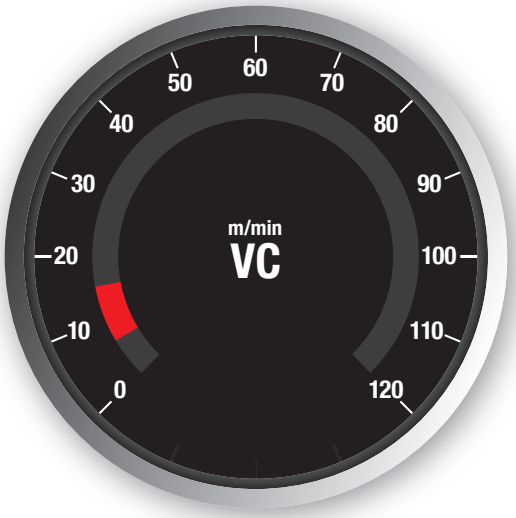
Powder metal forming tap for through and blind holes

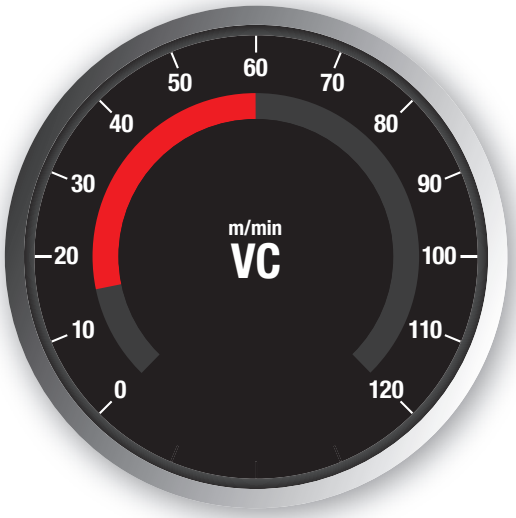
TiN coating

For stainless steels and aluminium

M A.166 MF A.197 G A.246





NI-OX HSSE

## GG-MT

HSSE straight flute cutting tap for blind and through holes

NiOx coating

For cast iron

M MF G

A.145 A.187 A.241

V PM

## VP-DC

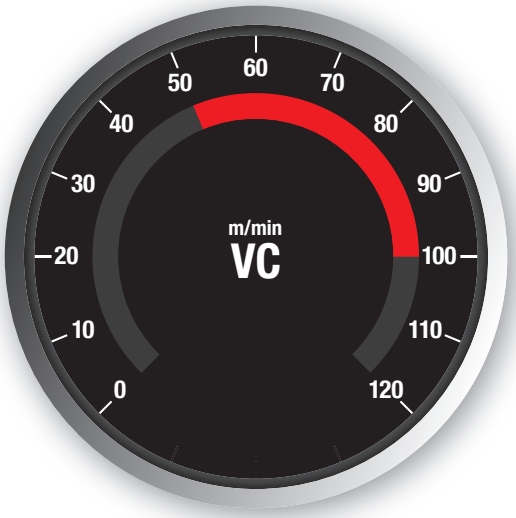
Powder metal straight flute cutting tap for through and blind holes

Multilayer V coating

For cast iron and aluminium cast

M MF UNC UNF G

A.141 A.184 A.202 A.207 A.241




A FX CARBIDE

# A-CHT

First choice in quality and performance

Carbide straight flute cutting tap for through and blind holes

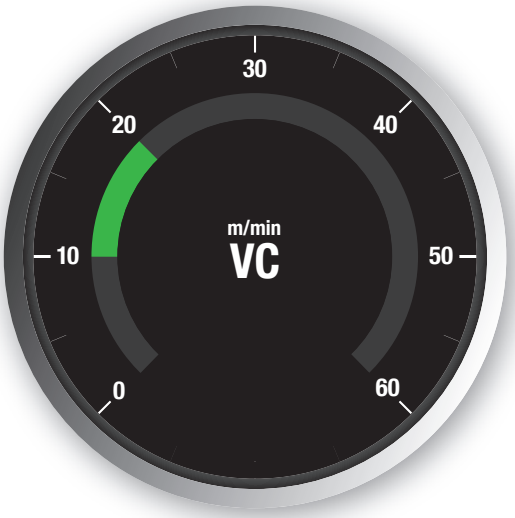
TiAlN coating

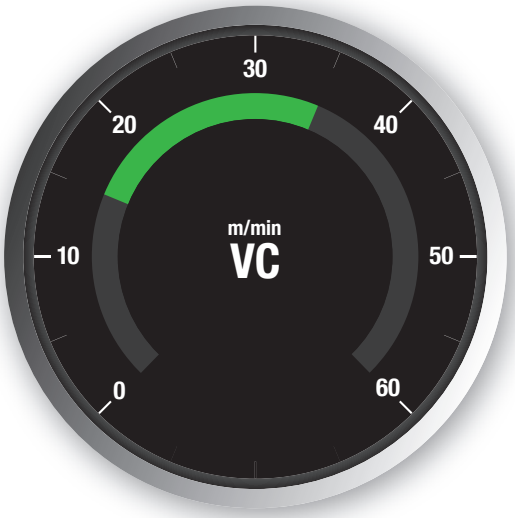
For cast iron and aluminium cast

Centre through or side through coolant

M MF

A.143 A.185






HSSE

## AL Series

HSSE cutting tap

Bright finish

For aluminium and cast aluminium

M A.136 | MF A.183

M A.110

CrN HSSE

## CC Series

HSSE cutting tap

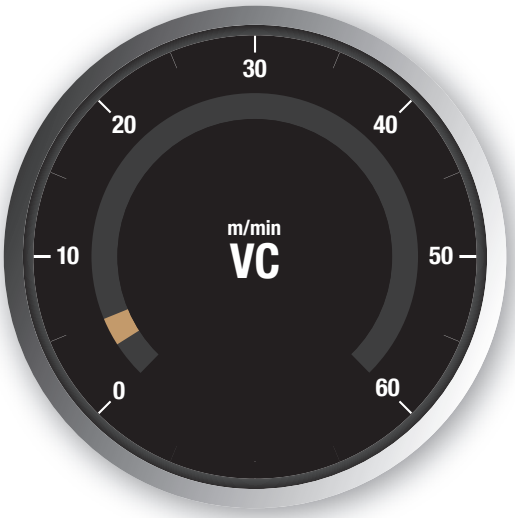
CrN coating

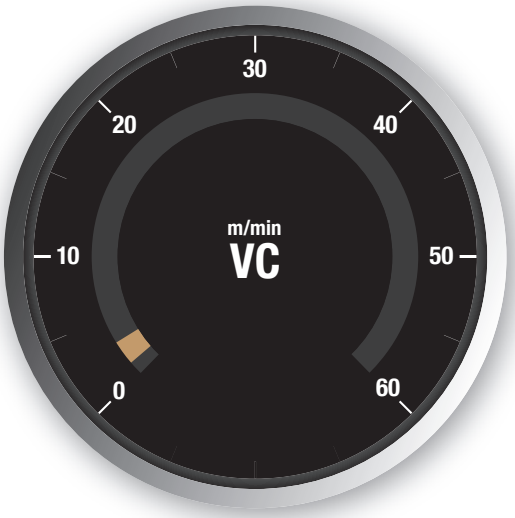
For general steels, stainless steels and aluminium

Developed for rigid tapping on CNC machines

M A.133 | MF A.182 | UNJC A.213 | UNJF A.220 | EG M A.222 | EG UNJF A.228 | G A.240

M A.108 | MF A.172




V PM

## V-TI Series

Powder metal low spiral-fluted cutting tap for blind holes

Multilayer V coating

For Titanium alloys

M MJ UNJC UNJF

A.137 A.210 A.214 A.220

M UNJC UNJF

A.110 A.211 A.217

HR PM

## WHR-NI Series

Powder metal low spiral-fluted cutting tap for blind holes

HR coating

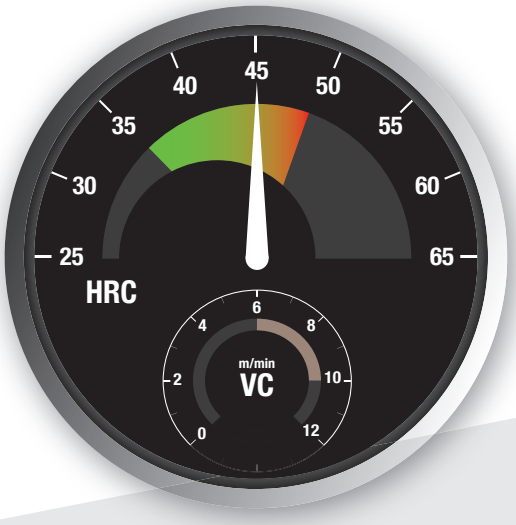
For Nickel-based alloys including Inconel 718

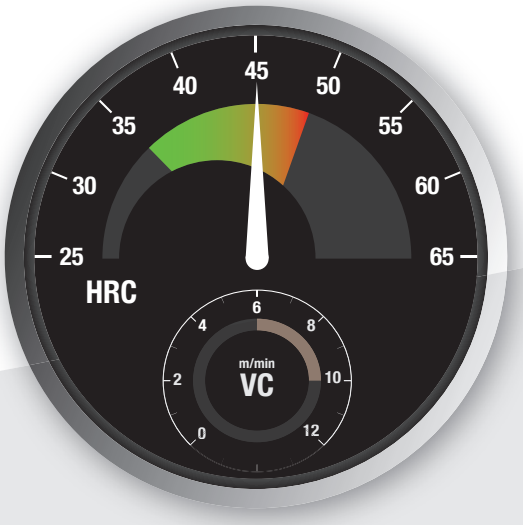
M UNJC UNJF

A.138 A.215 A.221

M UNJC UNJF

A.111 A.212 A.218






OX PM

## H-TAP

Powder metal low spiral-fluted cutting tap for blind holes

Steam oxide treatment

For hardened steels up to **45 HRC**

M A.139 | MF A.183 | UNJC A.216 | UNJF A.222

EG MJ A.224 | EG UNJC A.226 | EG UNJF A.229

M A.112 | MF A.173 | UNJC A.212 | UNJF A.218

EG MJ A.223 | EG UNJC A.225 | EG UNJF A.227

V PM

## VP-H

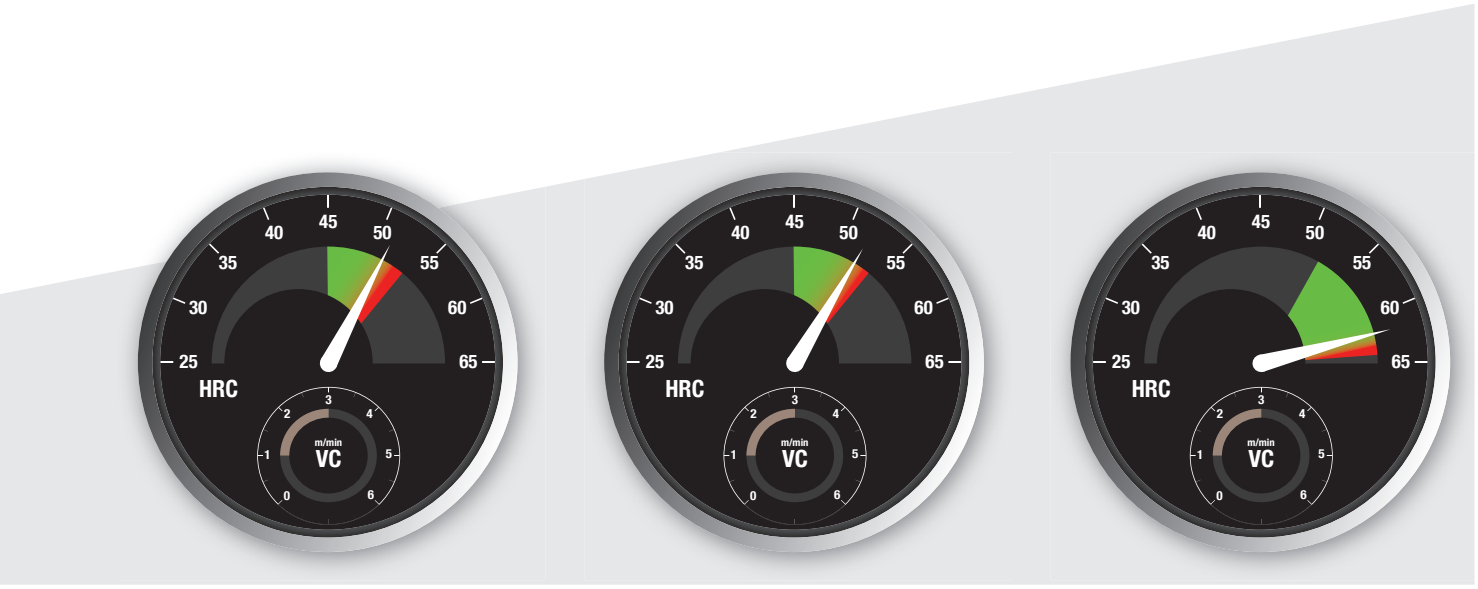
Powder metal low spiral-fluted cutting tap for blind holes

Multilayer V coating

For hardened steels up to **45 HRC**

M A.139

M A.113




V XPM

## V-XPM-HT

Powder metal straight flute cutting tap for through and blind holes

Multilayer V coating

For hardened steels up to **52 HRC**

M

A.146

V CARBIDE

## WH55-OT

Carbide straight flute cutting tap for through and blind holes

Multilayer V coating

For hardened steels up to **55 HRC**

M

A.147

V CARBIDE

## VX-OT

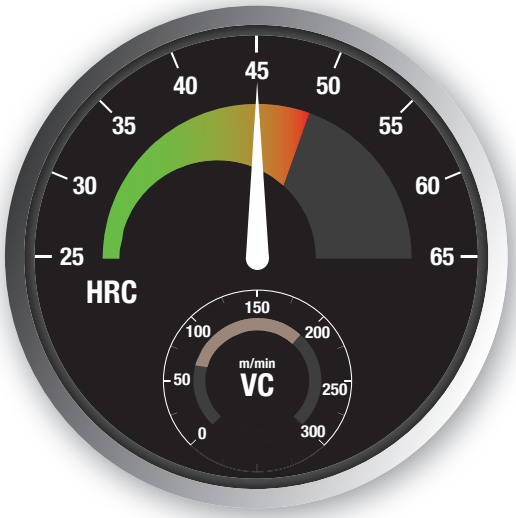
Carbide straight flute cutting tap for through and blind holes

Multilayer V coating

For hardened steels up to **62 HRC**

M G

A.148 A.242






A EgiAs CARBIDE

# AT-1

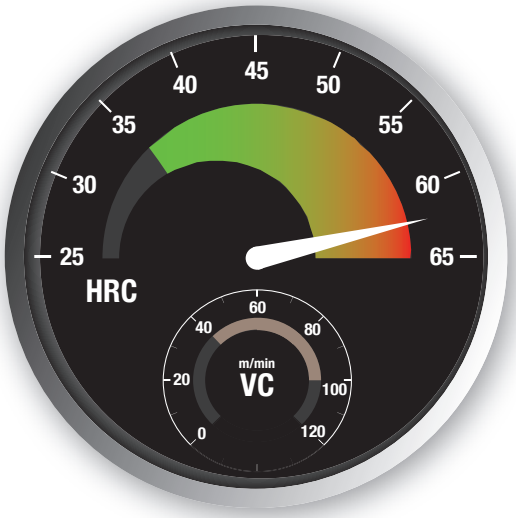
First choice in quality and performance

One pass thread mill

EgiAs coating

Variable helix and unequal spacing

| | | | | |
|---|---|---|---|---|
| M | MF | MJ | UNC | UNJC |
| A.254 | A.254 | A.254 | A.258 | A.258 |
| UNF | UNJF | R (PT) | Rc (PT) | Rp (PS) |
| A.258 | A.258 | A.262 | A.262 | A.263 |
| G (PF) | NPT | | | |
| A.263 | A.264 | | | |




A DUROREY CARBIDE

# AT-2

First choice in quality and performance

Thread mill with end-cutting edge for high hardness steels

DUROREY coating

Up to 65HRC

M A.254 | UNC A.259 | UNJC A.259 | UNF A.259 | UNJF A.259

Rc (PT) A.262 | NPT A.264

# SELECTION CHART

Threading | Selection chart | By material

## Threading | Cutting taps | Through hole

| | | | Tolerance | | | A-Brand | Product series | M | MF | UNC | UNF | UN | MJ | UNJC | UNJF | EG-M | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | | FORM B | 6HX | PM | - | V | A | A-POT | A.97 | A.168 | A.197 | A.204 | | | | | | |
| - | | FORM B | 6HX | PM | | V | A | A-OIL-POT | A.97 | A.169 | | | | | | | | |
| - | | FORM B | **6GX** | PM | - | V | A | A-POT 6GX | A.98 | A.169 | | | | | | | | |
| - | | FORM B | **7GX** | PM | - | V | A | A-POT 7GX | A.98 | | | | | | | | | |
| - | | FORM B | **6H +0.1** | PM | - | V | A | A-POT +0.1 | A.99 | | | | | | | | | |
| - | | FORM B | 6HX | PM | - | V | A | A-LT-POT | A.99 | | | | | | | | | |
| - | | FORM B | 6HX | PM | - | V | A | A-POT-LH | A.100 | | | | | | | | | |
| - | | FORM B | 6HX | PM | - | V | A | A-POT-HB Weldon | A.100 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | OX | | S-POT | A.101 | A.170 | A.198 | A.204 | | | | | | |
| - | | FORM B | **6G** | HSSE | - | OX | | S-POT 6G | A.101 | A.170 | | | | | | | | |
| - | | FORM B | **7G** | HSSE | - | OX | | S-POT 7G | A.102 | | | | | | | | | |
| - | | FORM B | **6H +0.1** | HSSE | - | OX | | S-POT +0.1 | A.102 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | OX | | S-LT-POT | A.103 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | OX | | S-POT-LH | A.103 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | OX | | S-POT-HB Weldon | A.104 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | OX | | VA-POT | A.104 | A.171 | A.198 | A.205 | | | A.210 | A.216 | | | |
| - | | FORM B | **6G** | HSSE | - | OX | | VA-POT 6G | A.105 | | | | | | | | | |
| - | | FORM B | 6HX | PM | - | V | | Z-POT | A.105 | A.171 | | | | | | | | |
| - | | FORM B | 6HX | PM | | V | | Z-OIL-POT | A.106 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | - | | POT | A.106 | A.172 | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | TiN | | TIN-POT | A.107 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | V | | TICN-POT | A.108 | | | | | | | | | |
| - | | FORM B | 6HX | HSSE | - | CrN | | CC-POT | A.108 | A.172 | | | | | | | | |
| - | | FORM B | 6HX | HSSE | - | CrN | | CC-LT-POT | A.109 | | | | | | | | | |
| - | | FORM A | 6H | HSSE | - | TiN | | HS-RFT-TIN | A.109 | | | | | | | | | |
| - | | FORM B | 6H | HSSE | - | - | | AL-POT | A.110 | | | | | | | | | |
| - | | FORM B | 6H | PM | - | V | | V-TI-POT | A.110 | | | | | | A.211 | A.217 | | |
| - | | FORM B | 6H | PM | - | - | | E-(HL)-POT | A.111 | | | | | | A.211 | A.217 | A.223 | A.225 |
| - | | FORM B | 6HX | PM | - | HR | | WHR-NI-POT | A.111 | | | | | | A.212 | A.218 | | |
| - | | FORM B | 6H | PM | - | - | | CPM-POT | A.112 | | | | | | | | | |
| - | | FORM B | 6H | PM | - | OX | | H-(HL)-POT | A.112 | A.173 | | | | | A.212 | A.218 | A.223 | A.225 |
| - | | FORM B | 6HX | PM | - | V | | VP-H-POT | A.113 | | | | | | | | | |
| - | | FORM B | 6HX | PM | | V | | VPO-H-POT | A.113 | | | | | | | | | |

| EG-UNJF | BSW | BSF | BA | G | Rc | NPSF | NPT | PG | P | | | | M | K | | N | | S | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | C <0,2% | 0,25 < C <0,4 | 0,25<C <0,4 | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | A.229 | A.231 | A.233 | A.235 | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | 8-20 | | | |
| | A.230 | A.232 | A.234 | A.236 | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | | | | | | | | |
| | | | | | | | | | 15-24 | 15-24 | 15-24 | 8-20 | 8-20 | | | 20-40 | 20-40 | 10-15 | | 8-15 | | | |
| | | | | | | | | | 15-24 | 15-24 | 15-24 | 8-20 | 8-20 | | | 20-40 | 20-40 | 10-15 | | 8-15 | | | |
| | | | | A.236 | | | | | 12-20 | 8-12 | 8-12 | 8-12 | | | 8-12 | 15-25 | 15-20 | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | 15-25 | 15-20 | | | | | | |
| | | | | | | | | | 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | | 10-15 | 15-25 | 15-20 | | | | | | |
| | | | | | | | | | 15-25 | 15-25 | 10-25 | 10-25 | 6-15 | | | 20-40 | | | | | | | |
| | | | | | | | | | 15-25 | 15-25 | 10-25 | 10-25 | 6-15 | | | 20-40 | | | | | | | |
| | | | | | | | | | 27-32 | 27-32 | 22-27 | 22-27 | 15-20 | | | 50-100 | 40-100 | | | | | | |
| | | | | | | | | | | | | | | | | 15-25 | 15-20 | | | | | | |
| | | | | | | | | | | | | | | | | | | 4-6 | | | | | |
| A.227 | | | | | | | | | | | | | | | | | | | 2-4 | | | | |
| | | | | | | | | | | | | | | | | | | | 2-4 | | | | |
| | | | | | | | | | | | 8-13 | | | | 10-15 | | | | | 6-10 | 6-10 | | |
| A.227 | | | | | | | | | | | 8-13 | | | | 10-15 | | | 4-6 | 2-4 | 6-10 | 6-10 | | |
| | | | | | | | | | | | 8-13 | | | | 10-15 | | | 4-6 | 2-4 | 6-10 | 6-10 | | |
| | | | | | | | | | | | 8-13 | | | | 10-15 | | | 4-6 | 2-4 | 6-10 | 6-10 | | |

# SELECTION CHART



## Threading | Cutting taps | Blind Hole

| | | | Tolerance | | | | A-Brand | Product series | M | MF | UNC | UNF | UN | MJ | UNJC | UNJF | EG-M | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | FORM C | 6HX | PM | - | V | A | A-SFT | A.114 | A.173 | A.199 | A.205 | | | | | | | |
| | - | FORM C | 6HX | PM | | V | A | A-OIL-SFT | A.114 | A.174 | | | | | | | | | |
| | - | FORM C | **6GX** | PM | - | V | A | A-SFT 6GX | A.115 | A.174 | | | | | | | | | |
| | - | FORM C | **7GX** | PM | - | V | A | A-SFT 7GX | A.115 | | | | | | | | | | |
| | - | FORM C | **6H +0.1** | PM | - | V | A | A-SFT +0.1 | A.116 | | | | | | | | | | |
| | - | **FORM E** | 6HX | PM | - | V | A | A-SFT FORM E | A.116 | A.175 | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | V | A | A-LT-SFT | A.117 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | V | A | A-SFT-LH | A.117 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | V | A | A-SFT-HB Weldon | A.118 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | VI | A | A-SFT-INOX **NEW** | A.118 | A.175 | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | V | A | A-SFT-AL **NEW** | A.119 | A.176 | | | | | | | | | |
| | - | **FORM E** | 6HX | PM | - | V | A | A-SFT-AL FORM E **NEW** | A.119 | A.176 | | | | | | | | | |
| | - | FORM C | 6HX | CAR-BIDE | | FX | A | A-CSF OIL | A.120 | A.177 | | | | | | | | | |
| | - | **FORM E** | 6HX | CAR-BIDE | | FX | A | A-CSF OIL FORM E | A.120 | A.177 | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | OX | | S-SFT | A.121 | A.178 | A.199 | A.206 | | | | | | | |
| | - | FORM C | **6G** | HSSE | - | OX | | S-SFT 6G | A.121 | A.178 | | | | | | | | | |
| | - | FORM C | **7G** | HSSE | - | OX | | S-SFT 7G | A.122 | | | | | | | | | | |
| | - | FORM C | **6H +0.1** | HSSE | - | OX | | S-SFT +0.1 | A.122 | | | | | | | | | | |
| | - | **FORM E** | 6H | HSSE | - | OX | | S-SFT FORM E | A.123 | A.179 | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | OX | | S-LT-SFT | A.123 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | OX | | S-SFT-LH | A.124 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | OX | | S-SFT-HB Weldon | A.124 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | OX | | VA-SFT | A.125 | A.179 | A.200 | A.206 | | | A.213 | A.219 | | | |
| | - | FORM C | **6G** | HSSE | - | OX | | VA-SFT 6G | A.125 | | | | | | | | | | |
| | - | **FORM E** | 6H | HSSE | - | OX | | VA-SFT FORM E | A.126 | | | | | | | | | | |
| | - | FORM C | 6H | PM | - | V | | Z-SFT | A.126 | A.180 | | | | | | | | | |
| | - | FORM C | 6H | PM | | V | | Z-OIL-SFT | A.127 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | - | | SFT | A.127 | A.180 | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | TiN | | TIN-SFT | A.128 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | V | | TICN-SFT | A.129 | | | | | | | | | | |
| | - | FORM C | 6HX | HSSE | - | OX | | HXL-SFT | A.129 | | A.200 | | | | | | | | |
| | - | FORM C | 6HX | HSSE | | OX | | OIL-HXL-SFT | A.130 | | | | | | | | | | |
| | - | FORM C | 6HX | HSSE | - | OX | | VXL-SFT | A.130 | | A.201 | | | | | | | | |
| | - | FORM C | 6HX | HSSE | | OX | | OIL-VXL-SFT | A.131 | | | | | | | | | | |

| EG-UNJF | BSW | BSF | BA | G | Rc | Rp | NPSF | NPT | P | | | | M | K | | N | | S | | | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | INCONEL 625 | TI GR.2 | 25-35 HRC | 35-45 HRC |
| | A.230 | A.232 | A.234 | A.237 | A.247 | | | A.249 | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | A.248 | A.249 | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | | | | | | 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-20 | |
| | | | | A.237 | | | | | 5-20 | 5-50 | 5-50 | 5-30 | 5-15 | | | 5-50 | | | | | | | |
| | | | | | | | | | | | | | | | | | 5-50 | | | | | | |
| | | | | | | | | | | | | | | | | | 5-30 | | | | | | |
| | | | | | | | | | | | | | | 10-100 | 10-100 | | 10-100 | | | | | | |
| | | | | | | | | | | | | | | 10-100 | 10-100 | | 10-100 | | | | | | |
| | A.231 | A.233 | A.235 | A.238 | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | A.238 | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | | 7-14 | | | | | | | | |
| | | | | | | | | | 10-25 | 10-25 | 10-25 | 8-20 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-15 | |
| | | | | | | | | | 10-25 | 10-25 | 10-25 | 8-20 | 8-20 | | | 15-35 | 15-35 | 5-10 | | | | 8-15 | |
| | | | | A.239 | | | | | 8-13 | 7-12 | 7-12 | 6-9 | | | 6-8 | 10-20 | 10-15 | | | | | | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | | 7-12 | 10-20 | 10-15 | | | | | | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | | 7-12 | 10-20 | 10-15 | | | | | | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 7-12 | | | | | | | 3-5 | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 7-12 | | | | | | | 3-5 | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | | | | | | | | | 3-5 | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | | | | | | | | | 3-5 | |

# SELECTION CHART

**Threading | Selection chart | By material**

## Threading | Cutting taps | Blind Hole

| | | | Tolerance | | | | A-Brand | Product series | M | MF | UNC | UNF | UN | MJ | UNJC | UNJF | EG-M | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | - | FORM C | 6H | HSSE | - | - | | SH-SFT | A.131 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | TiN | | M-SFT-DUPLEX | A.132 | A.181 | A.201 | A.207 | A.201 | | A.214 | A.219 | | | |
| | - | FORM C | 6HX | PM | | TiN | | M-OIL-SFT-DUPLEX | A.132 | A.181 | | | | | | | | | |
| | - | FORM C | 6HX | PM | - | TiN | | M-LT-SFT-DUPLEX | A.133 | | | | | | | | | | |
| | - | FORM C | 6HX | HSSE | - | CrN | | CC-(HL)-SFT | A.133 | A.182 | | | | | A.213 | A.220 | A.222 | | |
| | - | FORM C | 6HX | HSSE | - | CrN | | CC-LT-SFT | A.134 | | | | | | | | | | |
| | - | FORM C | 6HX | HSSE | - | TiN | | CC-NEO-SFT | A.134 | | | | | A.209 | | | | | |
| | - | FORM C | 6HX | HSSE | - | OX | | SUS-SFT | A.135 | A.182 | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | TiN | | HS-SFT-TIN | A.135 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | - | | AL-SFT | A.136 | A.183 | | | | | | | | | |
| | - | FORM C | 6H | HSSE | - | V | | US-AL-SFT | A.136 | | | | | | | | | | |
| | - | FORM C | 6H | PM | - | V | | V-TI-SFT | A.137 | | | | | A.210 | A.214 | A.220 | | | |
| | - | FORM C | 6H | PM | - | - | | E-(HL)-SFT | A.137 | | | | | | A.215 | A.221 | | A.224 | A.226 |
| | - | FORM C | 6HX | PM | - | HR | | WHR-NI-SFT | A.138 | | | | | | A.215 | A.221 | | | |
| | - | FORM C | 6H | PM | - | - | | CPM-SFT | A.138 | | | | | | | | | | |
| | - | FORM C | 6H | PM | - | OX | | H-(HL)-SFT | A.139 | A.183 | | | | | A.216 | A.222 | | A.224 | A.226 |
| | - | FORM C | 6HX | PM | - | V | | VP-H-SFT | A.139 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | | V | | VPO-H-SFT | A.140 | | | | | | | | | | |
| | - | FORM C | 6H | HSSE | | V | | V-EM-SFT | A.140 | | | | | | | | | | |

| EG-UNJF | BSW | BSF | BA | G | Rc | NPSF | NPT | PG | P | | | | M | K | | N | | S | | | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | C <0,2% | 0,25 < C <0,4 | 0,25<C <0,4 | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | INCONEL 625 | TI GR.2 | 25-35 HRC | 35-45 HRC |
| | | | | A.239 | | | | | | 7-12 | 7-12 | 6-9 | | 7-12 | 6-8 | | 10-15 | | | | | | |
| | | | | A.240 | | | | | | | | | 3-15 | | | | | | | 2-3 | 3-6 | | |
| | | | | | | | | | | | | | 3-15 | | | | | | | 2-3 | 3-6 | | |
| | | | | | | | | | | | | | 3-15 | | | | | | | 2-3 | 3-6 | | |
| A.228 | | | | A.240 | | | | | 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | | | 15-35 | | | | | | | |
| | | | | | | | | | 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | | | 15-35 | | | | | | | |
| | | | | | | | | | 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | | | 15-35 | | | | | | | |
| | | | | | | | | | | | | | 6-10 | | | | | | | | | | |
| | | | | | | | | | 27-32 | 27-32 | 22-27 | 22-27 | 15-20 | | | 50-100 | 40-100 | | | | | | |
| | | | | | | | | | | | | | | | | 10-20 | 10-15 | | | | | | |
| | | | | | | | | | | | | | | | | 100-400 | 100-400 | | | | | | |
| | | | | | | | | | | | | | | | | | | 3-5 | | | | | |
| A.228 | | | | | | | | | | | | | | | | | | | 1-3 | | | | |
| | | | | | | | | | | | | | | | | | | | 1-3 | | | | |
| | | | | | | | | | | | 7-12 | 7-12 | | 7-12 | 7-12 | | | | | | | 4-8 | 4-8 |
| A.229 | | | | | | | | | | | 7-12 | 7-12 | | | 7-12 | | | 3-5 | 1-3 | | | 4-8 | 4-8 |
| | | | | | | | | | | | 7-12 | 7-12 | | | 7-12 | | | 3-5 | 1-3 | | | 4-8 | 4-8 |
| | | | | | | | | | | | 7-12 | 7-12 | | | 7-12 | | | 3-5 | 1-3 | | | 4-8 | 4-8 |
| | | | | | | | | | | | | | | | | | 10-15 | | | | | | |

# SELECTION CHART

Threading | Selection chart | By material

## Threading | Cutting taps | Blind and Through hole

| | | | Tolerance | | | | A-Brand | Product series | M | MF | UNC | UNF | UN | MJ | UNJC | UNJF | EG-M | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FORM C | 6HX | PM | - | V | | VP-DC-MT | A.141 | A.184 | A.202 | A.207 | | | | | | | |
| | | **FORM E** | 6HX | PM | - | V | | VP-DC-MT FORM E | A.141 | | | | | | | | | | |
| | - | FORM C | 6HX | PM | | V | | VPO-DC-MT Center | A.142 | A.184 | | | | | | | | | |
| - | | FORM C | 6HX | PM | | V | | VPO-DC-MT Side | A.142 | A.185 | | | | | | | | | |
| | - | **FORM E** | 6HX | PM | | V | | VPO-DC-MT FORM E | A.143 | | A.202 | A.208 | | | | | | | |
| | - | FORM C | 6HX | CAR-BIDE | | FX | A | A-CHT OIL Center | A.143 | A.185 | | | | | | | | | |
| - | | FORM C | 6HX | CAR-BIDE | | FX | A | A-CHT OIL Side | A.144 | A.186 | | | | | | | | | |
| | - | **FORM E** | 6HX | CAR-BIDE | | FX | A | A-CHT OIL FORM E | A.144 | A.186 | | | | | | | | | |
| | | FORM C | 6HX | HSSE | - | NI-OX | | GG-MT | A.145 | A.187 | | | | | | | | | |
| | | FORM C | 6HX | HSSE | | OX | | OIL-TXL-MT | A.145 | | | | | | | | | | |
| | | FORM C | 6H | HSSE | - | OX | | EX-MCT | A.146 | | | | | | | | | | |
| | | FORM C | 6HX | XPM | - | V | | V-XPM-HT | A.146 | | | | | | | | | | |
| - | | **FORM D** | 6HX | XPM | - | V | | V-XPM-HT FORM D | A.147 | | | | | | | | | | |
| | | FORM C | 6HX | CAR-BIDE | - | V | | WH55-OT | A.147 | | | | | | | | | | |
| - | | **FORM D** | 6HX | CAR-BIDE | - | V | | WH55-OT FORM D | A.148 | | | | | | | | | | |
| | | FORM C | 6HX | CAR-BIDE | - | V | | VX-OT | A.148 | | | | | | | | | | |
| | | FORM C | - | PM | - | V | A | A-TPT | | | | | | | | | | | |
| | | FORM C | - | HSSE | - | OX | | S-TPT | | | | | | | | | | | |
| | | FORM C | - | HSSE | - | - | | NPT | | | | | | | | | | | |
| | | FORM C | - | HSSE | - | - | | PG | | | | | | | | | | | |

## Threading | Forming taps | Blind and Through hole

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | FORM C | 6HX | PM | - | VI | A | A-XPF | A.149 | A.187 | | | | | | | | | |
| | | FORM C | 6HX | PM | | V | A | A-OIL-XPF **NEW SIZE** | A.149 | A.188 | | | | | | | | | |
| | | FORM C | **6GX** | PM | - | VI | A | A-XPF 6GX **NEW** | A.150 | A.188 | | | | | | | | | |
| | | FORM C | **7G** | PM | - | VI | A | A-XPF 7GX **NEW** | A.150 | | | | | | | | | | |
| | | **FORM E** | 6HX | PM | - | VI | A | A-XPF FORM E **NEW** | A.151 | A.189 | | | | | | | | | |
| | | **FORM E** | 6HX | PM | | VI | A | A-OIL-XPF FORM E **NEW** | A.151 | | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | A | S-XPF | A.152 | A.189 | A.203 | A.208 | | | | | | | |
| | | FORM C | 6HX | HSS-Co | | V | A | S-OIL-XPF **NEW SIZE** | A.152 | A.190 | A.203 | A.209 | | | | | | | |
| | | FORM C | **6GX** | HSS-Co | - | V | A | S-XPF 6GX | A.153 | A.190 | | | | | | | | | |
| | | FORM C | **6GX** | HSS-Co | | V | A | S-OIL-XPF 6GX | A.153 | A.191 | | | | | | | | | |
| | | FORM C | **7GX** | HSS-Co | - | V | A | S-XPF 7GX | A.154 | | | | | | | | | | |
| | | FORM C | **6H +0.1** | HSS-Co | - | V | A | S-XPF +0.1 | A.154 | | | | | | | | | | |
| - | | **FORM D** | 6HX | HSS-Co | - | V | A | S-XPF FORM D | A.155 | A.191 | | | | | | | | | |
| | - | **FORM E** | 6HX | HSS-Co | - | V | A | S-XPF FORM E | A.155 | A.192 | | | | | | | | | |

| EG-UNJF | BSW | BSF | BA | G | Rc | NPSF | NPT | PG | P | | | | M | K | | N | | S | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | C <0,2% | 0,25 < C <0,4 | 0,25<C <0,4 | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| | | | | A.241 | | | | | | | 10-25 | 10-20 | | 15-60 | 15-40 | | 25-70 | | | 8-20 | 8-20 | | |
| | | | | | | | | | | | 10-25 | 10-20 | | 15-60 | 15-40 | | 25-70 | | | 8-20 | 8-20 | | |
| | | | | | | | | | | | 10-25 | 10-20 | | 15-60 | 15-40 | | 25-70 | | | 8-20 | 8-20 | | |
| | | | | | | | | | | | 10-25 | 10-20 | | 15-60 | 15-40 | | 25-70 | | | 8-20 | 8-20 | | |
| | | | | | | | | | | | 10-25 | 10-20 | | 15-60 | 15-40 | | 25-70 | | | 8-20 | 8-20 | | |
| | | | | | | | | | | | | | | 10-100 | 10-100 | | 10-100 | | | | | | |
| | | | | | | | | | | | | | | 10-100 | 10-100 | | 10-100 | | | | | | |
| | | | | | | | | | | | | | | 10-100 | 10-100 | | 10-100 | | | | | | |
| | | | | A.241 | | | | | | | | | | 10-15 | 7-12 | | | | | | | | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | | 10-15 | 7-12 | | | | | 3-5 | | | |
| | | | | | | | | | 8-13 | 7-12 | 7-12 | 6-9 | | 10-15 | 7-12 | | 10-15 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | 1-3 | |
| | | | | | | | | | | | | | | | | | | | | | | 1-3 | |
| | | | | | | | | | | | | | | | | | | | | | | 2-4 | 1-3 |
| | | | | | | | | | | | | | | | | | | | | | | 2-4 | 1-3 |
| | | | | A.242 | | | | | | | | | | | | | | | | | | | 1-3 |
| | | | | | A.247 | | | | 5-10 | 5-10 | 5-10 | 5-10 | | | | 5-10 | 10-15 | | | | | | |
| | | | | | A.248 | | | | 5-10 | 5-10 | 5-10 | 5-10 | | | | 5-10 | 10-15 | | | | | | |
| | | | | | | | A.250 | | 3-6 | 3-6 | 2-5 | 2-5 | | 2-5 | 4-8 | 5-10 | 10-15 | | | | | | |
| | | | | | | | | A.250 | 8-13 | 7-12 | 6-9 | | | | 7-12 | 10-20 | 10-15 | | | | | | |
| | | | | A.242 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | A.243 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | A.243 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | A.244 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | A.244 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | A.245 | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | 20-50 | 20-40 | | | 5-20 | | | |

# SELECTION CHART



## Threading | Forming taps | Blind and Through hole

| | | | Tolerance | | | | A-Brand | Product series | M | MF | UNC | UNF | UN | MJ | UNJC | UNJF | EG-M | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **FORM E** | 6HX | HSS-Co | | V | A | S-OIL-XPF FORM E **NEW SIZE** | A.156 | A.192 | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | A | S-LT-XPF | A.156 | | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | | V | A | S-OIL-LT-XPF | A.157 | A.193 | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | A | S-XPF-LH | A.157 | | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | A | S-XPF-HB Weldon | A.158 | | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | A | S-XPF-GL | A.158 | A.193 | | | | | | | | | |
| | | FORM C | **6GX** | HSS-Co | - | V | A | S-XPF-GL 6GX | A.159 | A.194 | | | | | | | | | |
| | | FORM C | 6HX | PM | - | V | | GRT **NEW** | A.159 | | | | | | | | | | |
| | | **FORM F** | 6HX | PM | - | V | | GRT FORM F **NEW** | A.160 | | | | | | | | | | |
| | | FORM C | 6HX | CAR-BIDE | | EgiAs | | P-OIL-CXPF | A.160 | A.194 | | | | | | | | | |
| | | FORM C | 6HX | CAR-BIDE | | V | A | C-OIL-XPF | A.161 | A.195 | | | | | | | | | |
| | | FORM C | 6HX | HSS-Co | - | V | | V-NRT | A.161 | A.195 | | | | | | | | | |
| | | FORM C | **6GX** | HSS-Co | - | V | | V-NRT 6GX | A.162 | | | | | | | | | | |
| | | **FORM D** | 6HX | HSS-Co | - | V | | V-NRT FORM D | A.162 | A.196 | | | | | | | | | |
| | | **FORM D** | **6GX** | HSS-Co | - | V | | V-NRT 6GX FORM D | A.163 | | | | | | | | | | |
| | | FORM C | 6HX | PM | - | AlCrN | | VA-XPF **NEW** | A.163 | A.196 | | | | | | | | | |
| | | FORM C | 6HX | PM | | AlCrN | | VA-OIL-XPF **NEW** | A.164 | | | | | | | | | | |
| | | FORM C | **6GX** | PM | - | AlCrN | | VA-XPF 6GX **NEW** | A.164 | | | | | | | | | | |
| | | **FORM E** | 6HX | PM | - | AlCrN | | VA-XPF FORM E **NEW** | A.165 | | | | | | | | | | |
| | | **FORM E** | 6HX | PM | | AlCrN | | VA-OIL-XPF FORM E **NEW** | A.165 | | | | | | | | | | |
| | | FORM C | 6HX | PM | | TiN | | M-NRT | A.166 | A.197 | | | | | | | | | |
| | | FORM C | 6HX | PM | | TiN | | M-OIL-NRT | A.166 | | | | | | | | | | |
| | | FORM C | **6GX** | PM | | TiN | | M-NRT 6GX | A.167 | | | | | | | | | | |
| | | **FORM E** | 6HX | PM | | TiN | | M-NRT FORM E | A.167 | | | | | | | | | | |
| | | **FORM E** | 6HX | PM | | TiN | | M-OIL-NRT FORM E | A.168 | | | | | | | | | | |

| EG-UNJF | BSW | BSF | BA | G | Rc | NPSF | NPT | PG | P | | | | M | K | | N | | | S | | H | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | C <0,2% | 0,25 < C <0,4 | 0,25<C <0,4 | SCM | INOX | GG | GGG | | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | | |
| | | | | | | | | | | 15-40 | 15-30 | 15-30 | 5-15 | | | | 20-40 | 20-40 | | | | | |
| | | | | | | | | | | 15-40 | 15-30 | 15-30 | 5-15 | | | | 20-45 | 20-40 | | | | | |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | | | | 15-30 | 20-50 | 20-40 | | | 5-20 | 5-20 | 5-20 |
| | | | | | | | | | 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | | | | 20-50 | 20-40 | | | 5-20 | 5-20 | 5-20 |
| | | | | | | | | | 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | | | | 10-20 | 10-20 | | | | | |
| | | | | | | | | | 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | | | | 10-20 | 10-20 | | | | | |
| | | | | | | | | | 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | | | | 10-20 | 10-20 | | | | | |
| | | | | | | | | | 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | | | | 10-20 | 10-20 | | | | | |
| | | | | A.246 | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | 1-3 | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | 1-3 | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | 1-3 | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | 1-3 | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | 1-3 | | | | |
| | | | | A.246 | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | | | | | |
| | | | | | | | | | 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | | | | 10-25 | 15-40 | | | | | |

# SELECTION CHART



## Threading | Thread Mills | Blind and Through hole

| | | | Tolerance | | | | A-Brand | Product series | M | MF | UNJ | UN | UNC | UNF | UNJC | UNJF | EG-MJ | EG-UNJC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | - | - | CARBIDE | - | EgiAs | A | AT-1 | A.254 | A.254 | A.258 | | A.258 | A.258 | A.258 | A.258 | | |
| | | - | - | CARBIDE | | DUROREY | A | AT-2 | A.254 | | A.259 | | A.259 | A.259 | A.259 | A.259 | | |
| | | - | - | CARBIDE | | DLC-IGUSS | A | AT-2 R-SPEC | A.255 | | | | | | | | | |
| | | - | - | CARBIDE | - | WXS | | WH-EM-PNC | A.255 | | | | | | | | | |
| | | - | - | CARBIDE | | WXS | | WHO-EM-PNC | A.256 | | | | | | | | | |
| | | - | - | CARBIDE | - | SC | | WX-ST-PNC-3P | A.256 | A.256 | | | | | | | | |
| | | - | - | CARBIDE | - | SC | | WH-VM-PNC | A.257 | A.257 | A.259 | | A.259 | A.259 | A.259 | A.259 | | |
| | | - | - | CARBIDE | - | WX | | WX-PNC | A.257 | A.257 | A.260 | | A.260 | A.260 | A.260 | A.260 | | |
| | | - | - | CARBIDE | | WX | | WXO-ST-PNC | A.258 | A.258 | | | | | | | | |

| Rp | BSW | BSF | BA | G | NPSF | Rc | NPSF | NPT | PG | P | | | | M | K | | N | | S | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | C <0,2% | 0,25 < C <0,4 | 0,25<C <0,4 | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC |
| A.263 | | | | | | A.262 | | A.264 | | 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | 80-160 | 100-300 | | | 80-200 | 80-200 | | |
| | | | | | | A.262 | | A.264 | | 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-75 | 35-65 | 35-55 |
| | | | | | | | | | | | | | | | | | 100-300 | 100-300 | | | | | | |
| | | | | | | | | | | 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-75 | 35-65 | 35-55 |
| | | | | | | | | | | 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-75 | 35-65 | 35-55 |
| | | | | A.261 | | | | | | 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 | 30-60 | |
| | | | | | | | | | | 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 | 30-60 | |
| | | | | A.261 | | A.263 | | A.265 | | 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 | | |
| | | | | | | | | | | 80-120 | 80-120 | 80-120 | 80-120 | 40-80 | 50-100 | 50-65 | 50-70 | 65-130 | | | 60-100 | 60-100 | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | A-POT | | A-OIL-POT | | A-POT 6GX | | A-POT 7GX | | A-POT +0.1 | | A-LT-POT | | A-POT-LH | | A-POT-HB Weldon | | S-POT | | S-POT 6G | | S-POT 7G | | S-POT +0.1 | | S-LT-POT | | S-POT-LH | | S-POT-HB Weldon | | VA-POT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | | A | | A | | A | | A | | A | | A | | A | | | | | | | | | | | | | | | |
| Page | | | A.97 | | A.97 | | A.98 | | A.98 | | A.99 | | A.99 | | A.100 | | A.100 | | A.101 | | A.101 | | A.102 | | A.102 | | A.103 | | A.103 | | A.104 | | A.104 | |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 |
| 1 | 0,25 | 0,75 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | • | | | | • | | • | | | | • | | | | | | • | | • | | • | | | | • | | | | | | • | |
| 2,2 | 0,45 | 1,75 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | • | |
| 2,3 | 0,4 | 1,85 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | • | | | | • | | • | | | | • | | | | | | • | | • | | • | | | | • | | | | | | • | |
| 2,6 | 0,45 | 2,15 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | • | • | | | • | | • | | • | | • | | • | | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 3,5 | 0,6 | 2,9 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | • | |
| 4 | 0,7 | 3,3 | • | • | | | • | | • | | • | | • | | • | | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 4,5 | 0,75 | 3,7 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | • | | | • | | • | | • | | • | | • | | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 5,5 | 0,9 | 4,6 | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | • | • | | • | | • | | • | | • | • | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • |
| 7 | 1 | 6 | • | • | | | | | | | | | | | | | | | • | • | | | | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | • | • | | • | | • | | • | | • | • | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • |
| 9 | 1,25 | 7,8 | • | • | | | | | | | | | | | | | | | • | • | | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | • | • | | • | | • | | • | | • | • | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • |
| 11 | 1,5 | 9,5 | | • | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 14 | 2 | 12 | | • | | • | | • | | • | | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 16 | 2 | 14 | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 18 | 2,5 | 15,5 | | • | | • | | | | | | | | • | | • | | | | • | | • | | | | • | | • | | | | • | | • |
| 20 | 2,5 | 17,5 | | • | | • | | | | | | | | • | | • | | | | • | | | | | | • | | • | | | | | | • |
| 22 | 2,5 | 19,5 | | • | | • | | | | | | | | | | • | | | | • | | | | | | | | • | | | | | | • |
| 24 | 3 | 21 | | • | | • | | | | | | | | | | • | | | | • | | | | | | | | • | | | | | | • |
| 27 | 3 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | • |
| 30 | 3,5 | 26,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | • |
| 33 | 3,5 | 29,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | • |
| 36 | 4 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | • |
| 39 | 4 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | V | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX | OX |
| | | | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | PM | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE |
| | | | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B |
| Tolerance | | | 6HX | 6HX | 6HX | 6HX | **6GX** | | **7GX** | | **6H +0.1** | | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6H | 6H | **6G** | | **7G** | | **6H +0.1** | | 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6H |
| P | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| M | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| K | | | | | | | | | | | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| N | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |
| S | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |
| H | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | VA-POT 6G | | Z-POT | | Z-OIL-POT | | POT | | POT D352 | TIN-POT | | TICN-POT | | CC-POT | | CC-LT-POT | | HS-RFT-TIN | | AL-POT | | V-TI-POT | | E-POT | | WHR-NI-POT | | CPM-POT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Page | | | A.105 | | A.105 | | A.106 | | A.106 | | A.107 | A.107 | | A.108 | | A.108 | | A.109 | | A.109 | | A.110 | | A.110 | | A.111 | | A.111 | | A.112 | |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 352 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 |
| 1 | 0,25 | 0,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | • | | • | | | | • | | | • | | • | | • | | • | | | | • | | | | | | | | | |
| 2,2 | 0,45 | 1,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,3 | 0,4 | 1,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | • | | • | | | | • | | | • | | | | • | | • | | | | • | | | | | | | | | |
| 2,6 | 0,45 | 2,15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | • | | • | • | | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | |
| 3,5 | 0,6 | 2,9 | | | | | | | • | | | • | | | | | | | | | | | | | | | | | | | |
| 4 | 0,7 | 3,3 | • | | • | • | | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | |
| 4,5 | 0,75 | 3,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | | • | • | | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | |
| 5,5 | 0,9 | 4,6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | | • | • | • | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 7 | 1 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | | • | • | • | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 9 | 1,25 | 7,8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | | • | • | • | | • | • | • | • | • | • | | • | • | • | | • | | • | | • | | • | | • | | • | • |
| 11 | 1,5 | 9,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | • | | • | | | • | | • | | • | • | | • | | | • | | • | | • | | | | • |
| 14 | 2 | 12 | | • | | • | | • | | • | | | • | | • | | • | | | | | | • | | | | | | | | • |
| 16 | 2 | 14 | | • | | • | | • | | • | | | • | | • | | • | | | | | | • | | | | | | | | • |
| 18 | 2,5 | 15,5 | | | | • | | • | | • | | | • | | • | | • | | | | | | • | | | | | | | | • |
| 20 | 2,5 | 17,5 | | | | • | | • | | • | | | • | | • | | • | | | | | | • | | | | | | | | • |
| 22 | 2,5 | 19,5 | | | | • | | | | • | | | • | | • | | • | | | | | | | | | | | | | | |
| 24 | 3 | 21 | | | | • | | | | • | | | • | | • | | • | | | | | | | | | | | | | | |
| 27 | 3 | 24 | | | | • | | | | • | | | • | | | | • | | | | | | | | | | | | | | |
| 30 | 3,5 | 26,5 | | | | • | | | | • | | | • | | | | • | | | | | | | | | | | | | | |
| 33 | 3,5 | 29,5 | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | |
| 36 | 4 | 32 | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | |
| 39 | 4 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | OX | | V | | V | | - | | - | TIN | | V | | CrN | | CrN | | TIN | | - | | V | | - | | HR | | - | |
| | | | HSSE | | PM | | PM | | HSSE | | HSSE | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | PM | | PM | | PM | | PM | |
| | | | FORM B | | FORM B | | FORM B | | FORM B | | FORM B | FORM B | | FORM B | | FORM B | | FORM B | | FORM A | | FORM B | | FORM B | | FORM B | | FORM B | | FORM B | |
| Tolerance | | | 6G | | 6HX | | 6HX | | 6H | | 6H | 6H | | 6H | | 6HX | | 6HX | | 6H | | 6H | | 6H | | 6H | | 6HX | | 6H | |
| P | | | • | | • | | • | | • | | • | • | | • | | • | | • | | • | | | | | | | | | | • | |
| M | | | • | | • | | • | | | | | • | | • | | • | | • | | • | | | | | | | | | | | |
| K | | | • | | | | | | • | | • | • | | • | | | | | | | | | | | | | | | | • | |
| N | | | | | • | | • | | • | | • | • | | • | | • | | • | | • | | • | | | | | | | | | |
| S | | | | | • | | • | | | | | • | | • | | | | | | | | | | • | | • | | • | | | |
| H | | | | | • | | • | | | | | | | | | | | | | | | | | | | | | | | • | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | H-POT | | VP-H-POT | | VPO-H-POT | | A-SFT | | A-OIL-SFT | | A-SFT 6GX | | A-SFT 7GX | | A-SFT +0.1 | | A-SFT FORM E | | A-LT-SFT | | A-SFT-LH | | A-SFT-HB Weldon | | A-SFT-INOX | | A-SFT-AL | | A-SFT-AL FORM E | | A-CSF OIL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | A | | A | | A | | A | | A | | A | | A | | A | | A | | A | | A | | A | | A | |
| Page | | | A.112 | | A.113 | | A.113 | | A.114 | | A.114 | | A.115 | | A.115 | | A.116 | | A.116 | | A.117 | | A.117 | | A.118 | | A.118 | | A.119 | | A.119 | | A.120 | |
| Ø | | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 |
| 1 | 0,25 | 0,75 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | • | | • | | | | • | | | | • | | • | | | | • | | • | | | | | | • | | • | | • | | | |
| 2,2 | 0,45 | 1,75 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 2,3 | 0,4 | 1,85 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 2,5 | 0,45 | 2,05 | • | | • | | | | • | | | | • | | • | | | | • | | • | | | | | | • | | • | | • | | | |
| 2,6 | 0,45 | 2,15 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 3 | 0,5 | 2,5 | • | | • | | | | • | • | | | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | | |
| 3,5 | 0,6 | 2,9 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 4 | 0,7 | 3,3 | • | | • | | | | • | • | | | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | | |
| 4,5 | 0,75 | 3,7 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 5 | 0,8 | 4,2 | • | | • | | | | • | • | | | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | |
| 5,5 | 0,9 | 4,6 | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | | |
| 6 | 1 | 5 | • | | • | | • | | • | • | • | | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | |
| 7 | 1 | 6 | | | | | | | • | • | | | | | | | | | • | • | | | | | | | • | • | | | | | | |
| 8 | 1,25 | 6,8 | • | | • | | • | | • | • | • | | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | |
| 9 | 1,25 | 7,8 | | | | | | | • | • | | | | | | | | | • | • | | | | | | | • | • | | | | | | |
| 10 | 1,5 | 8,5 | • | | • | | • | | • | • | • | | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | |
| 11 | 1,5 | 9,5 | | | | | | | | • | | | | | | | | | | • | | | | | | | | • | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 14 | 2 | 12 | | • | | • | | • | | • | | • | | • | | • | | | | • | | • | | • | | • | | • | | | | | | |
| 16 | 2 | 14 | | • | | • | | • | | • | | • | | • | | • | | | | • | | • | | • | | • | | • | | | | | | |
| 18 | 2,5 | 15,5 | | • | | • | | • | | • | | • | | | | | | | | • | | • | | • | | | | • | | | | | | |
| 20 | 2,5 | 17,5 | | • | | • | | • | | • | | • | | | | | | | | • | | • | | • | | | | • | | | | | | |
| 22 | 2,5 | 19,5 | | | | • | | • | | • | | • | | | | | | | | • | | | | • | | | | • | | | | | | |
| 24 | 3 | 21 | | | | • | | • | | • | | • | | | | | | | | • | | | | • | | | | • | | | | | | |
| 27 | 3 | 24 | | | | • | | • | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 3,5 | 26,5 | | | | • | | • | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 3,5 | 29,5 | | | | • | | • | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 4 | 32 | | | | • | | • | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 39 | 4 | 35 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | | | | • | | | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | OX | | V | | V | | V | | V | | V | | V | | V | | V | | V | | V | | V | | VI | | V | | V | | FX | |
| | | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | PM | | CARBIDE | |
| | | | FORM B | | FORM B | | FORM B | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | **FORM E** | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | **FORM E** | | FORM C | |
| Tolerance | | | 6H | | 6HX | | **6H** | | 6HX | | 6HX | | **6GX** | | **7GX** | | **6H +0.1** | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | |
| P | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | | | |
| M | | | | | | | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | | | |
| K | | | • | | • | | • | | | | | | | | | | | | | | | | | | | | | | | | | | • | |
| N | | | | | | | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| S | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | | | | | |
| H | | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | | | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | A-CSF OIL FORM E | S-SFT | | S-SFT 6G | | S-SFT 7G | | S-SFT +0.1 | | S-SFT FORM E | | S-LT-SFT | | S-SFT-LH | | S-SFT-HB Weldon | | VA-SFT | | VA-SFT 6G | | VA-SFT FORM E | | Z-SFT | | Z-OIL-SFT | | SFT | | SFT D352 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Page | | | A.120 | A.121 | | A.121 | | A.122 | | A.122 | | A.123 | | A.123 | | A.124 | | A.124 | | A.125 | | A.125 | | A.126 | | A.126 | | A.127 | | A.127 | | A.128 | |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 352 |
| 1 | 0,25 | 0,75 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | • | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | | | • | | • | | • | | | | • | | • | | | | | | • | | • | | | | • | | | | • | | |
| 2,2 | 0,45 | 1,75 | | | • | | | | | | | | • | | | | | | | | • | | | | | | | | | | | |
| 2,3 | 0,4 | 1,85 | | | • | | | | | | | | • | | | | | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | | | • | | • | | • | | | | • | | • | | | | | | • | | • | | | | • | | | | • | | |
| 2,6 | 0,45 | 2,15 | | | • | | | | | | | | • | | | | | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | | | • | • | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • | | | • | • | • |
| 3,5 | 0,6 | 2,9 | | | • | | | | | | | | • | | | | | | | | • | | | | | | | | | | • | | |
| 4 | 0,7 | 3,3 | | | • | • | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • | | | • | • | • |
| 4,5 | 0,75 | 3,7 | | | • | | | | | | | | • | | | | | | | | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | | • | • | • | | • | | • | | • | • | • | | • | | • | | • | • | • | | • | | • | • | | | • | • | • |
| 5,5 | 0,9 | 4,6 | | | • | | | | | | | | • | | | | | | | | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | | • | • | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | • | • | | • | • | • |
| 7 | 1 | 6 | | | • | • | | | | | | | • | • | | | | | | | | | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | | • | • | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | • | • | | • | • | • |
| 9 | 1,25 | 7,8 | | | • | • | | | | | | | • | • | | | | | | | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | | • | • | • | | • | | • | | • | • | • | • | • | | • | | • | • | • | | • | | • | • | • | | • | • | • |
| 11 | 1,5 | 9,5 | | | | • | | | | | | | | • | | | | | | | | | | | | | | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | • | | • | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | • | |
| 14 | 2 | 12 | | | | • | | • | | • | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | • | |
| 16 | 2 | 14 | | | | • | | • | | • | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | • | |
| 18 | 2,5 | 15,5 | | | | • | | | | | | | • | | • | | • | | | | | • | | | | • | | • | | • | | • | |
| 20 | 2,5 | 17,5 | | | | • | | | | | | | • | | • | | • | | | | | • | | | | • | | • | | • | | • | |
| 22 | 2,5 | 19,5 | | | | • | | | | | | | • | | | | • | | | | | • | | | | • | | | | • | | • | |
| 24 | 3 | 21 | | | | • | | | | | | | • | | | | • | | | | | • | | | | • | | | | • | | • | |
| 27 | 3 | 24 | | | | | | | | | | | | | | | | | | | | • | | | | • | | | | • | | • | |
| 30 | 3,5 | 26,5 | | | | | | | | | | | | | | | | | | | | • | | | | • | | | | | | • | |
| 33 | 3,5 | 29,5 | | | | | | | | | | | | | | | | | | | | • | | | | | | | | | | • | |
| 36 | 4 | 32 | | | | | | | | | | | | | | | | | | | | • | | | | | | | | | | • | |
| 39 | 4 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | FX | OX | OX | | OX | | OX | | OX | | OX | | OX | | OX | | OX | | OX | | OX | | OX | | V | | V | | - | | - | |
| | | | CARBIDE | HSSE | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | PM | | PM | | HSSE | | HSSE | |
| | | | **FORM E** | FORM C | FORM C | | FORM C | | FORM C | | FORM C | | **FORM E** | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | **FORM E** | | FORM C | | FORM C | | FORM C | | FORM C | |
| Tolerance | | | 6HX | 6H | **6G** | | 6H | | **7G** | | **6H+0.1** | | 6H | | 6H | | 6H | | 6H | | 6H | | **6G** | | 6H | | 6H | | 6H | | 6H | | 6H | |
| P | | | | • | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| M | | | | • | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | |
| K | | | • | • | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | | | • | | • | |
| N | | | • | | | | | | | | | | | | | | | | | | | | | | | | • | | • | | • | | • | |
| S | | | | | | | | | | | | | | | | | | | | | | | | | | | • | | • | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | • | | • | | | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | TIN-SFT | | TICN-SFT | | HXL-SFT | OIL-HXL-SFT | | VXL-SFT | | OIL-VXL-SFT | | SH-SFT | | M-SFT-DUPLEX | | M-OIL-SFT-DUPLEX | | M-LT-SFT-DUPLEX | | CC-SFT | | CC-LT-SFT | | CC-NEO-SFT | | SUS-SFT | | HS-SFT-TIN | | AL-SFT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Page | | | A.128 | | A.129 | | A.129 | A.130 | | A.130 | | A.131 | | A.131 | | A.132 | | A.132 | | A.133 | | A.133 | | A.134 | | A.134 | | A.135 | | A.135 | | A.136 | |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | | | | | | | | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | - | - | DIN 371 | DIN 376 | DIN 371 | DIN 376 | | | DIN 371 | DIN 376 |
| 1 | 0,25 | 0,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | • | |
| 1,7 | 0,35 | 1,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | • | | • | | | | | | | | | | | • | | | | • | | • | | • | | • | | • | | | • | |
| 2,2 | 0,45 | 1,75 | | | | | | | | | | | | | | | | | | | | | | | | | | • | | | • | |
| 2,3 | 0,4 | 1,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | • | | | | | | | | | | | | | • | | | | • | | • | | • | | • | | • | | | • | |
| 2,6 | 0,45 | 2,15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | • | • | • | | | | | | | | | • | | • | | | | • | | • | • | • | | • | | • | | • | • | |
| 3,5 | 0,6 | 2,9 | • | | | | | | | | | | | | | | | | | | | | | | | | | • | | | • | |
| 4 | 0,7 | 3,3 | • | • | • | | | | | | | | | • | | • | | | | • | | • | • | • | | • | | • | | • | • | |
| 4,5 | 0,75 | 3,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | • | • | | | | | | | | | • | | • | | | | • | | • | • | • | | • | | • | | • | • | |
| 5,5 | 0,9 | 4,6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | • | • | | | | | | | | | • | | • | | • | | • | • | • | • | • | | • | | • | | • | • | |
| 7 | 1 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | • | • | | | | | | | | | • | | • | | • | | • | • | • | • | • | | • | | • | | • | • | |
| 9 | 1,25 | 7,8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | • | • | | | | | | | | | • | | • | | • | | • | • | • | • | • | | • | | • | | • | • | |
| 11 | 1,5 | 9,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | | | | | | | | • | | • | | • | | • | | • | | • | | • | | • | | | • |
| 14 | 2 | 12 | | • | | • | | | | | | | | | • | | • | | • | | • | | • | | | • | | • | | | | • |
| 16 | 2 | 14 | | • | | • | | | | | | | | | • | | • | | • | | • | | • | | | • | | • | | | | • |
| 18 | 2,5 | 15,5 | | • | | • | | | | | | | | | • | | • | | • | | • | | • | | | | | • | | | | • |
| 20 | 2,5 | 17,5 | | • | | • | • | • | | • | | • | | | • | | • | | • | | • | | • | | | | | • | | | | • |
| 22 | 2,5 | 19,5 | | • | | • | | | | | | | | | | | • | | • | | | | • | | | | | • | | | | |
| 24 | 3 | 21 | | • | | • | • | • | | • | | • | | | | | • | | • | | | | • | | | | | • | | | | |
| 27 | 3 | 24 | | • | | | • | • | | • | | • | | | | | | | | | | | • | | | | | | | | | |
| 30 | 3,5 | 26,5 | | • | | | • | • | | • | | • | | | | | | | | | | | • | | | | | | | | | |
| 33 | 3,5 | 29,5 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| 36 | 4 | 32 | | | | | • | • | | • | | • | | | | | | | | | | | • | | | | | | | | | |
| 39 | 4 | 35 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TIN | | V | | OX | OX | | OX | | OX | | - | | TIN | | TIN | | TIN | | CrN | | CrN | | TIN | | OX | | TIN | | - | |
| | | | HSSE | | HSSE | | HSSE | HSSE | | HSSE | | HSSE | | HSSE | | PM | | PM | | PM | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | | HSSE | |
| | | | FORM C | | FORM C | | FORM C | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | |
| Tolerance | | | 6H | | 6H | | 6HX | 6HX | | 6HX | | 6HX | | 6H | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6H | | 6H | |
| P | | | • | | • | | • | • | | • | | • | | • | | • | | • | | • | | • | | • | | • | | | | • | | | |
| M | | | • | | • | | • | • | | • | | • | | | | • | | • | | • | | • | | • | | • | | • | | • | | | |
| K | | | • | | • | | • | | | | | | | • | | | | | | | | | | | | | | | | | | | |
| N | | | • | | • | | | | | | | | | • | | | | | | | | • | | • | | • | | | | | | • | |
| S | | | • | | • | | | | | | | | | | | • | | • | | • | | | | | | | | | | | | | |
| H | | | | | | | • | • | | • | | • | | | | | | | | | | | | | | | | | | | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**M**

| Product series | | | US-AL-SFT | V-TI-SFT | | E-SFT | | WHR-NI-SFT | | CPM-SFT | | H-SFT | | VP-H-SFT | | VPO-H-SFT | | V-EM-SFT | VP-DC-MT | | VP-DC-MT FORM E | | VPO-DC-MT Center | | VPO-DC-MT Side | | VPO-DC-MT FORM E | | A-CHT OIL Center | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | A |
| Page | | | A.136 | A.137 | | A.137 | | A.138 | | A.138 | | A.139 | | A.139 | | A.140 | | A.140 | A.141 | | A.141 | | A.142 | | A.142 | | A.143 | | A.143 | |
| Ø | I | Ø | | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 |
| 1 | 0,25 | 0,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | • | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | | • | | | | | | | | • | | • | | | | | • | | | | | | | | | | | |
| 2,2 | 0,45 | 1,75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,3 | 0,4 | 1,85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | | • | | | | | | | | • | | • | | | | | • | | | | | | | | | | | |
| 2,6 | 0,45 | 2,15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | • | • | | • | | • | | • | | • | | • | | | | | • | | • | | | | | | | | | |
| 3,5 | 0,6 | 2,9 | | | | | | | | | | | | | | | | | • | | | | | | | | | | | |
| 4 | 0,7 | 3,3 | • | • | | • | | • | | • | | • | | • | | | | • | • | | • | | | | | | | | | |
| 4,5 | 0,75 | 3,7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | • | | • | | • | | • | | • | | • | | | | • | • | | • | | | | | | | | • | |
| 5,5 | 0,9 | 4,6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | • | | • | | • | | • | | • | | • | | • | | • | • | | • | | • | | • | | • | | • | |
| 7 | 1 | 6 | | | | | | | | | | | | | | | | | • | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | • | | • | | • | | • | • | • | | • | | • | | • | • | | • | | • | | • | | • | | • | |
| 9 | 1,25 | 7,8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | • | | • | | • | | • | • | • | | • | | • | | • | • | | • | | • | | • | | • | | • | |
| 11 | 1,5 | 9,5 | | | | | | | | | | | | | | | | | | • | | | | | | | | | | |
| 12 | 1,75 | 10,2 | • | | • | | • | | • | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | • |
| 14 | 2 | 12 | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | |
| 16 | 2 | 14 | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | |
| 18 | 2,5 | 15,5 | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | |
| 20 | 2,5 | 17,5 | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | |
| 22 | 2,5 | 19,5 | | | | | | | | | | | | | • | | • | | | • | | • | | | | • | | | | |
| 24 | 3 | 21 | | | | | | | | | | | | | • | | • | | | • | | • | | | | • | | | | |
| 27 | 3 | 24 | | | | | | | | | | | | | • | | • | | | | | | | | | | | | | |
| 30 | 3,5 | 26,5 | | | | | | | | | | | | | • | | • | | | • | | | | | | | | | | |
| 33 | 3,5 | 29,5 | | | | | | | | | | | | | • | | • | | | | | | | | | | | | | |
| 36 | 4 | 32 | | | | | | | | | | | | | • | | • | | | | | | | | | | | | | |
| 39 | 4 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 5 | 47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | V | V | | - | | HR | | - | | OX | | V | | V | | V | V | | V | | V | | V | | V | | FX | |
| | | | HSSE | PM | | PM | | PM | | PM | | PM | | PM | | PM | | HSSE | PM | | PM | | PM | | PM | | PM | | CARBIDE | |
| | | | FORM C | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | FORM C | | **FORM E** | | FORM C | | FORM C | | **FORM E** | | FORM C | |
| Tolerance | | | 6H | 6H | | 6H | | 6HX | | 6H | | 6H | | 6HX | | 6HX | | 6H | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | | 6HX | |
| P | | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | | |
| M | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K | | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | • | |
| N | | | • | | | | | | | | | | | | | | | • | • | | • | | • | | • | | • | | • | |
| S | | | | • | | • | | • | | | | • | | • | | • | | | | | | | | | | | | | | |
| H | | | | | | | | | | • | | • | | • | | • | | | • | | • | | • | | • | | • | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

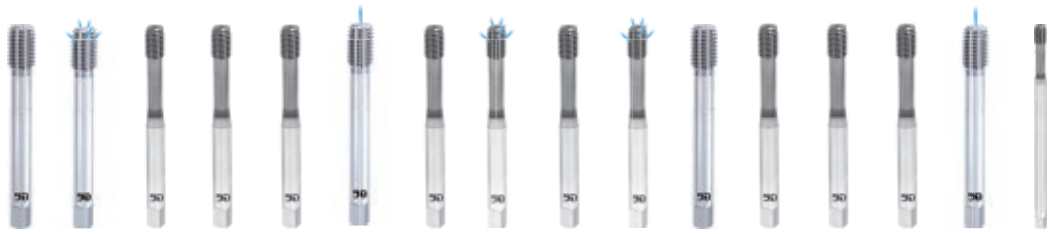
**M**

| Product series | | | A-CHT OIL Side | | A-CHT OIL FORM E | | GG-MT | | OIL-TXL-MT | EX-MCT | V-XPM-HT | V-XPM-HT FORM D | WH55-OT | WH55-OT FORM D | VX-OT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | | A | | | | | | | | | | |
| Page | | | A.144 | | A.144 | | A.145 | | A.145 | A.146 | A.146 | A.147 | A.147 | A.148 | A.148 |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 | DIN 371 | DIN 376 | | | | | | | |
| 1 | 0,25 | 0,75 | | | | | | | | | | | | | |
| 1,1 | 0,25 | 0,85 | | | | | | | | | | | | | |
| 1,2 | 0,25 | 0,95 | | | | | | | | | | | | | |
| 1,4 | 0,3 | 1,1 | | | | | | | | | | | | | |
| 1,6 | 0,35 | 1,25 | | | | | | | | | | | | | |
| 1,7 | 0,35 | 1,35 | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,45 | | | | | | | | | | | | | |
| 2 | 0,4 | 1,6 | | | | | | | | | | | | | |
| 2,2 | 0,45 | 1,75 | | | | | | | | | | | | | |
| 2,3 | 0,4 | 1,85 | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,05 | | | | | | | | | | | | | |
| 2,6 | 0,45 | 2,15 | | | | | | | | | | | | | |
| 3 | 0,5 | 2,5 | | | | | | | | | • | • | • | • | • |
| 3,5 | 0,6 | 2,9 | | | | | | | | | | | | | |
| 4 | 0,7 | 3,3 | | | | | • | • | | | • | • | • | • | • |
| 4,5 | 0,75 | 3,7 | | | | | | | | | | | | | |
| 5 | 0,8 | 4,2 | • | | • | | • | • | | | • | • | • | • | • |
| 5,5 | 0,9 | 4,6 | | | | | | | | | | | | | |
| 6 | 1 | 5 | • | | • | | • | • | | • | • | • | • | • | • |
| 7 | 1 | 6 | | | | | | | | | | | | | |
| 8 | 1,25 | 6,8 | • | | • | | • | • | | • | • | • | • | • | • |
| 9 | 1,25 | 7,8 | | | | | | | | | | | | | |
| 10 | 1,5 | 8,5 | • | | • | | • | • | | • | • | • | • | • | • |
| 11 | 1,5 | 9,5 | | | | | | | | | | | | | |
| 12 | 1,75 | 10,2 | | • | | • | | • | | • | • | • | • | • | • |
| 14 | 2 | 12 | | | | | | • | | • | | | | | |
| 16 | 2 | 14 | | | | | | • | | • | | | | | |
| 18 | 2,5 | 15,5 | | | | | | • | | • | | | | | |
| 20 | 2,5 | 17,5 | | | | | | • | • | • | | | | | |
| 22 | 2,5 | 19,5 | | | | | | | | | | | | | |
| 24 | 3 | 21 | | | | | | | • | | | | | | |
| 27 | 3 | 24 | | | | | | | • | | | | | | |
| 30 | 3,5 | 26,5 | | | | | | | • | | | | | | |
| 33 | 3,5 | 29,5 | | | | | | | • | | | | | | |
| 36 | 4 | 32 | | | | | | | • | | | | | | |
| 39 | 4 | 35 | | | | | | | • | | | | | | |
| 42 | 4,5 | 37,5 | | | | | | | • | | | | | | |
| 45 | 4,5 | 40,5 | | | | | | | | | | | | | |
| 48 | 5 | 43 | | | | | | | • | | | | | | |
| 52 | 5 | 47 | | | | | | | • | | | | | | |
| 56 | 5,5 | 50,5 | | | | | | | • | | | | | | |
| Blind / through | | | | | | | | | | | | | | | |
| | | | FX | | FX | | NI-OX | | OX | OX | V | V | V | V | V |
| | | | CARBIDE | | CARBIDE | | HSSE | | HSSE | HSSE | XPM | XPM | CARBIDE | CARBIDE | CARBIDE |
| | | | FORM C | | **FORM E** | | FORM C | | FORM C | FORM C | FORM C | FORM D | FORM C | **FORM D** | FORM C |
| Tolerance | | | 6HX | | 6HX | | 6HX | | 6HX | 6H | 6HX | 6HX | 6HX | 6HX | 6HX |
| P | | | | | | | | | • | • | | | | | |
| M | | | | | | | | | | | | | | | |
| K | | | • | | • | | • | | • | • | | | | | |
| N | | | • | | • | | | | | • | | | | | |
| S | | | | | | | | | | | | | | | |
| H | | | | | | | | | • | | • | • | • | • | • |

# SELECTION CHART

## Threading | Selection chart | By size

**M**



| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | NEW SIZE | NEW | NEW | NEW | NEW | NEW | | NEW SIZE | | | | | | | NEW SIZE | |
| **Product series** | | | | A-XPF | A-OIL-XPF | A-XPF 6 GX | A-XPF 7 GX | A-XPF FORM E | A-OIL-XPF FORM E | S-XPF | S-OIL-XPF | S-XPF 6GX | S-OIL-XPF 6GX | S-XPF 7GX | S-XPF +0.1 | S-XPF FORM D | S-XPF FORM E | S-OIL-XPF FORM E | S-LT-XPF |
| **A-Brand** | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |
| **Page** | | | | A.149 | A.149 | A.150 | A.150 | A.151 | A.151 | A.152 | A.152 | A.153 | A.153 | A.154 | A.154 | A.155 | A.155 | A.156 | A.156 |
| Ø | I min. | Ø max. | Ø | | | | | | | | | | | | | | | | |
| 1 | 0,25 | 0,89 | 0,90 | • | | | | | | • | | | | | | | | | |
| 1,1 | 0,25 | 0,99 | 1,00 | • | | | | | | • | | | | | | | | | |
| 1,2 | 0,25 | 1,09 | 1,10 | • | | | | | | • | | | | | | | | | |
| 1,4 | 0,3 | 1,26 | 1,28 | • | | | | | | • | | | | | | | | | |
| 1,6 | 0,35 | 1,45 | 1,48 | • | | | | | | • | | | | | | | | | |
| 1,7 | 0,35 | 1,55 | 1,58 | • | | | | | | • | | | | | | | | | |
| 1,8 | 0,35 | 1,65 | 1,68 | • | | | | | | • | | | | | | | | | |
| 2 | 0,4 | 1,82 | 1,85 | • | | • | | • | | • | | • | | • | | | • | | • |
| 2,2 | 0,45 | 2,00 | 2,04 | • | | | | | | • | | | | | | | | | |
| 2,3 | 0,4 | 2,12 | 2,15 | • | | | | | | • | | | | | | | | | |
| 2,5 | 0,45 | 2,30 | 2,34 | • | | | | | | • | | • | | • | | | • | | • |
| 2,6 | 0,45 | 2,40 | 2,44 | • | | | | | | • | | | | | | | | | |
| 3 | 0,5 | 2,77 | 2,82 | • | | • | • | • | | • | | • | | • | • | • | • | | • |
| 3,5 | 0,6 | 3,23 | 3,28 | • | | | | | | • | | • | | • | | | • | | |
| 4 | 0,7 | 3,67 | 3,72 | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • |
| 4,5 | 0,75 | 4,14 | 4,20 | • | | | | | | • | | | | | | | | | |
| 5 | 0,8 | 4,62 | 4,68 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 5,5 | 0,9 | 5,06 | 5,13 | • | | | | | | • | | | | | | | | | |
| 6 | 1 | 5,51 | 5,59 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 7 | 1 | 6,51 | 6,59 | • | | | | | | • | | | | | | | | | |
| 8 | 1,25 | 7,37 | 7,45 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 9 | 1,25 | 8,37 | 8,45 | • | | | | | | • | | | | | | | | | |
| 10 | 1,5 | 9,24 | 9,33 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 11 | 1,5 | 10,24 | 10,33 | • | | | | | | | • | | | | | | | | |
| 12 | 1,75 | 11,1 | 11,2 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 14 | 2 | 12,96 | 13,08 | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | |
| 16 | 2 | 14,96 | 15,08 | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | |
| 18 | 2,5 | 16,66 | 16,81 | • | • | | | | | | • | | | | | | | | |
| 20 | 2,5 | 18,66 | 18,81 | • | • | | | | | | • | | | | | | | | |
| 22 | 2,5 | 20,66 | 20,81 | • | • | | | | | | • | | | | | | | | |
| 24 | 3 | 22,39 | 22,56 | • | • | | | | | | • | | | | | | | | |
| 27 | 3 | 25,39 | 25,56 | • | • | | | | | | • | | | | | | | | |
| 30 | 3,5 | 28,09 | 28,28 | • | • | | | | | | • | | | | | | | | |
| 33 | 3,5 | 31,09 | 31,28 | | • | | | | | | • | | | | | | | | |
| 36 | 4 | 33,8 | 34,01 | | • | | | | | | • | | | | | | | | |
| 39 | 4 | 36,8 | 37,01 | | • | | | | | | • | | | | | | | | |
| 42 | 4,5 | 39,52 | 39,73 | | • | | | | | | • | | | | | | | | |
| 45 | 4,5 | 42,52 | 42,73 | | • | | | | | | • | | | | | | | | |
| **Blind / through** | | | | | | | | | | | | | | | | | | | |
| | | | | V | V | VI | VI | VI | VI | V | V | V | V | V | V | V | V | V | V |
| | | | | PM | PM | PM | PM | PM | PM | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co |
| | | | | FORM C | FORM C | FORM C | FORM C | FORM E | FORM E | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | **FORM D** | **FORM E** | **FORM E** | FORM C |
| **Tolerance** | | | | 6HX | 6HX | **6GX** | **7G** | 6HX | 6HX | 6HX | 6HX | **6GX** | **6GX** | **7GX** | **6HX +0.1** | 6HX | 6HX | 6HX | 6HX |
| P | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| M | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| K | | | | | | | | | | | | | | | | | | | |
| N | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| S | | | | | | | | | | | | | | | | | | | |
| H | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

# SELECTION CHART

## Threading | Selection chart | By size

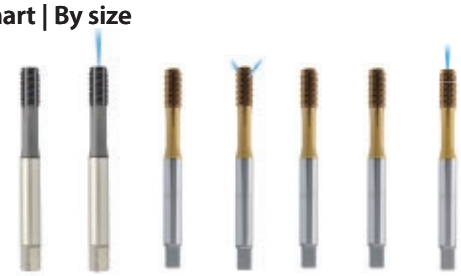
**M**

| Product series | | | | S-OIL-LT-XPF | S-XPF-LH | S-XPF-HB Weldon | S-XPF-GL | S-XPF-GL 6GX | GRT NEW | GRT FORM F NEW | P-OIL-CXPF | C-OIL-XPF | V-NRT | V-NRT 6GX | V-NRT FORM D | V-NRT 6GX FORM D | VA-XPF NEW | VA-OIL-XPF NEW | VA-XPF 6 GX NEW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | A | A | A | A | A | | | | A | | | | | | | |
| Page | | | | A.157 | A.157 | A.158 | A.158 | A.159 | A.159 | A.160 | A.160 | A.161 | A.161 | A.162 | A.162 | A.163 | A.163 | A.164 | A.164 |
| Ø | I | Ø min. | Ø max. | | | | | | DIN 2174 | DIN 2174 | | | | | | | DIN 2174 | DIN 2174 | DIN 2174 |
| 1 | 0,25 | 0,89 | 0,90 | | | | | | | • | | | • | | | | • | | |
| 1,1 | 0,25 | 0,99 | 1,00 | | | | | | | | | | | | | | | | |
| 1,2 | 0,25 | 1,09 | 1,10 | | | | | | | • | | | • | | | | | | |
| 1,4 | 0,3 | 1,26 | 1,28 | | | | | | | • | | | • | | | | • | | |
| 1,6 | 0,35 | 1,45 | 1,48 | | | | | | | | | | • | | | | • | | |
| 1,7 | 0,35 | 1,55 | 1,58 | | | | | | | | | | | | | | | | |
| 1,8 | 0,35 | 1,65 | 1,68 | | | | | | | | | | | | | | | | |
| 2 | 0,4 | 1,82 | 1,85 | | | | | | • | • | | | • | • | • | • | • | | • |
| 2,2 | 0,45 | 2,00 | 2,04 | | | | | | | | | | • | • | • | • | | | |
| 2,3 | 0,4 | 2,12 | 2,15 | | | | | | | | | | | | | | | | |
| 2,5 | 0,45 | 2,30 | 2,34 | | | | | | | | | | • | • | • | • | • | | • |
| 2,6 | 0,45 | 2,40 | 2,44 | | | | | | | | | | | | | | | | |
| 3 | 0,5 | 2,77 | 2,82 | | • | • | • | • | • | • | | | • | • | • | • | • | | • |
| 3,5 | 0,6 | 3,23 | 3,28 | | | | | | | | | | • | • | • | • | • | | • |
| 4 | 0,7 | 3,67 | 3,72 | | • | • | • | • | • | • | | | • | • | • | • | • | | • |
| 4,5 | 0,75 | 4,14 | 4,20 | | | | | | | | | | | | | | • | | |
| 5 | 0,8 | 4,62 | 4,68 | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 5,5 | 0,9 | 5,06 | 5,13 | | | | | | | | | | | | | | • | | |
| 6 | 1 | 5,51 | 5,59 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 7 | 1 | 6,51 | 6,59 | | | | | | | | | | | | | | • | | |
| 8 | 1,25 | 7,37 | 7,45 | • | • | • | • | • | | | • | • | • | • | • | • | • | • | • |
| 9 | 1,25 | 8,37 | 8,45 | | | | | | | | | | | | | | • | | |
| 10 | 1,5 | 9,24 | 9,33 | • | • | • | • | • | | | • | • | • | • | • | • | • | • | • |
| 11 | 1,5 | 10,24 | 10,33 | | | | | | | | | | | | | | | • | |
| 12 | 1,75 | 11,1 | 11,2 | | • | • | • | • | | | • | • | • | | • | | | • | • |
| 14 | 2 | 12,96 | 13,08 | | | • | • | | | | • | • | | | | | | • | • |
| 16 | 2 | 14,96 | 15,08 | | | • | • | | | | • | • | | | | | | • | • |
| 18 | 2,5 | 16,66 | 16,81 | | | • | | | | | • | | | | | | | • | • |
| 20 | 2,5 | 18,66 | 18,81 | | | • | | | | | | | | | | | | • | • |
| 22 | 2,5 | 20,66 | 20,81 | | | • | | | | | | | | | | | | • | • |
| 24 | 3 | 22,39 | 22,56 | | | • | | | | | | | | | | | | • | • |
| 27 | 3 | 25,39 | 25,56 | | | | | | | | | | | | | | | | |
| 30 | 3,5 | 28,09 | 28,28 | | | | | | | | | | | | | | | | |
| 33 | 3,5 | 31,09 | 31,28 | | | | | | | | | | | | | | | | |
| 36 | 4 | 33,8 | 34,01 | | | | | | | | | | | | | | | | |
| 39 | 4 | 36,8 | 37,01 | | | | | | | | | | | | | | | | |
| 42 | 4,5 | 39,52 | 39,73 | | | | | | | | | | | | | | | | |
| 45 | 4,5 | 42,52 | 42,73 | | | | | | | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | |
| | | | | V | V | V | V | V | V | V | EgiAs | V | V | V | V | V | AlCrN | AlCrN | AlCrN |
| | | | | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | PM | PM | CARBIDE | CARBIDE | HSS-Co | HSS-Co | HSS-Co | HSS-Co | PM | PM | PM |
| | | | | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | **FORM F** | FORM C | FORM C | FORM C | FORM C | **FORM D** | **FORM D** | FORM C | FORM C | FORM C |
| Tolerance | | | | 6HX | 6HX | 6HX | 6HX | **6GX** | 6HX | 6HX | 6HX | 6HX | 6HX | **6GX** | 6HX | **6GX** | 6HX | 6HX | **6GX** |
| P | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| M | | | | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • |
| K | | | | | | | | | | | | | | | | | | | |
| N | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| S | | | | | | | | | | | | | | | | | • | • | • |
| H | | | | • | • | • | • | • | | | • | • | | | | | | | |

# SELECTION CHART

## Threading | Selection chart | By size

**M**



NEW NEW

| Product series | | | | VA-XPF FORM E | VA-OIL-XPF FORM E | M-NRT | M-OIL-NRT | M-NRT 6GX | M-NRT FORM E | M-OIL-NRT FORM-E |
|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | |
| Page | | | | A.165 | A.165 | A.166 | A.166 | A.167 | A.167 | A.168 |
| Ø | I | Ø min. | Ø max. | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 |
| 1 | 0,25 | 0,89 | 0,90 | | | • | | | | |
| 1,1 | 0,25 | 0,99 | 1,00 | | | | | | | |
| 1,2 | 0,25 | 1,09 | 1,10 | | | | | | | |
| 1,4 | 0,3 | 1,26 | 1,28 | | | • | | | | |
| 1,6 | 0,35 | 1,45 | 1,48 | | | • | | | | |
| 1,7 | 0,35 | 1,55 | 1,58 | | | | | | | |
| 1,8 | 0,35 | 1,65 | 1,68 | | | | | | | |
| 2 | 0,4 | 1,82 | 1,85 | • | | • | | • | • | |
| 2,2 | 0,45 | 2,00 | 2,04 | | | | | | | |
| 2,3 | 0,4 | 2,12 | 2,15 | | | | | | | |
| 2,5 | 0,45 | 2,30 | 2,34 | • | | • | | • | • | |
| 2,6 | 0,45 | 2,40 | 2,44 | | | | | | | |
| 3 | 0,5 | 2,77 | 2,82 | • | | • | | • | • | |
| 3,5 | 0,6 | 3,23 | 3,28 | • | | • | | • | • | |
| 4 | 0,7 | 3,67 | 3,72 | • | | • | | • | • | |
| 4,5 | 0,75 | 4,14 | 4,20 | | | • | | | | |
| 5 | 0,8 | 4,62 | 4,68 | • | • | • | • | • | • | • |
| 5,5 | 0,9 | 5,06 | 5,13 | | | • | | | | |
| 6 | 1 | 5,51 | 5,59 | • | • | • | • | • | • | • |
| 7 | 1 | 6,51 | 6,59 | | | • | | | | |
| 8 | 1,25 | 7,37 | 7,45 | • | • | • | • | • | • | • |
| 9 | 1,25 | 8,37 | 8,45 | | | • | | | | |
| 10 | 1,5 | 9,24 | 9,33 | • | • | • | • | • | • | • |
| 11 | 1,5 | 10,24 | 10,33 | | | • | | | | |
| 12 | 1,75 | 11,1 | 11,2 | | • | • | • | • | • | • |
| 14 | 2 | 12,96 | 13,08 | | • | • | • | • | • | • |
| 16 | 2 | 14,96 | 15,08 | | • | • | • | • | • | • |
| 18 | 2,5 | 16,66 | 16,81 | | | • | • | | | |
| 20 | 2,5 | 18,66 | 18,81 | | | • | • | | | |
| 22 | 2,5 | 20,66 | 20,81 | | | • | • | | | |
| 24 | 3 | 22,39 | 22,56 | | | • | • | | | |
| 27 | 3 | 25,39 | 25,56 | | | | | | | |
| 30 | 3,5 | 28,09 | 28,28 | | | | | | | |
| 33 | 3,5 | 31,09 | 31,28 | | | | | | | |
| 36 | 4 | 33,8 | 34,01 | | | | | | | |
| 39 | 4 | 36,8 | 37,01 | | | | | | | |
| 42 | 4,5 | 39,52 | 39,73 | | | | | | | |
| 45 | 4,5 | 42,52 | 42,73 | | | | | | | |
| Blind / through | | | | | | | | | | |
| | | | | AlCrN | AlCrN | TiN | TiN | TiN | TiN | TiN |
| | | | | PM | PM | PM | PM | PM | PM | PM |
| | | | | **FORM E** | **FORM E** | FORM C | FORM C | FORM C | **FORM E** | **FORM E** |
| Tolerance | | | | 6HX | 6HX | 6HX | 6HX | **6GX** | 6HX | 6HX |
| P | | | | • | • | • | • | • | • | • |
| M | | | | • | • | • | • | • | • | • |
| K | | | | | | | | | | |
| N | | | | • | • | • | • | • | • | • |
| S | | | | • | • | | | | | |
| H | | | | | | | | | | |

# SELECTION CHART

Threading | Selection chart | By size

**MF**

| Product series | A-POT | | A-OIL-POT | A-POT 6GX | S-POT | S-POT 6G | VA-POT | Z-POT | POT | CC-POT | H-POT | A-SFT | | A-OIL-SFT | A-SFT 6GX | A-SFT FORM E | | A-SFT-INOX | | A-SFT-AL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | A | | A | A | | | | | | | | A | | A | A | A | | A | | A |
| Page | A.168 | | A.169 | A.169 | A.170 | A.170 | A.171 | A.171 | A.172 | A.172 | A.173 | A.173 | | A.174 | A.174 | A.175 | | A.175 | | A.176 |
| Ø | I | Ø | DIN 371 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 371 | DIN 374 | DIN 374 | DIN 374 | DIN 371 | DIN 374 | DIN 371 | DIN 374 | DIN 374 |
| 2,5 | 0,35 | 2,15 | • | | | | | | | | | • | | | | • | | • | | |
| 2,6 | 0,35 | 2,25 | • | | | | | | | | | • | | | | • | | • | | |
| 3 | 0,35 | 2,65 | • | | | • | | • | • | | | • | | | | • | | • | | |
| 3,5 | 0,35 | 3,15 | • | | | | | | | | | • | | | | • | | • | | |
| 4 | 0,35 | 3,65 | • | | | | | | | | | • | | | | • | | • | | |
| 4 | 0,5 | 3,5 | • | | | • | | • | • | • | • | • | | | | • | | • | | |
| 4,5 | 0,5 | 4 | • | | | | | | | | | • | | | | • | | • | | |
| 5 | 0,5 | 4,5 | • | | | • | | • | • | • | • | • | | | | • | | • | | |
| 6 | 0,5 | 5,5 | • | • | | • | | • | • | | • | • | • | | | • | • | • | • | |
| 6 | 0,75 | 5,25 | • | • | | • | • | • | • | • | • | • | • | | • | • | • | • | • | |
| 7 | 0,75 | 6,25 | • | | | | | | | | | • | | | | • | | • | | |
| 8 | 0,75 | 7,25 | • | • | | • | • | • | • | • | • | • | • | | • | • | • | • | • | |
| 8 | 1 | 7 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 9 | 1 | 8 | • | • | | • | | | | | | • | • | | | • | • | • | • | |
| 10 | 0,75 | 9,25 | • | • | | • | | | • | | | • | • | | | • | • | • | • | |
| 10 | 1 | 9 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 10 | 1,25 | 8,75 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 11 | 1 | 10 | | • | | • | | | | | | | • | | | | • | | • | |
| 12 | 1 | 11 | | • | | • | • | • | • | • | • | | • | | • | | • | | • | • |
| 12 | 1,25 | 10,75 | | • | | • | • | • | • | • | • | | • | | • | | • | | • | • |
| 12 | 1,5 | 10,5 | | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | • |
| 14 | 1 | 13 | | • | | • | | | | • | | | • | | | | • | | • | |
| 14 | 1,25 | 12,75 | | • | | • | | | | • | | | • | | | | • | | • | |
| 14 | 1,5 | 12,5 | | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | |
| 16 | 1 | 15 | | • | | • | | | | • | | | • | | | | • | | • | |
| 16 | 1,5 | 14,5 | | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | |
| 18 | 1 | 17 | | • | | • | | | | • | | | • | | | | • | | • | |
| 18 | 1,5 | 16,5 | | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | |
| 18 | 2 | 16 | | | | | | | | • | | | | | | | | | | |
| 20 | 1 | 19 | | • | | • | | | | • | | | • | | | | • | | • | |
| 20 | 1,5 | 18,5 | | • | • | • | • | • | • | • | • | | • | • | • | | • | | • | |
| 20 | 2 | 18 | | • | | • | | | | • | | | • | | | | • | | • | |
| 22 | 1 | 21 | | • | | • | | | | | | | • | | | | • | | • | |
| 22 | 1,5 | 20,5 | | • | | • | • | • | • | • | • | | • | | • | | • | | • | |
| 22 | 2 | 20 | | • | | • | | | | • | | | • | | | | • | | • | |
| 24 | 1 | 23 | | • | | • | | | | | | | • | | | | • | | • | |
| 24 | 1,5 | 22,5 | | • | | • | • | • | • | • | • | | • | | • | | • | | • | |
| 24 | 2 | 22 | | • | | • | | | | • | | | • | | | | • | | • | |
| 30 | 2 | 28 | | | | | | | | • | | | | | | | | | | |
| Blind / through | | | | | | | | | | | | | | | | | | | | |
| | | | V | V | V | OX | OX | OX | V | - | CrN | OX | V | V | V | V | V | VI | V | V |
| | | | PM | PM | PM | HSSE | HSSE | HSSE | PM | HSSE | HSSE | PM | PM | PM | PM | PM | PM | PM | PM | PM |
| | | | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM B | FORM C | FORM C | FORM C | **FORM E** | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | 6HX | 6HX | **6GX** | 6H | **6G** | 6H | 6HX | 6H | 6HX | 6H | 6HX | 6HX | **6GX** | 6HX | 6HX | 6HX | 6HX | 6HX |
| P | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | |
| M | | | • | • | • | • | • | • | • | | • | | • | • | • | • | • | • | | |
| K | | | | | | • | • | • | | • | | • | | | | | | | | |
| N | | | • | • | • | | | | • | • | • | | • | • | • | • | • | • | • | • |
| S | | | • | • | • | | | | • | | | • | • | • | • | • | | | | |
| H | | | • | • | • | | | | • | | | • | • | • | • | | | | | |

# SELECTION CHART



**MF**

| Product series | A-SFT-AL FORM E | A-CSF OIL | A-CSF OIL FORM E | S-SFT | S-SFT 6G | S-SFT FORM E | VA-SFT | Z-SFT | SFT | M-SFT-DUPLEX | M-OIL-SFT-DUPLEX | CC-SFT | SUS-SFT | AL-SFT | H-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | A | A | A | | | | | | | | | | | | |
| Page | A.176 | A.177 | A.177 | A.178 | A.178 | A.179 | A.179 | A.180 | A.180 | A.181 | A.181 | A.182 | A.182 | A.183 | A.183 |
| Ø | I | Ø | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 |
| 2,5 | 0,35 | 2,15 | | | | | | | | | | | | | |
| 2,6 | 0,35 | 2,25 | | | | | | | | | | | | | |
| 3 | 0,35 | 2,65 | | | | • | | • | • | • | | | | | • |
| 3,5 | 0,35 | 3,15 | | | | | | | | | | | | | |
| 4 | 0,35 | 3,65 | | | | | | | | | | | | | |
| 4 | 0,5 | 3,5 | | | | • | | • | • | • | • | | | | • |
| 4,5 | 0,5 | 4 | | | | | | | | | | | | | |
| 5 | 0,5 | 4,5 | | | | • | | • | • | • | • | | | | • |
| 6 | 0,5 | 5,5 | | | | • | | • | • | • | | • | | | • |
| 6 | 0,75 | 5,25 | | | | • | • | • | • | • | • | • | | | • |
| 7 | 0,75 | 6,25 | | | | | | | | | | | | | |
| 8 | 0,75 | 7,25 | | | | • | • | • | • | • | • | • | • | | • |
| 8 | 1 | 7 | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 9 | 1 | 8 | | | | • | | • | | | | | | | |
| 10 | 0,75 | 9,25 | | | | • | | • | | • | | | | | |
| 10 | 1 | 9 | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 10 | 1,25 | 8,75 | • | | | • | • | • | • | • | • | • | • | • | • |
| 11 | 1 | 10 | | | | • | | • | | | | | | | |
| 12 | 1 | 11 | • | • | • | • | • | • | • | • | | • | • | • | • |
| 12 | 1,25 | 10,75 | • | | | • | • | • | • | • | | • | • | • | • |
| 12 | 1,5 | 10,5 | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 14 | 1 | 13 | | | | • | | • | | • | | | | | |
| 14 | 1,25 | 12,75 | | | | • | | • | | • | | | | | |
| 14 | 1,5 | 12,5 | | • | • | • | • | • | • | • | • | • | • | | • |
| 16 | 1 | 15 | | | | • | | • | | • | | | | | |
| 16 | 1,5 | 14,5 | | • | • | • | • | • | • | • | • | • | • | | • |
| 18 | 1 | 17 | | | | • | | • | | • | | | | | |
| 18 | 1,5 | 16,5 | | | | • | • | • | • | • | • | • | • | | • |
| 18 | 2 | 16 | | | | | | | | • | | | | | |
| 20 | 1 | 19 | | | | • | | • | | • | | | | | |
| 20 | 1,5 | 18,5 | | • | | • | • | • | • | • | • | • | • | | • |
| 20 | 2 | 18 | | | | • | | • | | • | | | | | |
| 22 | 1 | 21 | | | | • | | • | | | | | | | |
| 22 | 1,5 | 20,5 | | | | • | • | • | • | • | • | | • | | • |
| 22 | 2 | 20 | | | | • | | • | | • | | | | | |
| 24 | 1 | 23 | | | | • | | • | | | | | | | |
| 24 | 1,5 | 22,5 | | | | • | • | • | • | • | • | | • | | • |
| 24 | 2 | 22 | | | | • | | • | | • | | | | | |
| 30 | 2 | 28 | | | | | | | | • | | | | | |
| Blind / through | | | | | | | | | | | | | | | |
| | V | FX | FX | OX | OX | OX | OX | V | - | TiN | TiN | CrN | OX | - | OX |
| | PM | CARBIDE | CARBIDE | HSSE | HSSE | HSSE | HSSE | PM | HSSE | PM | PM | HSSE | HSSE | HSSE | PM |
| | **FORM E** | FORM C | **FORM E** | FORM C | FORM C | **FORM E** | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | 6HX | 6HX | 6HX | 6H | **6G** | 6H | 6H | 6H | 6H | **6HX** | **6HX** | 6HX | **6HX** | 6H | 6H |
| P | | | | • | • | • | • | • | • | • | • | • | | | • |
| M | | | | • | • | • | • | • | | • | • | • | • | | |
| K | | • | • | • | • | • | • | | • | | | | | | • |
| N | • | • | • | | | | | • | • | | | • | | • | |
| S | | | | | | | | • | | • | • | | | | • |
| H | | | | | | | | • | | | | | | | • |

# SELECTION CHART

Threading | Selection chart | By size

**MF**

| Product series | | | VP-DC-MT | VPO-DC-MT Center | VPO-DC-MT Side | A-CHT OIL Center | A-CHT OIL Side | A-CHT OIL FORM E | GG-MT |
|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | A | A | A | |
| Page | | | A.184 | A.184 | A.185 | A.185 | A.186 | A.186 | A.187 |
| Ø | I | Ø | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | DIN 374 | |
| 2,5 | 0,35 | 2,15 | | | | | | | |
| 2,6 | 0,35 | 2,25 | | | | | | | |
| 3 | 0,35 | 2,65 | • | | | | | | • |
| 3,5 | 0,35 | 3,15 | | | | | | | • |
| 4 | 0,35 | 3,65 | | | | | | | |
| 4 | 0,5 | 3,5 | • | | | | | | • |
| 4,5 | 0,5 | 4 | | | | | | | |
| 5 | 0,5 | 4,5 | • | | | | | | • |
| 6 | 0,5 | 5,5 | • | | | | | | • |
| 6 | 0,75 | 5,25 | • | | | | | | • |
| 7 | 0,75 | 6,25 | | | | | | | |
| 8 | 0,75 | 7,25 | • | | | | | | • |
| 8 | 1 | 7 | • | • | • | • | • | | • |
| 9 | 1 | 8 | | | | | | | |
| 10 | 0,75 | 9,25 | | | | | | | |
| 10 | 1 | 9 | • | • | • | • | • | • | • |
| 10 | 1,25 | 8,75 | • | • | • | | | | • |
| 11 | 1 | 10 | | | | | | | |
| 12 | 1 | 11 | • | | | • | • | • | • |
| 12 | 1,25 | 10,75 | • | • | • | | | | • |
| 12 | 1,5 | 10,5 | • | • | • | • | • | • | • |
| 14 | 1 | 13 | | | | | | | • |
| 14 | 1,25 | 12,75 | | | | | | | |
| 14 | 1,5 | 12,5 | • | • | • | • | • | • | • |
| 16 | 1 | 15 | | | | | | | • |
| 16 | 1,5 | 14,5 | • | • | • | • | • | • | • |
| 18 | 1 | 17 | | | | | | | |
| 18 | 1,5 | 16,5 | • | • | • | | | | • |
| 18 | 2 | 16 | | | | | | | • |
| 20 | 1 | 19 | | | | | | | |
| 20 | 1,5 | 18,5 | • | • | • | • | • | | • |
| 20 | 2 | 18 | | | | | | | |
| 22 | 1 | 21 | | | | | | | |
| 22 | 1,5 | 20,5 | • | | | | | | • |
| 22 | 2 | 20 | | | | | | | |
| 24 | 1 | 23 | | | | | | | |
| 24 | 1,5 | 22,5 | • | | | | | | • |
| 24 | 2 | 22 | | | | | | | |
| 30 | 2 | 28 | | | | | | | |
| Blind / through | | | | | | | | | |
| | | | V | V | V | FX | FX | FX | NI-OX |
| | | | PM | PM | PM | CARBIDE | CARBIDE | CARBIDE | HSSE |
| | | | FORM C | FORM C | FORM C | FORM C | FORM C | **FORM E** | FORM C |
| Tolerance | | | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX | 6HX |
| P | | | • | • | • | | | | |
| M | | | | | | | | | |
| K | | | • | • | • | • | • | • | • |
| N | | | • | • | • | • | • | • | |
| S | | | | | | | | | |
| H | | | • | • | • | | | | |

# SELECTION CHART

**Threading | Selection chart | By size**

**MF**

NEW SIZES | NEW | NEW

| Product series | | | | A-XPF | A-OIL-XPF | A-XPF 6GX | A-XPF FORM E | S-XPF | S-OIL-XPF | S-XPF 6GX | S-OIL-XPF 6GX | S-XPF FORM D | S-XPF FORM E | S-OIL-XPF FORM E | S-OIL-LT-XPF | S-XPF-GL | S-XPF-GL 6GX | P-OIL-CXPF | C-OIL-CXPF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | A | A | A | A | A | A | A | A | A | A | A | A | A | A | | |
| Page | | | | A.187 | A.188 | A.188 | A.189 | A.189 | A.190 | A.190 | A.191 | A.191 | A.192 | A.192 | A.193 | A.193 | A.194 | A.194 | A.195 |
| Ø | I | Ø min. | Ø max. | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 |
| 4 | 0,5 | 3,77 | 3,82 | • | | | | • | | | | | | | | | | | |
| 5 | 0,5 | 4,77 | 4,82 | • | | | | • | | | | | | | | | | | |
| 6 | 0,5 | 5,79 | 5,83 | • | | | | • | | | | | | | | | | | |
| 6 | 0,75 | 5,65 | 5,71 | • | | | | • | | | | | | | | | | | |
| 7 | 0,75 | 6,65 | 6,71 | • | | | | • | | | | | | | | | | | |
| 8 | 0,5 | 7,79 | 7,83 | • | | | | • | | | | | | | | | | | |
| 8 | 0,75 | 7,65 | 7,71 | • | | | | • | | | | | | | | | | | |
| 8 | 1 | 7,51 | 7,59 | • | • | • | | • | • | • | • | • | | • | • | • | • | • | • |
| 10 | 1 | 9,51 | 9,59 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 10 | 1,25 | 9,37 | 9,45 | • | • | | | • | • | • | • | • | | • | • | • | • | | |
| 12 | 1 | 11,52 | 11,60 | • | • | • | | • | • | • | • | • | | • | • | • | • | | |
| 12 | 1,25 | 11,39 | 11,46 | • | • | • | | • | • | • | • | • | | • | • | • | • | | |
| 12 | 1,5 | 11,25 | 11,34 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 14 | 1 | 13,52 | 13,60 | • | • | | | • | • | | | | | | | | | | |
| 14 | 1,25 | 13,39 | 13,46 | • | • | | | • | • | • | • | | | • | • | • | • | | |
| 14 | 1,5 | 13,25 | 13,34 | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 16 | 1 | 15,52 | 15,60 | • | • | | | • | • | | | | | | | | | | |
| 16 | 1,5 | 15,25 | 15,34 | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • |
| 18 | 1 | 17,52 | 17,60 | • | • | | | • | • | | | | | | | | | | |
| 18 | 1,5 | 17,25 | 17,34 | • | • | • | | • | • | • | • | • | | • | | • | • | | |
| 20 | 1 | 19,52 | 19,60 | • | • | | | • | • | | | | | | | | | | |
| 20 | 1,5 | 19,25 | 19,34 | • | • | • | | • | • | • | • | • | | • | | • | • | | |
| 22 | 1,5 | 21,25 | 21,34 | • | • | | | • | • | • | • | | | • | | • | • | | |
| 24 | 1,5 | 23,25 | 23,34 | • | • | | | • | • | • | • | | | • | | • | • | | |
| Blind / through | | | | | | | | | | | | | | | | | | | |
| | | | | V | V | VI | V | V | V | V | V | V | V | V | V | V | V | EgiAs | V |
| | | | | PM | PM | PM | PM | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | HSS-Co | CARBIDE | CARBIDE |
| | | | | FORM C | FORM C | FORM C | FORM E | FORM C | FORM C | FORM C | FORM C | **FORM D** | **FORM E** | **FORM E** | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | | 6HX | 6HX | **6GX** | 6HX | 6HX | 6HX | **6GX** | **6GX** | 6HX | 6HX | 6HX | 6HX | 6HX | **6GX** | 6HX | 6HX |
| P | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| M | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • |
| K | | | | | | | | | | | | | | | | | | | |
| N | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| S | | | | | | | | | | | | | | | | | | | |
| H | | | | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • |

# SELECTION CHART

Threading | Selection chart | By size

NEW

**MF** **UNC** **UN**

| Product series | | | | V-NRT | V-NRT FORM D | VA-XPF | M-NRT |
|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | |
| Page | | | | A.195 | A.196 | A.196 | A.197 |
| Ø | I | Ø min. | Ø max. | DIN 2174 | DIN 2174 | DIN 2174 | DIN 2174 |
| 4 | 0,5 | 3,77 | 3,82 | | | • | • |
| 5 | 0,5 | 4,77 | 4,82 | | | • | • |
| 6 | 0,5 | 5,79 | 5,83 | | | • | • |
| 6 | 0,75 | 5,65 | 5,71 | | | • | • |
| 7 | 0,75 | 6,65 | 6,71 | | | • | • |
| 8 | 0,5 | 7,79 | 7,83 | | | • | • |
| 8 | 0,75 | 7,65 | 7,71 | | | • | • |
| 8 | 1 | 7,51 | 7,59 | • | • | • | • |
| 10 | 1 | 9,51 | 9,59 | • | • | • | • |
| 10 | 1,25 | 9,37 | 9,45 | • | • | • | • |
| 12 | 1 | 11,52 | 11,60 | • | • | | • |
| 12 | 1,25 | 11,39 | 11,46 | • | • | | • |
| 12 | 1,5 | 11,25 | 11,34 | • | • | | • |
| 14 | 1 | 13,52 | 13,60 | | | | • |
| 14 | 1,25 | 13,39 | 13,46 | | | | • |
| 14 | 1,5 | 13,25 | 13,34 | | | | • |
| 16 | 1 | 15,52 | 15,60 | | | | • |
| 16 | 1,5 | 15,25 | 15,34 | | | | • |
| 18 | 1 | 17,52 | 17,60 | | | | • |
| 18 | 1,5 | 17,25 | 17,34 | | | | • |
| 20 | 1 | 19,52 | 19,60 | | | | • |
| 20 | 1,5 | 19,25 | 19,34 | | | | • |
| 22 | 1,5 | 21,25 | 21,34 | | | | • |
| 24 | 1,5 | 23,25 | 23,34 | | | | • |

| Product series | | | | A-POT | S-POT | VA-POT | A-SFT | S-SFT | VA-SFT | HXL-SFT | VXL-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | A | | | A | | | | |
| Page | | | | A.197 | A.198 | A.198 | A.199 | A.199 | A.200 | A.200 | A.201 |
| Ø | I | Ø | | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | | |
| N°.2 | 56 | 1,85 | | • | • | | • | • | | | |
| N°.3 | 48 | 2 | | • | • | | • | • | | | |
| N°.4 | 40 | 2,35 | | • | • | • | • | • | • | | |
| N°.5 | 40 | 2,65 | | • | • | • | • | • | • | | |
| N°.6 | 32 | 2,7 | | • | • | • | • | • | • | | |
| N°.8 | 32 | 3,5 | | • | • | • | • | • | • | | |
| N°.10 | 24 | 3,8 | | • | • | • | • | • | • | | |
| N°.12 | 24 | 4,5 | | • | • | | • | • | | | |
| 1/4 | 20 | 5,1 | | • | • | • | • | • | • | | |
| 5/16 | 18 | 6,5 | | • | • | • | • | • | • | | |
| 3/8 | 16 | 7,9 | | • | • | • | • | • | • | | |
| 7/16 | 14 | 9,3 | | • | • | • | • | • | • | | |
| 1/2 | 13 | 10,7 | | • | • | • | • | • | • | | |
| 9/16 | 12 | 12,3 | | • | • | • | • | • | • | | |
| 5/8 | 11 | 13,5 | | • | • | • | • | • | • | | |
| 3/4 | 10 | 16,5 | | • | • | • | • | • | • | • | • |
| 7/8 | 9 | 19,3 | | • | • | • | • | • | • | • | • |
| 1 | 8 | 22,25 | | • | • | • | • | • | • | • | • |
| 1 1/8 | 7 | 25 | | | | | | • | | • | • |
| 1 1/8 | 8 | 25 | | | | | | | | • | • |
| 1 1/4 | 7 | 28 | | | | | | • | | • | • |
| 1 1/4 | 8 | 28 | | | | | | | | • | • |
| 1 3/8 | 6 | 30 | | | | | | | | • | • |
| 1 3/8 | 8 | 30 | | | | | | | | • | • |
| 1 1/2 | 6 | 34 | | | | | | • | | • | • |
| 1 1/2 | 8 | 34 | | | | | | | | • | • |
| 1 5/8 | 8 | 38,1 | | | | | | | | • | • |
| 1 3/4 | 8 | 41,5 | | | | | | | | • | • |
| 1 7/8 | 8 | 44,45 | | | | | | | | • | • |
| 2 | 8 | 48 | | | | | | | | • | • |
| 2 1/2 | 8 | 60,5 | | | | | | | | • | • |

| Blind / through | | | | | Blind / through | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | V | V | AlCrN | TIN | | V | OX | OX | V | OX | OX | OX | OX |
| | HSS-Co | HSS-Co | PM | PM | | PM | HSSE | HSSE | PM | HSSE | HSSE | HSSE | HSSE |
| | FORM C | **FORM D** | FORM C | FORM C | | FORM B | FORM B | FORM B | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | 6HX | 6HX | 6HX | 6HX | Tolerance | 2BX | 2B | 2B | 2BX | 2B | 2B | 2B | 2B |
| P | • | • | • | • | P | • | • | • | • | • | • | • | • |
| M | • | • | • | • | M | • | • | • | • | • | • | • | • |
| K | | | | | K | | • | • | | • | • | • | |
| N | • | • | • | • | N | • | | | • | | | | |
| S | | | • | | S | • | | | • | | | | |
| H | | | | | H | • | | | • | | | • | • |

# SELECTION CHART



UNC UN

UNC

| Product series | | | M-SFT-DUPLEX | VP-DC-MT | | VPO-DC-MT FORM E | | Product series | | | | S-XPF | | S-OIL-XPF | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | A-Brand | | | | A | | A | |
| Page | | | A.201 | A.202 | | A.202 | | Page | | | | A.203 | | A.203 | |
| Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | | DIN 2184-1 | | Ø | I | Ø 1. | Ø x. | DIN 2184-1 | | DIN 2184-1 | |
| N°.2 | 56 | 1,85 | • | • | | | | N°.5 | 40 | 2,86 | 2,93 | • | | | |
| N°.3 | 48 | 2 | • | • | | | | N°.6 | 32 | 3,09 | 3,17 | • | | | |
| N°.4 | 40 | 2,35 | • | • | | | | N°.8 | 32 | 3,76 | 3,84 | • | | | |
| N°.5 | 40 | 2,65 | • | • | | | | N°.10 | 24 | 4,26 | 4,35 | • | | | |
| N°.6 | 32 | 2,7 | • | • | | | | 1/4 | 20 | 5,66 | 5,76 | • | | • | |
| N°.8 | 32 | 3,5 | • | • | | | | 5/16 | 18 | 7,18 | 7,29 | • | | • | |
| N°.10 | 24 | 3,8 | • | • | | | | 3/8 | 16 | 8,66 | 8,78 | • | | • | |
| N°.12 | 24 | 4,5 | • | • | | | | 7/16 | 14 | 10,12 | 10,27 | | • | | • |
| 1/4 | 20 | 5,1 | • | • | | • | | 1/2 | 13 | 11,62 | 11,78 | | • | | • |
| 5/16 | 18 | 6,5 | • | • | | • | | 9/16 | 12 | 13,14 | 13,28 | | • | | • |
| 3/8 | 16 | 7,9 | • | • | | • | | 5/8 | 11 | 14,61 | 14,76 | | • | | • |
| 7/16 | 14 | 9,3 | • | | • | | • | 3/4 | 10 | 17,65 | 17,80 | | • | | • |
| 1/2 | 13 | 10,7 | • | | • | | • | 7/8 | 9 | 20,66 | 20,84 | | • | | • |
| 9/16 | 12 | 12,3 | • | | • | | • | 1 | 8 | 23,63 | 23,84 | | • | | • |
| 5/8 | 11 | 13,5 | • | | • | | • | | | | | | | | |
| 3/4 | 10 | 16,5 | • | | • | | • | | | | | | | | |
| 7/8 | 9 | 19,3 | • | | • | | • | | | | | | | | |
| 1 | 8 | 22,25 | • | | • | | • | | | | | | | | |
| 1 1/8 | 7 | 25 | | | | | | | | | | | | | |
| 1 1/8 | 8 | 25 | • | | | | | | | | | | | | |
| 1 1/4 | 7 | 28 | | | | | | | | | | | | | |
| 1 1/4 | 8 | 28 | • | | | | | | | | | | | | |
| 1 3/8 | 6 | 30 | | | | | | | | | | | | | |
| 1 3/8 | 8 | 30 | • | | | | | | | | | | | | |
| 1 1/2 | 6 | 34 | | | | | | | | | | | | | |
| 1 1/2 | 8 | 34 | • | | | | | | | | | | | | |
| 1 5/8 | 8 | 38,1 | • | | | | | | | | | | | | |
| 1 3/4 | 8 | 41,5 | • | | | | | | | | | | | | |
| 1 7/8 | 8 | 44,45 | • | | | | | | | | | | | | |
| 2 | 8 | 48 | • | | | | | | | | | | | | |
| 2 1/2 | 8 | 60,5 | | | | | | | | | | | | | |
| Blind / through | | | | | | | | Blind / through | | | | | | | |
| | | | TIN | V | | V | | | | | | V | | V | |
| | | | PM | PM | | PM | | | | | | HSS-Co | | HSS-Co | |
| | | | FORM C | FORM C | | FORM E | | | | | | FORM C | | FORM C | |
| Tolerance | | | 2BX | 2BX | | 2BX | | Tolerance | | | | 2BX | | 2BX | |
| P | | | • | • | | • | | P | | | | • | | • | |
| M | | | • | | | | | M | | | | • | | • | |
| K | | | | • | | • | | K | | | | | | | |
| N | | | | • | | • | | N | | | | • | | • | |
| S | | | • | | | | | S | | | | | | | |
| H | | | | • | | • | | H | | | | • | | • | |

# SELECTION CHART

**Threading | Selection chart | By size**

**UNF**

**UNF**

| Product series | | | A-POT | | S-POT | | VA-POT | | A-SFT | | S-SFT | | VA-SFT | | M-SFT-DUPLEX | | VP-DC-MT | | VPO-DC-MT FORM E | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | | | | | | A | | | | | | | | | | | |
| Page | | | A.204 | | A.204 | | A.205 | | A.205 | | A.206 | | A.206 | | A.207 | | A.207 | | A.208 | |
| Ø | I | Ø | DIN 2184-1 | | | | DIN 2184-1 | | DIN 2184-1 | | | | | | DIN 2184-1 | | | | DIN 2184-1 | |
| N°.2 | 64 | 1,85 | • | | • | | | | • | | • | | | | • | | • | | | |
| N°.3 | 56 | 2,15 | • | | • | | | | • | | • | | | | • | | • | | | |
| N°.4 | 48 | 2,4 | • | | • | | | | • | | • | | | | • | | • | | | |
| N°.5 | 44 | 2,7 | • | | • | | | | • | | • | | | | • | | • | | | |
| N°.6 | 40 | 2,95 | • | | • | | • | | • | | • | | • | | • | | • | | | |
| N°.8 | 36 | 3,5 | • | | • | | | | • | | • | | | | • | | • | | | |
| N°.10 | 32 | 4,1 | • | | • | | • | | • | | • | | • | | • | | • | | | |
| N°.12 | 28 | 4,6 | • | | • | | | | • | | • | | | | • | | • | | | |
| 1/4 | 28 | 5,5 | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| 5/16 | 24 | 6,9 | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| 3/8 | 24 | 8,5 | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| 7/16 | 20 | 9,9 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 1/2 | 20 | 11,5 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 9/16 | 18 | 12,9 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 5/8 | 18 | 14,5 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 3/4 | 16 | 17,5 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 7/8 | 14 | 20,4 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| 1 | 12 | 23,25 | | • | | • | | • | | • | | • | | • | | • | | • | | • |
| Blind / through | | | | | | | | | | | | | | | | | | | | |
| | | | V | | OX | | OX | | V | | OX | | OX | | TiN | | V | | V | |
| | | | PM | | HSSE | | HSSE | | PM | | HSSE | | HSSE | | PM | | PM | | PM | |
| | | | FORM B | | FORM B | | FORM B | | FORM C | | FORM C | | FORM C | | FORM C | | FORM C | | FORM E | |
| Tolerance | | | 2BX | | 2B | | 2B | | 2BX | | 2B | | 2B | | 2BX | | 2BX | | 2BX | |
| P | | | • | | • | | • | | • | | • | | • | | • | | • | | • | |
| M | | | • | | • | | • | | • | | • | | • | | • | | | | | |
| K | | | | | • | | • | | | | • | | • | | | | • | | • | |
| N | | | • | | | | | | • | | | | | | | | • | | • | |
| S | | | • | | | | | | • | | | | | | • | | | | | |
| H | | | • | | | | | | • | | | | | | | | • | | • | |

| Product series | | | | | S-XPF | S-OIL-XPF |
|---|---|---|---|---|---|---|
| A-Brand | | | | | A | A |
| Page | | | | | A.208 | A.209 |
| Ø | I | Ø min. | Ø max. | | | |
| N°.6 | 40 | 3,19 | 3,26 | | • | |
| N°.10 | 32 | 4,41 | 4,47 | | • | |
| 1/4 | 28 | 5,87 | 5,94 | | • | • |
| 5/16 | 24 | 7,39 | 7,47 | | • | • |
| 3/8 | 24 | 8,98 | 9,06 | | • | • |
| 7/16 | 20 | 10,45 | 10,55 | | • | • |
| 1/2 | 20 | 12,04 | 12,14 | | • | • |
| 9/16 | 18 | 13,56 | 13,64 | | • | • |
| 5/8 | 18 | 15,15 | 15,23 | | • | • |
| 3/4 | 16 | 18,22 | 18,30 | | • | • |
| 7/8 | 14 | 21,27 | 21,38 | | • | • |
| 1 | 12 | 24,26 | 24,37 | | • | • |
| Blind / through | | | | | | |
| | | | | | V | V |
| | | | | | HSS-Co | HSS-Co |
| | | | | | FORM C | FORM C |
| Tolerance | | | | | 2BX | 2BX |
| P | | | | | • | • |
| M | | | | | • | • |
| K | | | | | | |
| N | | | | | • | • |
| S | | | | | | |
| H | | | | | • | • |

# SELECTION CHART

**Threading | Selection chart | By size**

**MJ**

**UNJC**

| Product series | | | CC-NEO-SFT | | V-TI-SFT | |
|---|---|---|---|---|---|---|
| A-Brand | | | | | | |
| Page | | | A.209 | | A.210 | |
| Ø | I | Ø | DIN 371 | DIN 376 | DIN 371 | DIN 376 |
| 2 | 0,4 | 1,610 - 1,722 | • | | • | |
| 3 | 0,5 | 2,513 - 2,653 | • | | • | |
| 4 | 0,7 | 3,318 - 3,498 | • | | • | |
| 5 | 0,8 | 4,221 - 4,421 | • | | • | |
| 6 | 1 | 5,026 - 5,216 | • | | • | |
| 8 | 1,25 | 6,782 - 6,994 | • | | • | |
| 10 | 1,5 | 8,539 - 8,775 | • | | • | |
| 12 | 1,75 | 10.295 - 10,560 | | • | | • |
| Blind / through | | | | | | |
| | | | TiN | | V | |
| | | | HSSE | | PM | |
| | | | FORM C | | FORM C | |
| Tolerance | | | 4H | | 4H | |
| P | | | • | | | |
| M | | | • | | | |
| K | | | | | | |
| N | | | • | | | |
| S | | | | | • | |
| H | | | | | | |

| Product series | | | VA-POT | V-TI-POT | E-POT | WHR-NI-POT | H-POT | VA-SFT | CC-SFT | M-SFT-DUPLEX | V-TI-SFT | E-SFT | WHR-NI-SFT | H-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | | | | |
| Page | | | A.210 | A.211 | A.211 | A.212 | A.212 | A.213 | A.213 | A.214 | A.214 | A.215 | A.215 | A.216 |
| Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 |
| N°.4 | 40 | 2,35 | • | • | • | • | • | • | • | • | • | • | • | • |
| N°.6 | 32 | 2,7 | • | • | • | • | • | • | • | • | • | • | • | • |
| N°.8 | 32 | 3,5 | • | • | • | • | • | • | • | • | • | • | • | • |
| N°.10 | 24 | 3,8 | | | • | • | | | • | • | | • | • | |
| N°.12 | 24 | | | | | | | | | • | | | | |
| 1/4 | 20 | 5,1 | | | • | • | | | • | • | | • | • | |
| 5/16 | 18 | 6,5 | | | • | • | | | • | • | | • | • | |
| 3/8 | 16 | 7,9 | | | • | • | | | • | • | | • | • | |
| 7/16 | 14 | 9,3 | | | • | • | | | • | | • | • | • | |
| 1/2 | 13 | 10,7 | | | • | • | | | • | | • | • | • | |
| 9/16 | 12 | 12,3 | | | | | | | • | | • | | | |
| 5/8 | 11 | 13,5 | | | • | • | | | • | | • | • | • | |
| 3/4 | 10 | 16,5 | | | • | • | | | • | | • | • | • | |
| 7/8 | 9 | 19,3 | | | • | • | | | • | | • | • | • | |
| 1 | 8 | 22,25 | | | • | • | | | • | | • | • | • | |
| Blind / through | | | | | | | | | | | | | | |
| | | | OX | V | - | HR | OX | OX | CrN | TiN | V | - | HR | OX |
| | | | HSSE | PM | PM | PM | PM | HSSE | HSSE | PM | PM | PM | PM | PM |
| | | | FORM B | FORM B | FORM B | FORM B | FORM B | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | 3B | 3B | 3B | 3B | 3B | 3B | 3B | 3BX | 3B | 3B | 3B | 3B |
| P | | | • | | | | • | • | • | • | | | | • |
| M | | | • | | | | | • | • | • | | | | |
| K | | | • | | | | • | • | | | | | | • |
| N | | | | | | | | | • | | | | | |
| S | | | | • | • | • | • | | | • | • | • | • | • |
| H | | | | | | | • | | | | | | | • |

# SELECTION CHART

Threading | Selection chart | By size

## UNJF

| Product series | | | VA-POT | V-TI-POT | E-POT | WHR-NI-POT | H-POT | VA-SFT | M-SFT-DUPLEX | CC-SFT | V-TI-SFT | E-SFT | WHR-NI-SFT | H-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | | | | |
| Page | | | A.216 | A.217 | A.217 | A.218 | A.218 | A.219 | A.219 | A.220 | A.220 | A.221 | A.221 | A.222 |
| Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 |
| N°4 | 48 | | | | | | | | • | | | | | |
| N°6 | 40 | | | | | | | | • | | | | | |
| N°8 | 36 | | | | | | | | • | | | | | |
| N°.10 | 32 | 4,1 | • | • | • | • | • | • | • | • | • | • | • | • |
| N°.12 | 28 | | | | | | | | • | | | | | |
| 1/4 | 28 | 5,5 | • | • | • | • | • | • | • | • | • | • | • | • |
| 5/16 | 24 | 6,9 | • | • | • | • | • | • | • | • | • | • | • | • |
| 3/8 | 24 | 8,5 | • | • | • | • | • | • | • | • | • | • | • | • |
| 7/16 | 20 | 9,9 | • | • | • | • | • | • | • | • | • | • | • | • |
| 1/2 | 20 | 11,5 | • | • | • | • | • | • | • | • | • | • | • | • |
| 9/16 | 18 | 12,9 | | | • | • | | | • | • | | • | • | |
| 5/8 | 18 | 14,5 | | | • | • | | | • | • | | • | • | |
| 3/4 | 16 | 17,5 | | | • | • | | | • | • | | • | • | |
| 7/8 | 14 | 20,4 | | | • | • | | | • | • | | • | • | |
| 1 | 12 | 23,25 | | | | | | | • | • | | | | |
| Blind / through | | | | | | | | | | | | | | |
| | | | OX | V | - | HR | OX | OX | TiN | CrN | V | - | HR | OX |
| | | | HSSE | PM | PM | PM | PM | HSSE | PM | HSSE | PM | PM | PM | PM |
| | | | FORM B | FORM B | FORM B | FORM B | FORM B | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | 3B | 3B | 3B | 3B | 3B | 3B | 3BX | 3B | 3B | 3B | 3B | 3B |
| P | | | • | | | | • | • | • | • | | | | • |
| M | | | • | | | | | • | • | • | | | | |
| K | | | • | | | | • | • | | | | | | • |
| N | | | | | | | | | | • | | | | |
| S | | | | • | • | • | • | | • | | • | • | • | • |
| H | | | | | | | • | | | | | | | • |

# SELECTION CHART

Threading | Selection chart | By size

**EG M**

**EG MJ**

**EG UNJC**

| Product series | | | CC-HL-SFT | | Product series | | | E-HL-POT | H-HL-POT | E-HL-SFT | H-HL-SFT | Product series | | | E-HL-POT | H-HL-POT | E-HL-SFT | H-HL-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | A-Brand | | | | | | | A-Brand | | | | | | |
| Page | | | A.222 | | Page | | | A.223 | A.223 | A.224 | A.224 | Page | | | A.225 | A.225 | A.226 | A.226 |
| Ø | I | Ø | DIN 371 | DIN 376 | Ø | I | Ø | DIN 371 | DIN 371 | DIN 371 | DIN 371 | Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 |
| 3 | 0,5 | 3,2 | • | | 2 | 0,4 | 2,1 | • | • | • | • | 4 | 40 | 3 | • | • | • | • |
| 4 | 0,7 | 4,2 | • | | 2,5 | 0,45 | 2,6 | • | • | • | • | 6 | 32 | 3,7 | • | • | • | • |
| 5 | 0,8 | 5,2 | • | | 3 | 0,5 | 3,2 | • | • | • | • | 8 | 32 | 4,4 | • | • | • | • |
| 6 | 1 | 6,3 | • | | 4 | 0,7 | 4,2 | • | • | • | • | | | | | | | |
| 8 | 1,25 | 8,4 | • | | 5 | 0,8 | 5,2 | • | • | • | • | | | | | | | |
| 10 | 1,5 | 10,4 | • | | 6 | 1 | 6,3 | • | • | • | • | | | | | | | |
| 12 | 1,75 | 12,5 | | • | 8 | 1,25 | 8,4 | • | • | • | • | | | | | | | |
| 16 | 2 | 16,6 | | • | 10 | 1,5 | 10,4 | • | • | • | • | | | | | | | |
| 20 | 2,5 | 20,7 | | • | | | | | | | | | | | | | | |
| Blind / through | | | | | Blind / through | | | | | | | Blind / through | | | | | | |
| | | | CrN | | | | | - | OX | - | OX | | | | - | OX | - | OX |
| | | | HSSE | | | | | PM | PM | PM | PM | | | | PM | PM | PM | PM |
| | | | FORM C | | | | | FORM B | FORM B | FORM C | FORM C | | | | FORM B | FORM B | FORM C | FORM C |
| Tolerance | | | 6H | | Tolerance | | | 4H | 4H | 4H | 4H | Tolerance | | | 3B | 3B | 3B | 3B |
| P | | | • | | P | | | | • | | • | P | | | | • | | • |
| M | | | • | | M | | | | | | | M | | | | | | |
| K | | | | | K | | | | • | | • | K | | | | • | | • |
| N | | | • | | N | | | | | | | N | | | | | | |
| S | | | | | S | | | • | • | • | • | S | | | • | • | • | • |
| H | | | | | H | | | | • | | • | H | | | | • | | • |

# SELECTION CHART

Threading | Selection chart | By size

**EG UNJF**

**BSW**

| Product series | | | E-HL-POT | H-HL-POT | CC-HL-SFT | E-HL-SFT | H-HL-SFT | Product series | | | A-POT | S-POT | A-SFT | S-SFT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | A-Brand | | | A | | A | |
| Page | | | A.227 | A.227 | A.228 | A.228 | A.229 | Page | | | A.229 | A.230 | A.230 | A.231 |
| Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | Ø | I | Ø | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 | DIN 2184-1 |
| 10 | 32 | 5,1 | • | • | • | • | • | 1/8 | 40 | 2,5 | • | • | • | • |
| 1/4 | 28 | 6,6 | • | • | • | • | • | 3/16 | 24 | 3,6 | • | • | • | • |
| 5/16 | 24 | 8,3 | • | • | • | • | • | 1/4 | 20 | 5 | • | • | • | • |
| 3/8 | 24 | 9,8 | • | • | • | • | • | 5/16 | 18 | 6,5 | • | • | • | • |
| 7/16 | 20 | 11,5 | • | • | | • | • | 3/8 | 16 | 7,9 | • | • | • | • |
| 1/2 | 20 | 13,1 | • | • | | • | • | 7/16 | 14 | 9,2 | • | • | • | • |
| | | | | | | | | 1/2 | 12 | 10,5 | • | • | • | • |
| | | | | | | | | 5/8 | 11 | 13,4 | • | • | • | • |
| | | | | | | | | 3/4 | 10 | 16,4 | • | • | • | • |
| | | | | | | | | 7/8 | 9 | 19,25 | • | • | • | • |
| | | | | | | | | 1 | 8 | 22 | • | • | • | • |
| Blind / through | | | | | | | | Blind / through | | | | | | |
| | | | - | OX | CrN | - | OX | | | | V | OX | V | OX |
| | | | PM | PM | HSSE | PM | PM | | | | PM | HSSE | PM | HSSE |
| | | | FORM B | FORM B | FORM C | FORM C | FORM C | | | | FORM B | FORM B | FORM C | FORM C |
| Tolerance | | | 3B | 3B | 3B | 3B | 3B | Tolerance | | | MED | MED | MED | MED |
| P | | | | • | • | | • | P | | | • | • | • | • |
| M | | | | | • | | | M | | | • | • | • | • |
| K | | | | • | | | | K | | | | • | | • |
| N | | | | | • | | | N | | | • | | • | |
| S | | | • | • | | • | • | S | | | • | | • | |
| H | | | | • | | | • | H | | | • | | • | |

# SELECTION CHART



**BSF**

**BA (BS93)**

| Product series | A-POT | S-POT | A-SFT | S-SFT | Product series | A-POT | S-POT | A-SFT | S-SFT |
|---|---|---|---|---|---|---|---|---|---|
| A-Brand | A | | A | | A-Brand | A | | A | |
| Page | A.231 | A.232 | A.232 | A.233 | Page | A.233 | A.234 | A.234 | A.235 |

| Ø | I | Ø | DIN 2184-1 | | DIN 2184-1 | | Ø | I | Ø | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 26 | 5,3 | • | • | • | • | 0 | 1 | 5 | • | • | • | • |
| 5/16 | 22 | 6,8 | • | • | • | • | 1 | 0,9 | 4,4 | • | • | • | • |
| 3/8 | 20 | 8,3 | • | • | • | • | 2 | 0,81 | 3,9 | • | • | • | • |
| 7/16 | 18 | 9,7 | • | • | • | • | 3 | 0,73 | 3,4 | • | • | • | • |
| 1/2 | 16 | 11 | • | • | • | • | 4 | 0,66 | 3 | • | • | • | • |
| 5/8 | 14 | 14 | • | • | • | • | 5 | 0,59 | 2,6 | • | • | • | • |
| 3/4 | 12 | 16,8 | • | • | • | • | 6 | 0,53 | 2,3 | • | • | • | • |
| 1 | 10 | 22,7 | • | • | • | • | 7 | 0,48 | 2 | • | • | • | • |
| | | | | | | | 8 | 0,43 | 1,8 | • | • | • | • |
| | | | | | | | 9 | 0,39 | 1,5 | • | • | • | • |
| | | | | | | | 10 | 0,35 | 1,3 | • | • | • | • |
| | | | | | | | 11 | 0,31 | 1,2 | • | • | • | • |
| | | | | | | | 12 | 0,28 | 1 | • | • | • | • |

| Blind / through | | | | | Blind / through | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | V | OX | V | OX | | V | OX | V | OX |
| | PM | HSSE | PM | HSSE | | PM | HSSE | PM | HSSE |
| | FORM B | FORM B | FORM C | FORM C | | FORM B | FORM B | FORM C | FORM C |
| Tolerance | MED | MED | MED | MED | Tolerance | - | - | - | - |
| P | • | • | • | • | P | • | • | • | • |
| M | • | • | • | • | M | • | • | • | • |
| K | | • | | • | K | | • | | • |
| N | • | | | | N | • | | • | |
| S | • | | • | | S | • | | • | |
| H | • | | • | | H | • | | • | |

# SELECTION CHART

**Threading | Selection chart | By size**

**G**

NEW

| Product series | | | A-POT | S-POT | POT | A-SFT | A-SFT-INOX | S-SFT | VA-SFT | SFT | SH-SFT | M-SFT DUPLEX | CC-SFT | VP-DC-MT | GG-MT | VX-OT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | | | A | A | | | | | | | | | |
| Page | | | A.235 | A.236 | A.236 | A.237 | A.237 | A.238 | A.238 | A.239 | A.239 | A.240 | A.240 | A.241 | A.241 | A.242 |
| Ø | I | Ø | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 | DIN 5156 |
| 1/16 | 28 | 6,8 | | | | • | • | | | | | | | • | | |
| 1/8 | 28 | 8,7 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 1/4 | 19 | 11,8 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 3/8 | 19 | 15,25 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 1/2 | 14 | 19 | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| 5/8 | 14 | 21 | • | • | • | • | • | • | • | • | | • | | • | | |
| 3/4 | 14 | 24,5 | • | • | • | • | • | • | • | • | | • | | • | | |
| 7/8 | 14 | 28,25 | • | • | • | • | • | • | • | • | | • | | • | | |
| 1 | 11 | 30,75 | • | • | • | • | • | • | • | • | | • | | • | | |
| 1 1/8 | 11 | 35,5 | | | | | | | | | | | | • | | |
| 1 1/4 | 11 | 39,5 | | | | | | | | | | | | • | | |
| 1 1/2 | 11 | 45,25 | | | | | | | | | | | | • | | |
| 1 3/4 | 11 | 51 | | | | | | | | | | | | • | | |
| 2 | 11 | 57 | | | | | | | | | | | | • | | |
| Blind / through | | | | | | | | | | | | | | | | |
| | | | V | OX | - | V | VI | OX | OX | - | - | TIN | CrN | V | NI-OX | V |
| | | | PM | HSSE | HSSE | PM | PM | HSSE | HSSE | HSSE | HSSE | PM | HSSE | PM | HSSE | CARBIDE |
| | | | FORM B | FORM B | FORM B | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| P | | | • | • | • | • | • | • | • | • | • | | • | • | | |
| M | | | • | • | | • | • | • | • | | | • | • | | | |
| K | | | | • | • | | | • | • | • | • | | | • | • | |
| N | | | • | | • | • | • | | | • | • | | • | • | | |
| S | | | • | | | • | | | | | | • | | | | |
| H | | | • | | | • | | | | | | | | • | | • |

# SELECTION CHART

**Threading | Selection chart | By size**

**G**

NEW NEW NEW NEW NEW

**Rc (PT)**

| Product series | | | | A-XPF | A-OIL-XPF | A-XPF FORM E | A-OIL-XPF FORM E | S-XPF | S-OIL-XPF | S-XPF-GL | VA-XPF | M-NRT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | A | A | A | A | A | A | A | | |
| Page | | | | A.242 | A.243 | A.243 | A.244 | A.244 | A.245 | A.245 | A.246 | A.246 |
| Ø | I | Ø min. | Ø max. | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 | DIN 2189 |
| 1/8 | 28 | 9,24 | 9,35 | • | • | • | • | • | | • | • | • |
| 1/4 | 19 | 12,41 | 12,62 | • | • | • | • | • | • | • | • | • |
| 3/8 | 19 | 15,92 | 16,12 | • | • | • | • | • | • | • | • | • |
| 1/2 | 14 | 19,93 | 20,15 | • | • | • | • | • | • | • | • | • |
| 5/8 | 14 | 21,89 | 22,11 | | | | | • | • | • | • | • |
| 3/4 | 14 | 25,42 | 25,64 | | | | | • | • | • | • | • |
| 7/8 | 14 | 29,18 | 29,40 | | | | | • | • | • | • | |
| 1 | 11 | 31,92 | 32,20 | | | | | • | • | • | • | |
| Blind / through | | | | | | | | | | | | |
| | | | | VI | VI | VI | VI | V | V | V | PM | TIN |
| | | | | PM | PM | PM | PM | HSS-Co | HSS-Co | HSS-Co | AlCrN | PM |
| | | | | FORM C | FORM C | FORM E | FORM E | FORM C | FORM C | FORM C | FORM C | FORM C |
| Tolerance | | | | - | - | - | - | - | - | - | - | - |
| P | | | | • | • | • | • | • | • | • | • | • |
| M | | | | • | • | • | • | • | • | • | • | • |
| K | | | | | | | | | | | | |
| N | | | | • | • | • | • | • | • | • | • | • |
| S | | | | | | | | | | | • | |
| H | | | | • | • | • | | • | • | • | | |

| Product series | | | A-SFT | A-TPT | S-TPT |
|---|---|---|---|---|---|
| A-Brand | | | A | A | |
| Page | | | A.247 | A.247 | A.248 |
| Ø | I | Ø | DIN 5156 | DIN 5156 | DIN 5156 |
| 1/16 | 28 | 6,15 | • | | |
| 1/8 | 28 | 8,3 | • | • | • |
| 1/4 | 19 | 11 | • | • | • |
| 3/8 | 19 | 14,5 | • | • | • |
| 1/2 | 14 | 18,1 | • | • | • |
| 3/4 | 14 | 23,5 | • | • | • |
| 1 | 11 | 29,6 | • | • | • |
| Blind / through | | | | | |
| | | | V | V | OX |
| | | | PM | PM | HSSE |
| | | | FORM C | FORM C | FORM C |
| Tolerance | | | - | - | - |
| P | | | • | • | • |
| M | | | | | |
| K | | | | | |
| N | | | • | • | |
| S | | | | | |
| H | | | | | |

# SELECTION CHART



## Rp

NEW

## NPSF

## NPT

## Pg

| Product series | | | A-SFT FORM E | Product series | | | A-SFT FORM E | Product series | | | A-SFT NPT | NPT | Product series | | | PG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | A | A-Brand | | | A | A-Brand | | | A | | A-Brand | | | |
| Page | | | A.248 | Page | | | A.249 | Page | | | A.249 | A.250 | Page | | | A.250 |
| Ø | I | Ø | DIN 5156 | Ø | I | Ø | DIN 5156 | Ø | I | Ø | DIN 5156 | DIN 2181 | Ø | I | Ø | DIN 5156 |
| 1/16 | 27 | 6,15 | • | 1/16 | 27 | 6,15 | • | 1/16 | 27 | 6,15 | • | • | 7 | 20 | 11,4 | • |
| 1/8 | 27 | 8,4 | • | 1/8 | 27 | 8,4 | • | 1/8 | 27 | 8,4 | • | • | 9 | 18 | 14 | • |
| 1/4 | 18 | 11,1 | • | 1/4 | 18 | 11,1 | • | 1/4 | 18 | 11,1 | • | • | 11 | 18 | 17,25 | • |
| 3/8 | 18 | 14,3 | • | 3/8 | 18 | 14,3 | • | 3/8 | 18 | 14,3 | • | • | 13,5 | 18 | 19 | • |
| 1/2 | 14 | 17,9 | • | 1/2 | 14 | 17,9 | • | 1/2 | 14 | 17,9 | • | • | 16 | 18 | 21,25 | • |
| 3/4 | 14 | 23,3 | • | 3/4 | 14 | 23,3 | • | 3/4 | 14 | 23,3 | • | • | 21 | 16 | 27 | • |
| 1 | 11,5 | 29 | • | 1 | 11,5 | 29 | • | 1 | 11,5 | 29 | • | • | 29 | 16 | 35,5 | • |
| | | | | | | | | | | | | | 36 | 16 | 45,5 | • |
| | | | | | | | | | | | | | 42 | 16 | 52,5 | • |
| | | | | | | | | | | | | | 48 | 16 | 58 | • |
| Blind / through | | | | Blind / through | | | | Blind / through | | | | | Blind / through | | | |
| | | V | | | | V | | | | V | | - | | | | - |
| | | - | | | | PM | | | | PM | | HSSE | | | | HSSE |
| | | FORM E | | | | FORM C | | | | FORM C | | FORM C | | | | FORM C |
| Tolerance | | - | | Tolerance | | - | | Tolerance | | - | | - | Tolerance | | | - |
| P | | • | | P | | • | | P | | • | | • | P | | | • |
| M | | • | | M | | • | | M | | | | | M | | | |
| K | | | | K | | | | K | | | | • | K | | | • |
| N | | • | | N | | • | | N | | • | | • | N | | | • |
| S | | • | | S | | • | | S | | | | | S | | | |
| H | | • | | H | | • | | H | | | | | H | | | |

## Metric - Through hole
### Cutting taps

| | Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | M1 - M24 | A.97 |
| | A-OIL-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Side through coolant | M6 - M24 | A.97 |
| | A-POT 6GX | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 6G internal thread tolerance | M2 - M16 | A.98 |
| | A-POT 7GX | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 7G internal thread tolerance | M2 - M16 | A.98 |
| | A-POT+0.1 | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Oversized tap for 6H +0,1mm thread tolerance | M3 - M16 | A.99 |
|  | A-LT-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>With long shank for long reach threading | M2 - M20 | A.99 |
| | A-POT-LH | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For left-hand threads | M3 - M24 | A.100 |
| | A-POT-HB Weldon | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>With Weldon shank | M3 - M16 | A.100 |
| | S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | M1 - M24 | A.101 |
| | S-POT 6G | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>For 6G internal thread tolerance | M2 - M16 | A.101 |
| | S-POT 7G | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>For 7G internal thread tolerance | M2 - M16 | A.102 |
| | S-POT+0.1 | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>Oversized tap for 6H +0,1mm thread tolerance | M3 - M16 | A.102 |
| | S-LT-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>With long shank for long reach threading | M2 - M20 | A.103 |
| | S-POT-LH | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>For left-hand threads | M3 -M24 | A.103 |
| | S-POT-HB Weldon | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>With Weldon shank | M3 -M16 | A.104 |
| | VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | M2 - M36 | A.104 |
| | VA-POT 6G | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | M2 - M16 | A.105 |
| | Z-POT | V | | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels and stainless steels | M2 - M30 | A.105 |
| | Z-OIL-POT | V | | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels and stainless steels<br>Side through coolant | M6 - M20 | A.106 |

# INDEX

Threading

## Metric - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| POT | | | HSSE spiral-point cutting tap for through holes<br>For general purpose applications | M2 - M36 | A.106 |
| POT | | | HSSE spiral-point cutting tap for through holes<br>For general purpose applications<br>According to DIN 352 shank reduced length | M3 - M10 | A.107 |
| TIN-POT | TiN | | HSSE spiral-point cutting tap for through holes<br>For steels up to 850 N/mm² | M2 - M30 | A.107 |
| TICN-POT | V | | HSSE spiral-point cutting tap for through holes<br>For steels up to 1000 N/mm² | M2 - M24 | A.108 |
| CC-POT | CrN | | HSSE spiral-point cutting tap for through holes<br>For general steels and stainless steels<br>Developed for rigid tapping on CNC machines | M2 - M30 | A.108 |
| CC-LT-POT | CrN | | HSSE spiral-point cutting tap for through holes<br>For general steels and stainless steels<br>With long shank for long reach threading | M2 - M12 | A.109 |
| HS-RFT-TIN | TiN | | HSSE spiral-flute cutting tap for through holes<br>For high speed tapping in various materials<br>Right-hand cut with left-hand flute for chip evacuation towards front | M3 - M12 | A.109 |
| AL-POT | | | HSSE spiral-point cutting tap for through holes<br>For aluminium and cast aluminium | M2 - M20 | A.110 |
| V-TI-POT | V | | Powder metal spiral-point cutting tap for through holes<br>For Titanium alloys | M3 - M12 | A.110 |
| E-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | M3 - M12 | A.111 |
| WHR-NI-POT | HR | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | M3 - M12 | A.111 |
| CPM-POT | | | Powder metal spiral-point cutting tap for through holes<br>For steels up to 900 N/mm² and cast iron | M3 - M20 | A.112 |
| H-POT | OX | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC | M2 - M20 | A.112 |
| VP-H-POT | V | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC | M2 - M36 | A.113 |
| VPO-H-POT | V | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC<br>Side through coolant | M6 - M36 | A.113 |

## Metric - Blind hole
### Cutting taps

| | Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | M1 - M24 | A.114 |
| | A-OIL-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Center through coolant | M6 - M56 | A.114 |
| | A-SFT 6GX | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 6G internal thread tolerance | M2 - M16 | A.115 |
| | A-SFT 7GX | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 7G internal thread tolerance | M2 - M16 | A.115 |
| | A-SFT +0.1 | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Oversized tap for 6H +0,1mm thread tolerance | M3 - M16 | A.116 |
| | A-SFT FORM E | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Form E chamfer | M2 - M24 | A.116 |
| | A-LT-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>With long shank for long reach threading | M2 - M20 | A.117 |
| | A-SFT-LH | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For left-hand threads | M3 - M24 | A.117 |
| | A-SFT-HB Weldon | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>With Weldon shank | M3 - M16 | A.118 |
| | A-SFT-INOX NEW | VI | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer VI coating | M2 - M24 | A.118 |
| | A-SFT-AL FORM C NEW | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer TiCN coating | M2 - M12 | A.119 |
| | A-SFT-AL FORM E NEW | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer TiCN coating | M2 - M12 | A.119 |
| | A-CSF OIL | FX | A | Carbide spiral-fluted cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant | M5 - M12 | A.120 |
| | A-CSF OIL FORM E | FX | A | Carbide spiral-fluted cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant, Form E chamfer | M5 - M12 | A.120 |
| | S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | M1 - M24 | A.121 |
| | S-SFT 6G | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>For 6G internal thread tolerance | M2 - M16 | A.121 |
| | S-SFT 7G | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>For 7G internal thread tolerance | M2 - M16 | A.122 |
| | S-SFT+0.1 | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>Oversized tap for 6H +0,1mm thread tolerance | M3 - M16 | A.122 |
| | S-SFT FORM E | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>Form E chamfer | M2 - M24 | A.123 |

# INDEX

Threading

## Metric - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| S-LT-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>With long shank for long reach threading | M2 -M20 | A.123 |
| S-SFT-LH | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>For left-hand threads | M3 - M24 | A.124 |
| S-SFT-HB Weldon | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>With Weldon shank | M3 - M16 | A.124 |
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | M2 - M36 | A.125 |
| VA-SFT 6G | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>For 6G internal thread tolerance | M2 - M16 | A.125 |
| VA-SFT FORM E | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>Form E chamfer | M3 - M16 | A.126 |
| Z-SFT | V | | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels and stainless steels | M2 - M30 | A.126 |
| Z-OIL-SFT | V | | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels and stainless steels<br>Center through coolant | M6 - M20 | A.127 |
| SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For general purpose applications | M2 - M36 | A.127 |
| SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For general purpose applications<br>According to DIN 352 shank reduced length | M3 - M10 | A.128 |
| TIN-SFT | TiN | | HSSE spiral-flute cutting tap for blind holes<br>For steels up to 850 N/mm$^2$ | M2 - M30 | A.128 |
| TICN-SFT | V | | HSSE spiral-flute cutting tap for blind holes<br>For steels up to 850 N/mm$^2$ | M2 - M24 | A.129 |
| HXL-SFT | OX | | HSSE low spiral-fluted cutting tap for blind holes<br>For steels and cast iron<br>For horizontal applications in oil and heavy industry | M20 - M56 | A.129 |
| OIL-HXL-SFT | OX | | HSSE low spiral-fluted cutting tap for blind holes<br>For steels and cast iron<br>Center through coolant, for horizontal applications in oil and heavy industry | M20 - M56 | A.130 |
| VXL-SFT | OX | | HSSE high spiral-fluted cutting tap for blind holes<br>For general steels<br>For vertical applications in oil and heavy industry | M20 - M56 | A.130 |
| OIL-VXL-SFT | OX | | HSSE high spiral-fluted cutting tap for blind holes<br>For general steels<br>Center through coolant, for vertical applications in oil and heavy industry | M20 - M56 | A.131 |
| SH-SFT | | | HSSE low spiral-fluted cutting tap for blind holes<br>For alloyed steels ≥ 1100N/mm$^2$<br>Short chip creation | M3 - M20 | A.131 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | M2 - M24 | A.132 |
| M-OIL-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex<br>Center through coolant | M6 - M24 | A.132 |
| M-LT-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex<br>With long shank for deep reach threading, up to 3D | M2 - M20 | A.133 |

## Metric - Blind hole

### Cutting taps

| | Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | CC-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines | M2 - M36 | A.133 |
| | CC-LT-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>With long shank for long reach threading | M2 - M12 | A.134 |
| | CC-NEO-SFT | TiN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Variable helix for better chip evacuation | M2 - M16 | A.134 |
| | SUS-SFT | OX | | HSSE high spiral-fluted cutting tap for blind holes<br>For stainless steels | M2 - M24 | A.135 |
| | HS-SFT-TIN | TiN | | HSSE spiral-flute cutting tap for blind holes<br>For high speed tapping in various materials | M3 - M12 | A.135 |
| | AL-SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For aluminium and cast aluminium | M1,6 - M20 | A.136 |
| | US-AL-SFT | V | | HSSE spiral-flute cutting tap for blind holes<br>For high speed tapping in aluminium and cast aluminium<br>Developed for rigid tapping on CNC machines | M3 - M12 | A.136 |
| | V-TI-SFT | V | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Titanium alloys | M1,6 - M12 | A.137 |
| | E-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | M3 - M12 | A.137 |
| | WHR-NI-SFT | HR | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | M3 - M12 | A.138 |
| | CPM-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For steels up to 900 N/mm² and cast iron | M3 - M20 | A.138 |
| | H-SFT | OX | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC | M2 - M20 | A.139 |
| | VP-H-SFT | V | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC | M2 - M36 | A.139 |
| | VPO-H-SFT | V | | Powder metal spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC<br>Center through coolant | M6 - M36 | A.140 |
| | V-EM-SFT | V | | HSSE spiral-flute cutting tap for blind holes<br>For die cast aluminium<br>Center through coolant, with end cut, for pre-formed cast holes | M4 - M16 | A.140 |

## Metric - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VP-DC-MT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | M2 - M30 | A.141 |
| VP-DC-MT FORM E | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min, chamfer Form E | M3 - M24 | A.141 |
| VPO-DC-MT Center | V | | Powder metal straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min, with Center through coolant | M6 - M20 | A.142 |
| VPO-DC-MT Side | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min, with side through coolant | M6 - M20 | A.142 |
| VPO-DC-MT FORM E | V | | Powder metal straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min, Center coolant through, chamfer Form E | M6 - M24 | A.143 |
| A-CHT OIL Center | FX | A | Carbide straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant | M5 - M12 | A.143 |
| A-CHT OIL Side | FX | A | Carbide straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Side through coolant | M5 - M12 | A.144 |
| A-CHT OIL FORM E | FX | A | Carbide straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant<br>Form E chamfer | M5 - M12 | A.144 |
| GG-MT | NI-OX | | HSSE straight flute cutting tap for blind and through holes<br>For cast iron | M4 - M20 | A.145 |
| OIL-TXL-MT | OX | | HSSE straight flute cutting tap for blind and through holes<br>For cast iron and general steels<br>For vertical and horizontal applications, side through coolant<br>Up to M56 | M20 - M56 | A.145 |
| EX-MCT | OX | | HSSE low left-hand helix for blind and through holes<br>For cast iron, cast aluminium and general steels<br>Long shank for long reach tapping | M6 - M20 | A.146 |
| V-XPM-HT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For hardened steels up to 52 HRC<br>Highly wear resistant XPM tool substrate | M3 - M12 | A.146 |
| V-XPM-HT FORM D | V | | Powder metal straight flute cutting tap for through and blind holes<br>For hardened steels up to 52 HRC, Chamfer Form D<br>Highly wear resistant XPM tool substrate | M3 - M12 | A.147 |
| WH55-OT | V | | Carbide straight flute cutting tap for blind and through holes<br>For hardened steels up to 55 HRC | M3 - M12 | A.147 |
| WH55-OT FORM D | V | | Carbide straight flute cutting tap for through holes<br>For hardened steels up to 55 HRC<br>Chamfer Form D | M3 - M12 | A.148 |
| VX-OT | V | | Carbide straight flute cutting tap for blind and through holes<br>For hardened steels up to 62 HRC | M3 - M12 | A.148 |

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## Metric - Forming

### Forming taps

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| | A-XPF | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Powder metal for long tool life | M1 - M30 | A.149 |
| | A-OIL-XPF NEW SIZE | V | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Side through coolant | M4 - M45 | A.149 |
| | A-XPF 6GX NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels | M2 - M16 | A.150 |
| | A-XPF 7GX NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels | M3 - M12 | A.150 |
| | A-XPF FORM E NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels | M2 - M16 | A.151 |
| | A-OIL-XPF FORM E NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Center through coolant | M4 - M16 | A.151 |
| | S-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | M1 - M30 | A.152 |
| | S-OIL-XPF NEW SIZE | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | M4 - M45 | A.152 |
| | S-XPF 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For 6G internal thread tolerance | M2 - M16 | A.153 |
| | S-OIL-XPF 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For 6G internal thread tolerance, side through coolant | M5 - M16 | A.153 |
| | S-XPF 7GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For 7G internal thread tolerance | M2 - M16 | A.154 |
| | S-XPF+0.1 | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Oversized tap for 6H +0,1mm thread tolerance | M3 - M16 | A.154 |
| | S-XPF FORM D | V | A | HSSE forming tap for through holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form D | M3 - M16 | A.155 |
| | S-XPF FORM E | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form E | M2 - M16 | A.155 |
| | S-OIL-XPF FORM E NEW SIZE | V | A | HSSE forming tap for blind holes<br>For general steels, stainless steels, aluminium<br>Center through coolant, chamfer Form E | M4 - M16 | A.156 |
| | S-LT-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>With long shank for long reach threading | M2 - M12 | A.156 |
| | S-OIL-LT-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>With long shank for long reach threading, side through coolant | M6 - M12 | A.157 |
| | S-XPF-LH | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For left-hand threads | M3 - M24 | A.157 |
| | S-XPF-HB Weldon | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>With Weldon shank | M3 - M16 | A.158 |
| | S-XPF-GL | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Without oil grooves for higher rigidity | M3 - M12 | A.158 |

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### Forming taps

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| S-XPF-GL 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Without oil grooves for higher rigidity, For 6G internal thread tolerance | M3 - M12 | A.159 |
| GRT<br>NEW | V | | Powder metal forming tap for through and blind holesMutilayer TiCN coating<br>For general steels, stainless steels, aluminium | M2 - M6 | A.159 |
| GRT FORM F<br>NEW | V | | Powder metal forming tap for through and blind holesMutilayer TiCN coating<br>For general steels, stainless steels, aluminium<br>Chamfer Form F | M1 - M6 | A.160 |
| P-OIL-CXPF | EgiAs | | Carbide forming tap for blind holes<br>EgiAs coating<br>Center through coolant | M5 - M16 | A.160 |
| C-OIL-XPF | V | A | Carbide forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>With side through coolant | M5 - M16 | A.161 |
| V-NRT | V | | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | M1 - M12 | A.161 |
| V-NRT 6GX | V | | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For 6G internal thread tolerance | M2 - M10 | A.162 |
| V-NRT FORM D | V | | HSSE forming tap for through holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form D | M2 - M12 | A.162 |
| V-NRT 6GX FORM D | V | | HSSE forming tap for through holes<br>For general steels, stainless steels, aluminium<br>For 6G internal thread tolerance, chamfer Form D | M2 - M10 | A.163 |
| VA-XPF<br>NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium | M1 - M24 | A.163 |
| VA-OIL-XPF<br>NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium<br>Side through coolant | M5 - M24 | A.164 |
| VA-XPF 6GX<br>NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium | M2 - M16 | A.164 |
| VA-XPF FORM E<br>NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium | M2 - M16 | A.165 |
| VA-OIL-XPF<br>FORM E<br>NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium<br>Center through coolant | M5 - M16 | A.165 |
| M-NRT | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium | M1 - M24 | A.166 |
| M-OIL-NRT | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium<br>Side through coolant | M5 - M24 | A.166 |
| M-NRT 6GX | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium<br>For 6G internal thread tolerance | M2 - M16 | A.167 |
| M-NRT FORM E | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium<br>Chamfer Form E | M2 - M16 | A.167 |
| M-OIL-NRT FORM E | TiN | | Powder metal forming tap for blind holes<br>For stainless steel and aluminium<br>Center through coolant, Chamfer Form E | M5 - M16 | A.168 |

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Threading

## Metric Fine - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | MF2,5 - MF24 | A.168 |
| A-OIL-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Side through coolant | MF8 - MF20 | A.169 |
| A-POT 6GX | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 6G internal thread tolerance | MF6 - MF24 | A.169 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | MF3 - MF24 | A.170 |
| S-POT 6G | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels<br>For 6G internal thread tolerance | MF6 - MF24 | A.170 |
| VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | MF3 - MF24 | A.171 |
| Z-POT | V | | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in steels and stainless steels | MF3 - MF24 | A.171 |
| POT | - | | HSSE spiral-point cutting tap for through holes<br>For general purpose applications | MF4 - MF30 | A.172 |
| CC-POT | CrN | | HSSE spiral-point cutting tap for through holes<br>For general steels and stainless steels<br>Developed for rigid tapping on CNC machines | MF6 - MF24 | A.172 |
| H-POT | OX | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC | MF3 - MF24 | A.173 |

## Metric Fine - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | MF2,5 - MF24 | A.173 |
| A-OIL-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Center through coolant | MF8 - MF20 | A.174 |
| A-SFT 6GX | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>For 6G internal thread tolerance | MF6 - MF24 | A.174 |
| A-SFT FORM E | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Form E chamfer | MF2,5 - MF24 | A.175 |
| A-SFT-INOX NEW | VI | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer VI coating | MF2,5 - MF24 | A.175 |
| A-SFT-AL FORM C NEW | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer TiCN coating | MF8 - MF12 | A.176 |
| A-SFT-AL FORM E NEW | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer TiCN coating | MF8 - MF12 | A.176 |

## Metric Fine - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-CSF OIL | FX | A | Carbide spiral-fluted cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant | MF8 - MF20 | A.177 |
| A-CSF OIL FORM E | FX | A | Carbide spiral-fluted cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant<br>Form E chamfer | MF8 - MF16 | A.177 |
| S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | MF3 - MF24 | A.178 |
| S-SFT 6G | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels<br>For 6G internal thread tolerance | MF6 - MF24 | A.178 |
| S-SFT FORM E | OX | | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Form E chamfer | MF3 - MF24 | A.179 |
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | MF3 - MF24 | A.179 |
| Z-SFT | V | | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels and stainless steels | MF3 - MF24 | A.180 |
| SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For general purpose applications | MF4 - MF30 | A.180 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | M6 - M24 | A.181 |
| M-OIL-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex<br>Center through coolant | M8 - M20 | A.181 |
| CC-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines | MF6 - MF24 | A.182 |
| SUS-SFT | OX | | HSSE high spiral-fluted cutting tap for blind holes<br>For stainless steels | MF8 - MF24 | A.182 |
| AL-SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For aluminium and cast aluminium | MF8 - MF12 | A.183 |
| H-SFT | OX | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC | MF3 - MF24 | A.183 |

## Metric Fine - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VP-DC-MT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | MF3 - MF24 | A.184 |
| VPO-DC-MT Center | V | | Powder metal straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min<br>Center through coolant | MF8 - MF20 | A.184 |
| VPO-DC-MT Side | V | | Powder metal straight flute cutting tap for through holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min<br>Side through coolant | MF8 - MF20 | A.185 |
| A-CHT OIL Center | FX | A | Carbide straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant | MF8 - MF20 | A.185 |
| A-CHT OIL Side | FX | A | Carbide straight flute cutting tap for through holes<br>For cast iron and aluminium cast<br>Side through coolant | MF8 -MF20 | A.186 |
| A-CHT OIL FORM E | FX | A | Carbide straight flute cutting tap for blind holes<br>For cast iron and aluminium cast<br>Center through coolant<br>Form E chamfer | MF10 - MF16 | A.186 |
| GG-MT | NI-0X | | HSSE straight flute cutting tap for blind and through holes<br>For cast iron | MF3 - MF24 | A.187 |

## Metric Fine - Forming

### Forming taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-XPF | V | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Powder metal for long tool life | MF4 - MF24 | A.187 |
| A-OIL-XPF NEW SIZES | V | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels<br>Side through coolant | MF8 - MF24 | A.188 |
| A-XPF 6 GX NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels | MF8 - MF20 | A.188 |
| A-XPF FORM E NEW | VI | A | Powder metal forming tap for through and blind holes<br>High speed tapping in general steels, aluminium, stainless steels | MF10 - MF16 | A.189 |
| S-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | MF4 - MF24 | A.189 |
| S-OIL-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | MF8 - MF24 | A.190 |
| S-XPF 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>For 6G internal thread tolerance | MF8 - MF24 | A.190 |
| S-OIL-XPF 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant<br>For 6G internal thread tolerance | MF8 - MF24 | A.191 |
| S-XPF FORM D | V | A | HSSE forming tap for through holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form D | MF8 - MF20 | A.191 |

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## Metric Fine - Forming

### Forming taps

| Product series | | A-Brand | Features | Range | Page |
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| S-XPF FORM E | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form E | MF10 - MF16 | A.192 |
| S-OIL-XPF FORM E | V | A | HSSE forming tap for blind holes<br>For general steels, stainless steels, aluminium<br>Center through coolant<br>Chamfer Form E | MF8 - MF24 | A.192 |
| S-OIL-LT-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>With long shank for long reach threading, side through coolant | MF8 - MF14 | A.193 |
| S-XPF-GL | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Without oil grooves for higher rigidity | MF8 - MF24 | A.193 |
| S-XPF-GL 6GX | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Without oil grooves for higher rigidity,<br>For 6G internal thread tolerance | MF8 - MF24 | A.194 |
| P-OIL-CXPF | EgiAs | | Carbide forming tap for blind holes<br>EgiAs coating<br>Center through coolant | MF8 - MF16 | A.194 |
| C-OIL-XPF | V | A | Carbide forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | MF8 - MF16 | A.195 |
| V-NRT | V | | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | MF8 - MF12 | A.195 |
| V-NRT FORM D | V | | HSSE forming tap for through holes<br>For general steels, stainless steels, aluminium<br>Chamfer Form D | MF8 - MF12 | A.196 |
| VA-XPF NEW | AlCrN | | Powder metal forming tap for through and blind holes<br>AlCrN coating<br>For general steels, stainless steels, aluminium | MF4 - MF24 | A.196 |
| M-NRT | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium | MF4 - MF24 | A.197 |

## UNC - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | N.2 - 1" | A.197 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.2 - 1" | A.198 |
| VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.4 - 1" | A.198 |

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## UNC - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | N.2 - 1" | A.199 |
| S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.2 - 1 1/2 | A.199 |
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.4 - 1" | A.200 |
| HXL-SFT | OX | | HSSE low spiral-fluted cutting tap for blind holes<br>For steels and cast iron<br>For horizontal applications in oil and heavy industry | 3/4 - 2 1/2 | A.200 |
| VXL-SFT | OX | | HSSE high spiral-fluted cutting tap for blind holes<br>For general steels<br>For vertical applications in oil and heavy industry | 3/4 - 2 1/2 | A.201 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | N.2 - 2" | A.201 |
| VPO-DC-MT FORM E | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | 1/4 - 1" | A.202 |

## UNC - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VP-DC-MT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | N.2 - 1" | A.202 |

## UNC - Forming

### Forming taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| S-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | N.5 - 1" | A.203 |
| S-OIL-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | 1/4 - 1" | A.203 |

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## UNF - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | N.2 - 1" | A.204 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.2 - 1" | A.204 |
| VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.6 - 1" | A.205 |

## UNF - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | N.2 - 1" | A.205 |
| S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.2 - 1" | A.206 |
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.6 - 1" | A.206 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | N.2 - 1" | A.207 |
| VPO-DC-MT FORM E | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | 1/4 - 1" | A.208 |

## UNF - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VP-DC-MT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and aluminium cast<br>Synchro taps at cutting speeds > 30 m/min | N.2 - 1" | A.207 |

## UNF - Forming

### Forming taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| S-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | N.6 - 1" | A.208 |
| S-OIL-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | 1/4 - 1" | A.209 |

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Threading

## MJ - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| CC-NEO-SFT | TiN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Variable helix for better chip evacuation | MJ2 - MJ12 | A.209 |
| V-TI-SFT | V | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Titanium alloys | MJ2 - MJ12 | A.210 |

## UNJC - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.4 - N.8 | A.210 |
| V-TI-POT | V | | Powder metal spiral-point cutting tap for through holes<br>For Titanium alloys | N.4 - N.8 | A.211 |
| E-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | N.4 - 1" | A.211 |
| WHR-NI-POT | HR | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | N.4 - 1" | A.212 |
| H-POT | OX | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC | N.4 - N.8 | A.212 |

## UNJC - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.4 - N.8 | A.213 |
| CC-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines | N.4 - 1" | A.213 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | N.4- 1" | A.214 |
| V-TI-SFT | V | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Titanium alloys | N.4 - N.8 | A.214 |
| E-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | N.4 - 1" | A.215 |
| WHR-NI-SFT | HR | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | N.4 - 1" | A.215 |
| H-SFT | OX | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC | N.4 - N.8 | A.216 |

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Threading

## UNJF - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VA-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.10 - 1/2 | A.216 |
| V-TI-POT | V | | Powder metal spiral-point cutting tap for through holes<br>For Titanium alloys | N.10 - 1/2 | A.217 |
| E-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | N.10 - 7/8 | A.217 |
| WHR-NI-POT | HR | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718 | N.10 - 7/8 | A.218 |
| H-POT | OX | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC | N.10 - 1/2 | A.218 |

## UNJF - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.10 - 1/2 | A.219 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | N.4 - 1" | A.219 |
| CC-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines | N.10 - 1" | A.220 |
| V-TI-SFT | V | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Titanium alloys | N.10 - 1/2 | A.220 |
| E-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | N.10 - 7/8 | A.221 |
| WHR-NI-SFT | HR | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718 | N.10 - 7/8 | A.221 |
| H-SFT | OX | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC | N.10 - 1/2 | A.222 |

## HELICOIL M - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| CC-HL-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines, for thread insert | M3 - M20 | A.222 |

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Threading

## HELICOIL MJ - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-HL-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | MJ2 - MJ10 | A.223 |
| H-HL-POT | 0X | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC<br>For thread insert | MJ2 - MJ10 | A.223 |

## HELICOIL MJ - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-HL-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | MJ2 - MJ10 | A.224 |
| H-HL-SFT | 0X | | Powder metal spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC<br>For thread insert | MJ2 - MJ10 | A.224 |

## HELICOIL UNJC - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-HL-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | N.4 -N.8 | A.225 |
| H-HL-POT | 0X | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC<br>For thread insert | N.4 -N.8 | A.225 |

## HELICOIL UNJC - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-HL-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | N.4 -N.8 | A.226 |
| H-HL-SFT | 0X | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC<br>For thread insert | N.4 -N.8 | A.226 |

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Threading

## HELICOIL UNJF - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-HL-POT | | | Powder metal spiral-point cutting tap for through holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | N.10 - 1/2 | A.227 |
| H-HL-POT | 0X | | Powder metal spiral-point cutting tap for through holes<br>For hardened steels up to 45 HRC<br>For thread insert | N.10 - 1/2 | A.227 |

## HELICOIL UNJF - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| CC-HL-SFT | | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines, for thread insert | N.10 - 3/8 | A.228 |
| E-HL-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For Nickel-based alloys including Inconel 718<br>For thread insert | N.10 - 1/2 | A.228 |
| H-HL-SFT | | | Powder metal low spiral-fluted cutting tap for blind holes<br>For hardened steels up to 45 HRC<br>For thread insert | N.10 - 1/2 | A.229 |

## BSW - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/8 - 1" | A.229 |
| S-POT | 0X | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | 1/8 - 1" | A.230 |

## BSW - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/8 - 1" | A.230 |
| S-SFT | 0X | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | 1/8 - 1" | A.231 |

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Threading

## BSF - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/4 - 1" | A.231 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | 1/4 - 1" | A.232 |

## BSF - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/4 - 1" | A.232 |
| S-SFT | OX | | HSSE spiral-point cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | 1/4 - 1" | A.233 |

## BA - Through hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | N.0 - N.12 | A.233 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | N.0 - N.12 | A.234 |

## BA - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | N.0 - N.12 | A.234 |
| S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | N.0 - N.12 | A.235 |

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Threading

## G - Through hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-POT | V | A | Powder metal spiral-point cutting tap for through holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/8 - 1" | A.235 |
| S-POT | OX | | HSSE spiral-point cutting tap for through holes<br>General purpose tapping in steels and stainless steels | 1/8 - 1" | A.236 |
| POT | | | HSSE spiral-point cutting tap for through holes<br>For general purpose applications | 1/8 - 1" | A.236 |

## G - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/16 - 1" | A.237 |
| A-SFT-INOX NEW | VI | A | Powder metal spiral-fluted cutting tap for blind holes<br>Multilayer VI coating | 1/16 - 1" | A.237 |
| S-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | 1/8 - 1" | A.238 |
| VA-SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>General purpose tapping in steels and stainless steels | 1/8 - 1" | A.238 |
| SFT | OX | | HSSE spiral-flute cutting tap for blind holes<br>For general purpose applications | 1/8 - 1" | A.239 |
| SH-SFT | | | HSSE low spiral-fluted cutting tap for blind holes<br>For alloyed steels ≥ 1100N/mm$^2$<br>Short chip creation | 1/8 - 1/2 | A.239 |
| M-SFT-DUPLEX | TiN | | Powder metal spiral-fluted cutting tap for blind holes<br>TiN coating<br>For stainless steels, Duplex, Super Duplex | 1/8 - 1" | A.240 |
| CC-SFT | CrN | | HSSE spiral-flute cutting tap for blind holes<br>For general steels, stainless steels and aluminium<br>Developed for rigid tapping on CNC machines | 1/8 - 1/2 | A.240 |

## G - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| VP-DC-MT | V | | Powder metal straight flute cutting tap for through and blind holes<br>For cast iron and cast aluminium<br>Synchro taps at cutting speeds > 30 m/min | 1/16 - 2" | A.241 |
| GG-MT | Ni-Ox | | HSSE straight flute cutting tap for blind and through holes<br>NiOx coating<br>For cast iron | 1/8 - 1/2 | A.241 |
| VX-OT | V | | Carbide straight flute cutting tap for blind and through holes<br>For hardened steels up to 62 HRC | 1/8 - 1/2 | A.242 |

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Threading

## G - Forming

### Forming taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-XPF NEW | VI | A | Powder metal forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | 1/8 - 1/2 | A.242 |
| A-OIL-XPF NEW | VI | A | Powder metal forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | 1/8 - 1/2 | A.243 |
| A-XPF FORM E NEW | VI | A | Powder metal forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | 1/8 - 1/2 | A.243 |
| A-OIL-XPF FORM E NEW | VI | A | Powder metal forming tap for through and blind holes<br>H igh speed tapping in general steels, aluminium, stainless steels<br>Center through coolant | 1/8 - 1/2 | A.244 |
| S-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium | 1/8 - 1" | A.244 |
| S-OIL-XPF | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Side through coolant | 1/4 - 1" | A.245 |
| S-XPF-GL | V | A | HSSE forming tap for through and blind holes<br>For general steels, stainless steels, aluminium<br>Without oil grooves for higher rigidity | 1/8 - 1" | A.245 |
| VA-XPF NEW | AlCrN | | Powder metal forming tap for through and blind holesAlCrN coating<br>For general steels, stainless steels and aluminium | 1/8 - 1" | A.246 |
| M-NRT | TiN | | Powder metal forming tap for through and blind holes<br>For stainless steel and aluminium | 1/8 - 3/4 | A.246 |

## Rc (BSPT) - Through & Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT RC | V | A | Powder metal spiral flute cutting tap for blind holes<br>High speed tapping in general steels and aluminium<br>RC (ISO) tapered 1:16 | 1/16 - 1" | A.247 |
| A-TPT | V | A | Powder metal straight flute cutting tap for through and blind holes<br>High speed tapping in general steels and aluminium<br>RC (BSPT) tapered 1:16 | 1/8 - 1" | A.247 |
| S-TPT | OX | | HSSE straight flute cutting tap for through and blind holes<br>For general steels and aluminium<br>RC (BSPT) tapered 1:16 | 1/8 - 1" | A.248 |

## Rp - Blind hole

### Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT FORM E NEW | V | A | Powder metal spiral flute cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/16 - 1" | A.248 |

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Threading

## NPSF - Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT FORM E | V | A | Powder metal spiral flute cutting tap for blind holes<br>High speed tapping in general steels, aluminium, stainless steels | 1/16 - 1" | A.249 |

## NPT - Through & Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| A-SFT NPT | V | A | Powder metal spiral-fluted cutting tap for blind holes<br>High speed tapping in general steels and aluminium<br>Tapered 1:16 | 1/16 - 1" | A.249 |
| NPT | | | HSSE straight flute cutting tap for through and blind holes<br>For general steels, aluminium and cast iron<br>Tapered 1:16 | 1/16 - 1" | A.250 |

## PG - Through & Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| PG | | | HSSE straight flute cutting tap for through and blind holes<br>For general steels, aluminium and cast iron<br>For PG thread | 7 - 48 | A.250 |

## Serial Form - Through & Blind hole

Cutting taps

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| HT | | | HSS straight flute cutting tap for through and blind holes<br>For general steels, aluminium and cast iron<br>Progressive thread, set of 3 taps with short shank | M2 - M20 | A.251 |
| HT-VA-OX | OX | | HSSE straight flute cutting tap for through and blind holes<br>For general steels, aluminium and cast iron<br>Progressive thread, set of 3 taps with short shank | M2 - M20 | A.251 |

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Threading

## Tapping Holder

### Tapping Holder

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| SynchroMaster | | | Tap holder synchronized<br>For tapping sizes from M3 to M12<br>HSK type, for ER16 collet type | - | A.252 |
| SynchroMaster | | | Tap holder synchronized<br>For tapping sizes from M3 to M12<br>BT type, for ER16 collet type | - | A.252 |
| SynchroMaster | | | Tap holder synchronized<br>For tapping sizes from M3 to M12<br>Straight shank type, for ER16 collet type | - | A.252 |

## Tap Extension

### Taps Extension

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| Tap extension shank<br>NEW | | | Short tap extensions<br>Without internal coolant supply<br>For machining deeper threads with standard threading tools | 4,5-33 | A.253 |
| Tap extension shank<br>NEW | | | Long tap extensions<br>Without internal coolant supply<br>For machining deeper threads with standard threading tools | 4,5-33 | A.253 |

## Thread Mill

### Thread Mill

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| AT-1 | EgiAs | A | One pass thread mill<br>Milling for internal thread | M6 - M24 | A.254 |
| AT-2 | DUROREY | A | Thread milling without pre-drilled hole for hardened materials<br>Left-hand (spindle rotation left)<br>Up to 65HRC | M3 - M20 | A.254 |
| AT-2 R-SPEC | DLC-IGUSS | A | Thread milling without pre-drilled hole<br>Left-hand (spindle rotation left), 2 flutes<br>For aluminium | M3 - M12 | A.255 |
| WH-EM-PNC | WXS | | Thread milling without pre-drilled hole<br>Left-hand (spindle rotation left) | M3 - M12 | A.255 |
| WHO-EM-PNC | WXS | | Thread milling without pre-drilled hole for hardened materials<br>Left-hand (spindle rotation left)<br>Center through coolant<br>Up to 62HRC | M3 - M16 | A.256 |
| WX-ST-PNC-3P | SC<br>WXS | | Carbide thread milling cutter with 3 crest thread length<br>For all materials and hardened steels up to 50 HRC | M1,8 - M20 | A.256 |
| WH-VM-PNC | SC<br>WXS | | Carbide thread milling cutter for small sizes<br>For all materials and hardened steels up to 50 HRC | M1 - M5 | A.257 |
| WX-PNC | WX | | Carbide thread milling cutter<br>For all materials | M6 - M27 | A.257 |
| WXO-ST-PNC | WX | | Carbide thread milling cutter with Center through coolant<br>For all materials and hardened steels up to 45 HRC | M6 - M27 | A.258 |

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Threading

## Thread Mill

### Thread Mill

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| AT-1 | EgiAs | A | One pass thread mill<br>Milling for internal thread | 1/4 - 1 | A.258 |
| AT-2 | DUROREY | A | Thread milling without pre-drilled hole for hardened materials<br>Left-hand (spindle rotation left)<br>Up to 65HRC | No.8 - 1/2 | A.259 |
| WH-VM-PNC | WXS | | Carbide thread milling cutter for small sizes<br>For all materials and hardened steels up to 50 HRC | N.8 | A.259 |
| WX-PNC | WX | | Carbide thread milling cutter<br>For all materials | 1/4 - 7/8 | A.260 |
| WHO-EM-PNC | WXS | | Thread milling without pre-drilled hole<br>For hardened steels up to 62 HRC and stainless steel | G1/16 - G1/2 | A.260 |
| WX-ST-PNC-3P | WXS | | Carbide thread milling cutter with 3 crest thread length<br>For all materials and hardened steels up to 50 HRC | G1/8 - G2 | A.261 |
| WX-PNC | WX | | Carbide thread milling cutter<br>For all materials | 1/16 - 3/8 | A.261 |
| AT-1 | EgiAs | A | One pass thread mill<br>Milling for internal thread | 1/16 - 2 | A.262 |
| AT-2 | DUROREY | A | Thread milling without pre-drilled hole for hardened materials<br>Left-hand (spindle rotation left)<br>Up to 65HRC | Rc 1/16 - Rc 1 | A.262 |
| WX-PNC | WX | | Carbide thread milling cutter<br>For all materials | Rc1/8 - Rc 2 | A.263 |
| AT-1 | EgiAs | A | One pass thread mill<br>Milling for internal thread | Rp 1/16 - Rp 2 | A.263 |
| AT-1 | EgiAs | A | One pass thread mill<br>Milling for internal thread | NPT 1/16 - NPT 2 | A.264 |
| AT-2 | DUROREY | A | Thread milling without pre-drilled hole for hardened materials<br>Left-hand (spindle rotation left)<br>Up to 65HRC | NPT 1/16 -NPT 1 | A.264 |
| WX-PNC | WX | | Carbide thread milling cutter<br>For all materials | NPT 1/16 -NPT 2 | A.265 |

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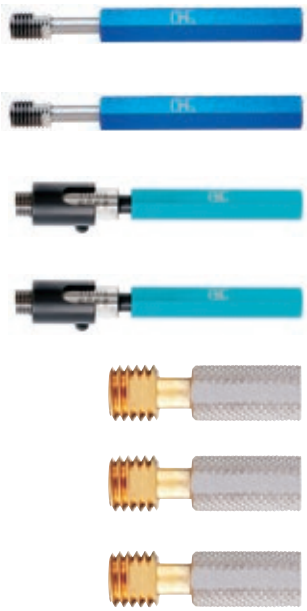
Threading

## Thread Gauge

### Thread Gauge



| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| E-DCT | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time | M(J)3 - M(J)20 | A.265 |
| E-DCT | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time | 1/4 - 3/4 EG-UNJC<br>1/4 - 3/4 EG-UNJF | A.266 |
| DCT | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time<br>Measurable range 100% ~-50% tolerance of thread size 6H | M6 - M24 | A.266 |
| DCT | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time<br>Measurable range 100% ~-50% tolerance of thread size 3B | 5/16UNJF | A.267 |
| DCT75 | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time<br>Measurable range 100% ~-50% tolerance of thread size 6H | M6 - M16 | A.267 |
| DCT75 | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time<br>Measurable range 100% ~-50% tolerance of thread size 3B | 1/4UNC - 1/2UNC<br>1/4UNF - 1/2UNF | A.268 |
| DCT75 | | | Diameter correction tool for thread mill<br>Reduce the set up and machining time<br>Measurable internal thread class R screw and PT screw | Rc1/16 - Rc3/8 | A.268 |

## Serial Solid Circular Dies

### Serial Solid Circular Dies

| Product series | | A-Brand | Features | Range | Page |
|---|---|---|---|---|---|
| DIN 223B | | | HSS solid circular dies DIN223B<br>With spiral entry for forward chip ejection<br>Chamfer lead on both sides | M3 - M20 | A.270 |
| DIN 223B | | | HSS solid circular dies DIN223B<br>With spiral entry for forward chip ejection<br>Chamfer lead on both sides | 1/8 - 1/2 | A.270 |

# ISO 13399 LEGEND



| ISO code | Description |
|---|---|
| APMX | Depth of cut maximum |
| BD | Body diameter |
| DC | Cutting diameter |
| DCON | Connection diameter |
| DCONMS | Connection diameter machine side |
| DCONWS | Connection diameter workpiece side |
| DN | Neck diameter |
| DRVS | Drive size |
| LF | Functional length |
| LH | Head length |
| LS | Shank length |
| LU | Usable length |
| NOF | Flute count |
| OAL | Overall length |
| P | Pitch |
| PHD | Premachined hole diameter |
| TD | Thread diameter |
| THCHL | Thread chamfer length |
| THCHT | Thread chamfer type form |
| THLGTH | Thread length |
| TP_TPI | Thread pitch/thread per inch |

# A-POT

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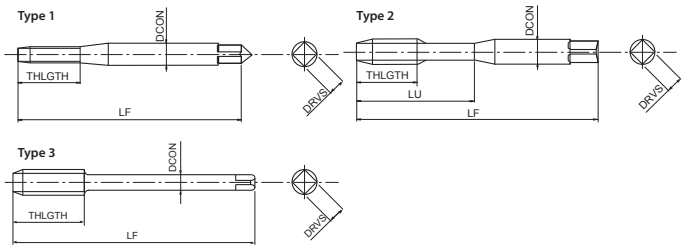
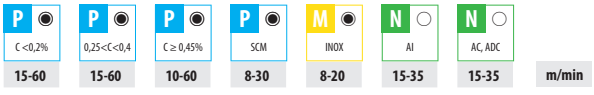
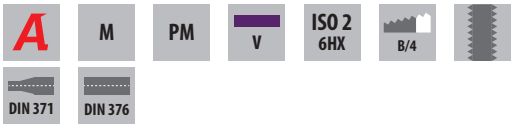
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels



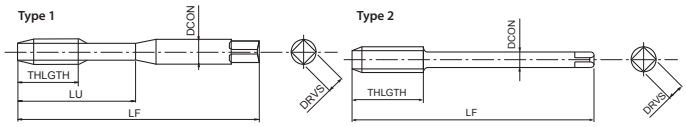




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48145111 | 1 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145112 | 1,1 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145113 | 1,2 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145115 | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145118 | 1,6 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145119 | 1,7 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145120 | 1,8 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48145125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145127 | 2,2 | 0,45 | 45 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145128 | 2,3 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145133 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145136 | 2,6 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48145142 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 3 | 2 | 371 |
| 48145144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48145147 | 4,5 | 0,75 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48145149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48145152 | 5,5 | 0,9 | 80 | 17 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48145155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48145158 | 7 | 1 | 80 | 19 | 30 | 7 | 5,5 | 3 | 2 | 371 |
| 48145161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48145165 | 9 | 1,25 | 90 | 22 | 35 | 9 | 7 | 3 | 2 | 371 |
| 48145169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48145139 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 48145185 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 48145150 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 48145187 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 48145159 | 7 | 1 | 80 | 19 | - | 5,5 | 4,3 | 3 | 3 | 376 |
| 48145188 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 48145166 | 9 | 1,25 | 90 | 22 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48145189 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48145175 | 11 | 1,5 | 100 | 24 | - | 8 | 6,2 | 3 | 3 | 376 |
| 48145179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48145191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48145202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 48145214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 48145228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 48145238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 48145247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |

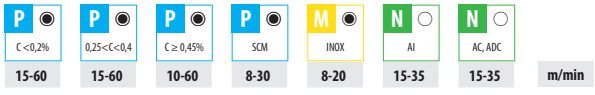
# A-OIL-POT

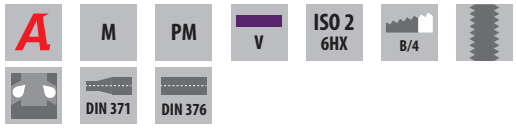
INDEX

## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Side through coolant



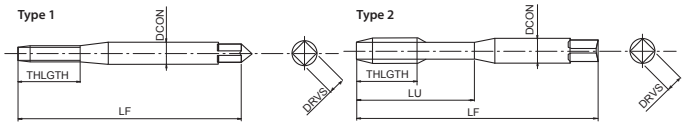



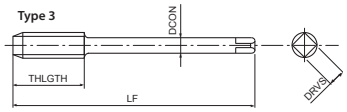

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48214155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48214161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48214169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48214179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48214191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48214202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |
| 48214214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 2 | 376 |
| 48214228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 2 | 376 |
| 48214238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 376 |
| 48214247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 376 |

# A-POT 6GX

INDEX

## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | ISO 3 6GX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48205125 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48205133 | 2,5 | 0,45 | 0.02 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48205138 | 3 | 0,5 | 0.02 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48205144 | 4 | 0,7 | 0.022 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48205149 | 5 | 0,8 | 0.024 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48205155 | 6 | 1 | 0.026 | 80 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48205161 | 8 | 1,25 | 0.028 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48205169 | 10 | 1,5 | 0.032 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48205179 | 12 | 1,75 | 0.034 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48205191 | 14 | 2 | 0.038 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48205202 | 16 | 2 | 0.038 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |

# A-POT 7GX

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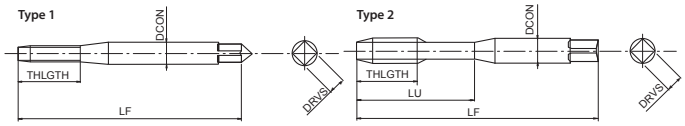
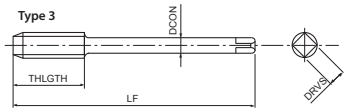
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 7GX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48206125 | 2 | 0,4 | 0.038 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48206133 | 2,5 | 0,45 | 0.04 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48206138 | 3 | 0,5 | 0.04 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48206144 | 4 | 0,7 | 0.044 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48206149 | 5 | 0,8 | 0.048 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48206155 | 6 | 1 | 0.052 | 80 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48206161 | 8 | 1,25 | 0.056 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48206169 | 10 | 1,5 | 0.064 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48206179 | 12 | 1,75 | 0.068 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48206191 | 14 | 2 | 0.076 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48206202 | 16 | 2 | 0.076 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |

# A-POT +0.1

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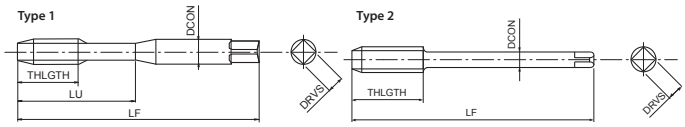
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Oversized tap for 6H +0,1mm thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

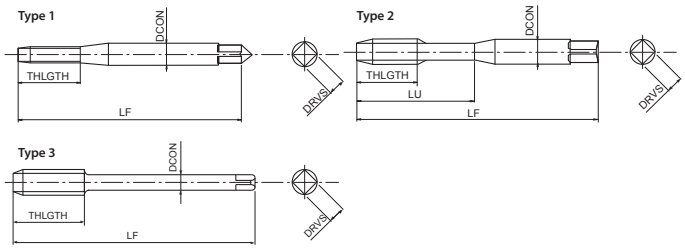
| A | M | PM | V | 6H +0.1 | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48259138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48259144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48259149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48259155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48259161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48259169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48259179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48259202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |

# A-LT-POT

INDEX

## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- With long shank for long reach threading

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48210125 | 2 | 0,4 | 80 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48210133 | 2,5 | 0,45 | 100 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48210138 | 3 | 0,5 | 100 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48210144 | 4 | 0,7 | 125 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48210149 | 5 | 0,8 | 160 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48210155 | 6 | 1 | 160 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48210161 | 8 | 1,25 | 180 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48210169 | 10 | 1,5 | 200 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48211155 | 6 | 1 | 160 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 48211161 | 8 | 1,25 | 180 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 48211169 | 10 | 1,5 | 200 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48211179 | 12 | 1,75 | 200 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48211191 | 14 | 2 | 200 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48211202 | 16 | 2 | 200 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 48211214 | 18 | 2,5 | 200 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 48211228 | 20 | 2,5 | 200 | 34 | - | 16 | 12 | 3 | 3 | 376 |

# A-POT-LH

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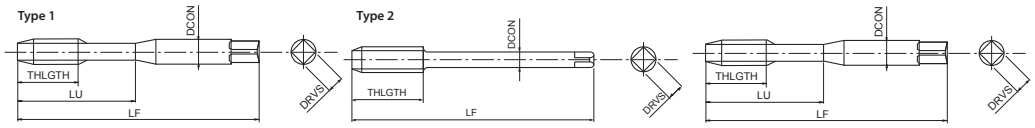
**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For left-hand threads

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | LH | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48218138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48218144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48218149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48218155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48218161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48218169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48218179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48218191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48218202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |
| 48218214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 2 | 376 |
| 48218228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 2 | 376 |
| 48218238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 376 |
| 48218247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 376 |

# A-POT-HB Weldon

INDEX

**Threading | Cutting taps | Metric**

- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- With Weldon shank

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

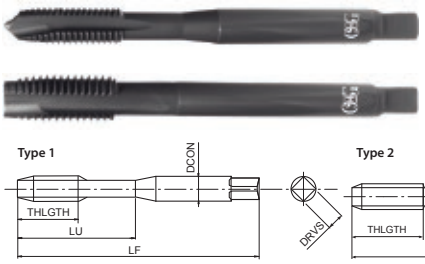
| A | M | PM | V | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | DIN 1835 | HB | | | |

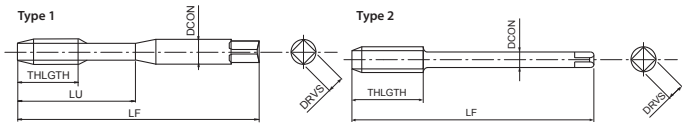
| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48221138 | 3 | 0,5 | 56 | 11 | 18 | 6 | 4,9 | 3 | 371/1835 |
| 48221144 | 4 | 0,7 | 63 | 13 | 21 | 6 | 4,9 | 3 | 371/1835 |
| 48221149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 371/1835 |
| 48221155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 371/1835 |
| 48221161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 371/1835 |
| 48221169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 371/1835 |
| 48221179 | 12 | 1,75 | 110 | 28 | 46 | 12 | 9 | 3 | 376/1835 |
| 48221191 | 14 | 2 | 110 | 30 | 49 | 14 | 11 | 3 | 376/1835 |
| 48221202 | 16 | 2 | 110 | 32 | 56 | 16 | 12 | 3 | 376/1835 |

# S-POT

INDEX

## Threading | Cutting taps | Metric






- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| M | HSSE | 0X | ISO 2 6H | ISO 1 5H≤M1,4 | B/4 | | |
|---|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | | |

* Tolerance 5H

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48224111* | 1 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224112* | 1,1 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224113* | 1,2 | 0,25 | 40 | 5 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224115* | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224118 | 1,6 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224119 | 1,7 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224120 | 1,8 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 2 | 1 | 371 |
| 48224125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48224127 | 2,2 | 0,45 | 45 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48224128 | 2,3 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48224133 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48224136 | 2,6 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48224138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48224142 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48224144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48224147 | 4,5 | 0,75 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48224149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48224152 | 5,5 | 0,9 | 80 | 17 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48224155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48224158 | 7 | 1 | 80 | 19 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48224161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48224165 | 9 | 1,25 | 90 | 22 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48224169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48224140 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 2 | 376 |
| 48224185 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 48224150 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 48224187 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48224159 | 7 | 1 | 80 | 19 | - | 5,5 | 4,3 | 3 | 2 | 376 |
| 48224188 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48224166 | 9 | 1,25 | 90 | 22 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48224189 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48224175 | 11 | 1,5 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 376 |
| 48224179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48224191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48224202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |
| 48224214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 2 | 376 |
| 48224228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 2 | 376 |
| 48224238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 376 |
| 48224247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 376 |

# S-POT 6G

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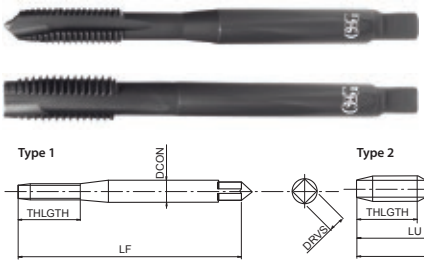
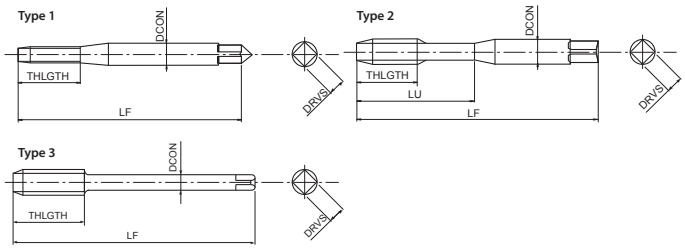
## Threading | Cutting taps | Metric






- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| M | HSSE | 0X | ISO 3 6G | B/4 | | DIN 371 | |
|---|---|---|---|---|---|---|---|
| DIN 376 | | | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48272125 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48272133 | 2,5 | 0,45 | 0.02 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48272138 | 3 | 0,5 | 0.02 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48272144 | 4 | 0,7 | 0.022 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48272149 | 5 | 0,8 | 0.024 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48272155 | 6 | 1 | 0.026 | 80 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48272161 | 8 | 1,25 | 0.028 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48272169 | 10 | 1,5 | 0.032 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48272179 | 12 | 1,75 | 0.034 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48272191 | 14 | 2 | 0.038 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48272202 | 16 | 2 | 0.038 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |

# S-POT 7G

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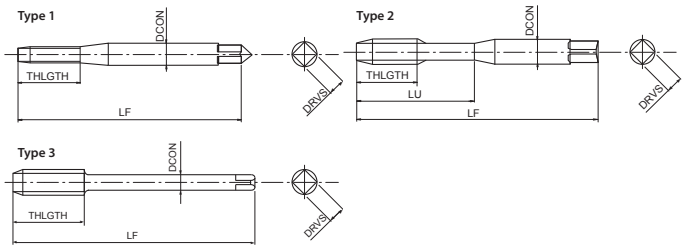
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

M | HSSE | 0X | 7G | B/4 | | DIN 371 | DIN 376

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48273125 | 2 | 0,4 | 0.038 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48273133 | 2,5 | 0,45 | 0.04 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48273138 | 3 | 0,5 | 0.04 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48273144 | 4 | 0,7 | 0.044 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48273149 | 5 | 0,8 | 0.048 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48273155 | 6 | 1 | 0.052 | 80 | 19 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48273161 | 8 | 1,25 | 0.056 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48273169 | 10 | 1,5 | 0.064 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48273179 | 12 | 1,75 | 0.068 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48273191 | 14 | 2 | 0.076 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48273202 | 16 | 2 | 0.076 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |

# S-POT +0.1

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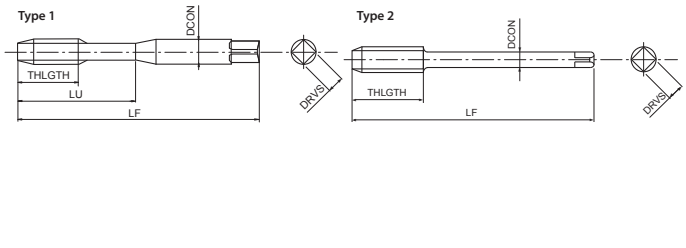
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- Oversized tap for 6H +0,1mm thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

M | HSSE | 0X | 6H +0.1 | B/4 | | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48271138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48271144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48271149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48271155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48271161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48271169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48271179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48271191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48271202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |

# S-LT-POT

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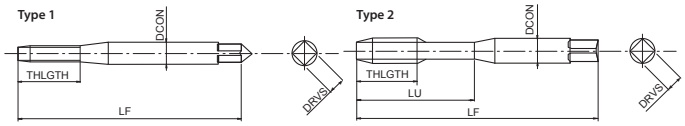
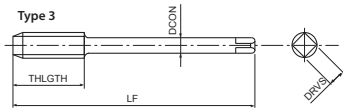
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- With long shank for long reach threading

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

M | HSSE | 0X | ISO 2 6H | B/4

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 48278125 | 2 | 0,4 | 80 | 8 | - | 2,8 | 2,1 | 2 | 1 |
| 48278133 | 2,5 | 0,45 | 100 | 9 | - | 2,8 | 2,1 | 2 | 1 |
| 48278138 | 3 | 0,5 | 100 | 11 | 18 | 3,5 | 2,7 | 3 | 2 |
| 48278144 | 4 | 0,7 | 125 | 13 | 21 | 4,5 | 3,4 | 3 | 2 |
| 48278149 | 5 | 0,8 | 160 | 16 | 25 | 6 | 4,9 | 3 | 2 |
| 48278155 | 6 | 1 | 160 | 19 | 30 | 6 | 4,9 | 3 | 2 |
| 48278187 | 6 | 1 | 160 | 19 | - | 4,5 | 3,4 | 3 | 2 |
| 48278161 | 8 | 1,25 | 180 | 22 | 35 | 8 | 6,2 | 3 | 2 |
| 48278188 | 8 | 1,25 | 180 | 22 | - | 6 | 4,9 | 3 | 2 |
| 48278169 | 10 | 1,5 | 200 | 24 | 39 | 10 | 8 | 3 | 2 |
| 48278189 | 10 | 1,5 | 200 | 24 | - | 7 | 5,5 | 3 | 2 |
| 48278179 | 12 | 1,75 | 200 | 28 | - | 9 | 7 | 3 | 3 |
| 48278191 | 14 | 2 | 200 | 30 | - | 11 | 9 | 3 | 3 |
| 48278202 | 16 | 2 | 200 | 32 | - | 12 | 9 | 3 | 3 |
| 48278214 | 18 | 2,5 | 200 | 34 | - | 14 | 11 | 3 | 3 |
| 48278228 | 20 | 2,5 | 200 | 34 | - | 16 | 12 | 3 | 3 |

# S-POT-LH

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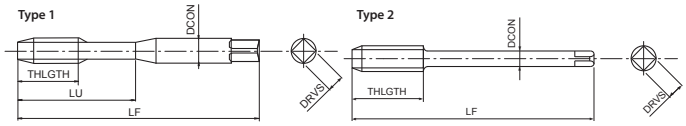
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For left-hand threads

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

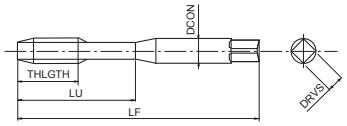
M | HSSE | 0X | ISO 2 6H | B/4 | DIN 371 | DIN 376 | LH

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48280138 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48280144 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48280149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48280155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48280161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48280169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48280179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48280191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48280202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |
| 48280214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 2 | 376 |
| 48280228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 2 | 376 |
| 48280238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 376 |
| 48280247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 376 |

# S-POT-HB Weldon

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- With Weldon shank

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

M | HSSE | 0X | ISO 2 6H | B/4 | DIN 371 | DIN 1835 | HB

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48279138 | 3 | 0,5 | 56 | 11 | 18 | 6 | 4,9 | 3 | 371/1835 |
| 48279144 | 4 | 0,7 | 63 | 13 | 21 | 6 | 4,9 | 3 | 371/1835 |
| 48279149 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 3 | 371/1835 |
| 48279155 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 3 | 371/1835 |
| 48279161 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 371/1835 |
| 48279169 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 3 | 371/1835 |
| 48279179 | 12 | 1,75 | 110 | 28 | 46 | 12 | 9 | 3 | 371/1835 |
| 48279191 | 14 | 2 | 110 | 30 | 49 | 14 | 11 | 3 | 371/1835 |
| 48279202 | 16 | 2 | 110 | 32 | 56 | 16 | 12 | 3 | 371/1835 |

# VA-POT

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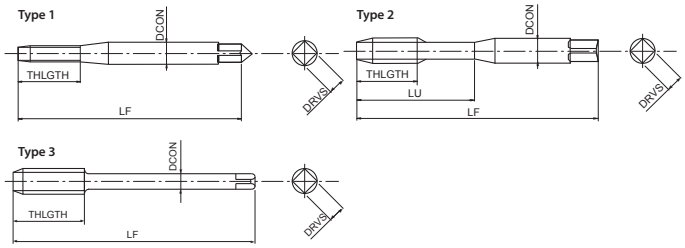
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

M | HSSE | 0X | ISO 2 6H | B/4 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 63812560 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 63812860 | 2,2 | 0,45 | 45 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 63813360 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 63813860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 63814060 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 63814460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 63814960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 63815560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 63816160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 63816960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 63913860 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 63914460 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 63914960 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 63915560 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 63916160 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 63916960 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 63917960 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 63919160 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 63920260 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 63921460 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 63922860 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 63923860 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 63924760 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |
| 63926260 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 63927160 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |
| 63928160 | 33 | 3,5 | 180 | 50 | - | 25 | 20 | 4 | 3 | 376 |
| 63929460 | 36 | 4 | 200 | 56 | - | 28 | 22 | 4 | 3 | 376 |

# VA-POT 6G

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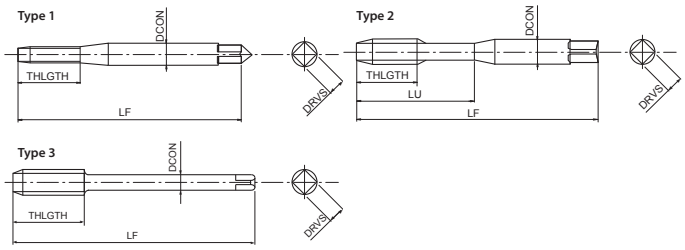
## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| M | HSSE | OX | ISO 3 6G | B/4 | | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 63812599 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 63813399 | 2,5 | 0,45 | 0.02 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 63813899 | 3 | 0,5 | 0.02 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 63814499 | 4 | 0,7 | 0.022 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 63814999 | 5 | 0,8 | 0.024 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 63815599 | 6 | 1 | 0.026 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 63816199 | 8 | 1,25 | 0.028 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 63816999 | 10 | 1,5 | 0.032 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 63917999 | 12 | 1,75 | 0.034 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 63919199 | 14 | 2 | 0.038 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 63920299 | 16 | 2 | 0.038 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |

# Z-POT

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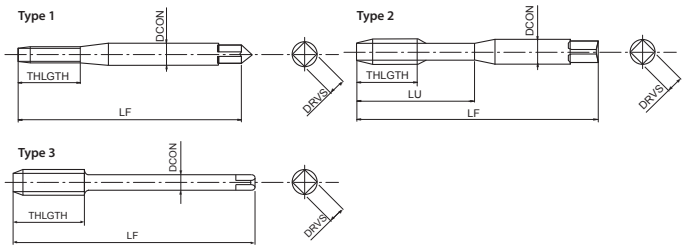
## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-24 | 15-24 | 15-24 | 8-20 | 8-20 | 20-40 | 20-40 | m/min |

| S Ti | H 25-35 HRC | | | | | | |
|---|---|---|---|---|---|---|---|
| 10-15 | 8-15 | | | | | | |

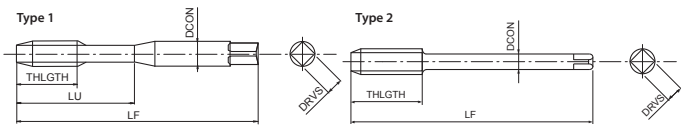
| M | PM | V | ISO 2 6HX | B/4 | | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 83812568 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 83813368 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 83813868 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 83814468 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 83814968 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 83815568 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 83816168 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 83816968 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 83913868 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 83914468 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 83914968 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 83915568 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 83916168 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 83916968 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 83917968 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 83919168 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 83920268 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 83921468 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 83922868 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 83923868 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 83924768 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |
| 83926268 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 83927168 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |

# Z-OIL-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-24 | 15-24 | 15-24 | 8-20 | 8-20 | 20-40 | 20-40 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 10-15 | 8-15 |

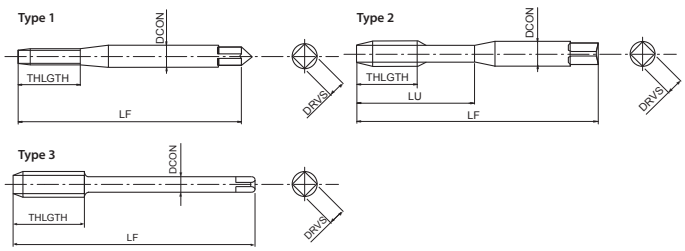
| M | PM | V | ISO 2 6HX | B/4 | | | |
|---|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 83815588 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 83816188 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 83816988 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 83917988 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 83919188 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 83920288 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 2 | 376 |
| 83921488 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 2 | 376 |
| 83922888 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 2 | 376 |

# POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Bright finish
- For general purpose applications

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GGG | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 12-20 | 8-12 | 8-12 | 8-12 | 8-12 | 15-25 | 15-20 | m/min |

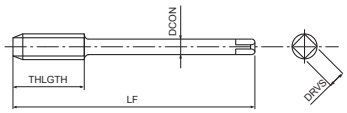
| M | HSSE | ISO 2 6H | B/4 | | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 60712560 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 60713360 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 60713860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 60714060 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 60714460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 60714960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 60715560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 60716160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 60716960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 60813860 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 60814460 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 60814960 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 60815560 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 60816160 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 60816960 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 60817960 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 60819160 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 60820260 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 60821460 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 60822860 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 60823860 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 60824760 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |
| 60826260 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 60827160 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |
| 60828160 | 33 | 3,5 | 180 | 50 | - | 25 | 20 | 4 | 3 | 376 |
| 60829460 | 36 | 4 | 200 | 56 | - | 28 | 22 | 4 | 3 | 376 |

# POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Bright finish
- For general purpose applications
- According to DIN 352 shank reduced length

| P ○ C <0,2% | P ○ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | K ○ GGG | N ○ Al | N ◉ AC, ADC | |
|---|---|---|---|---|---|---|---|
| 12-20 | 8-12 | 8-12 | 8-12 | 8-12 | 15-25 | 15-20 | m/min |

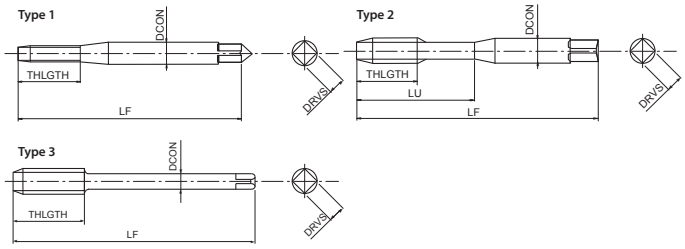
| M | HSSE | ISO 2 6H | B/4 | | DIN 352 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 60513860 | 3 | 0,5 | 40 | 11 | 3,5 | 2,7 | 3 | 352 |
| 60514460 | 4 | 0,7 | 45 | 13 | 4,5 | 3,4 | 3 | 352 |
| 60514960 | 5 | 0,8 | 50 | 24 | 6 | 4,9 | 3 | 352 |
| 60515560 | 6 | 1 | 50 | 27 | 6 | 4,9 | 3 | 352 |
| 60516160 | 8 | 1,25 | 63 | 22 | 6 | 4,9 | 3 | 352 |
| 60516960 | 10 | 1,5 | 70 | 24 | 7 | 5,5 | 3 | 352 |

# TIN-POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- TiN coating
- For steels up to 850 N/mm²

| P ○ C <0,2% | P ○ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ○ SCM | M ◉ INOX | K ○ GGG | N ○ Al | | |
|---|---|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | 15-25 | m/min | |
| N ○ AC, ADC | S ○ Ti | | | | | | | |
| 15-20 | 6-9 | | | | | | | |

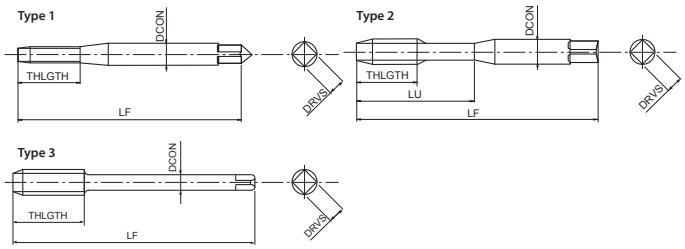
| M | HSSE | TiN | ISO 2 6H | B/4 | | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 6071256001 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 6071336001 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 6071386001 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 6071406001 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 6071446001 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 6071496001 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 6071556001 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 6071616001 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 6071696001 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 6081386001 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 6081446001 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 6081496001 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 6081556001 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 6081616001 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 6081696001 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 6081796001 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 6081916001 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 6082026001 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 6082146001 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 6082286001 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 6082386001 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 6082476001 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |
| 6082626001 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 6082716001 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |

# TICN-POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For steels up to 1000 N/mm²

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | N Al | |
|---|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | 15-25 | m/min |

| N AC, ADC | S Ti |
|---|---|
| 15-20 | 6-9 |

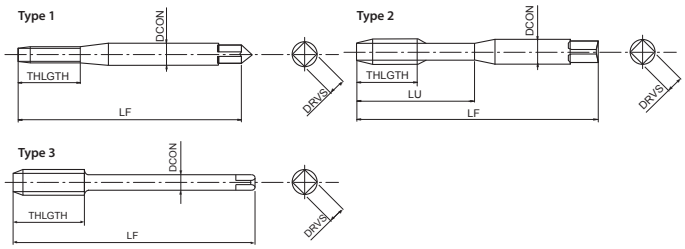
M | HSSE | V | ISO 2 6H | B/4 | | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 6071256002 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 6071386002 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 6071446002 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 6071496002 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 6071556002 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 6071616002 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 6071696002 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 6081796002 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 6081916002 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 6082026002 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 6082146002 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 6082286002 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 6082386002 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 6082476002 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |

# CC-POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- CrN coating
- For general steels and stainless steels
- Developed for rigid tapping on CNC machines

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-15 | 20-40 | m/min |

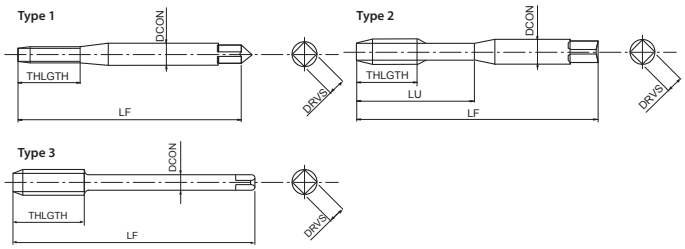
M | HSSE | CrN | ISO 2 6HX | B/4 | | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48059125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48059133 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48059138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48059144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48059149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48059155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48059161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48059169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48060138 | 3 | 0,5 | 56 | 11 | - | 2,2 | - | 3 | 3 | 376 |
| 48060144 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 48060149 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 48060155 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 48060161 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 376 |
| 48060169 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48060179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48060191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48060202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 48060214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 48060228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |
| 48060238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 3 | 3 | 376 |
| 48060247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 3 | 3 | 376 |
| 48060262 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 48060271 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |

# CC-LT-POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- CrN coating
- For general steels and stainless steels
- With long shank for long reach threading

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-15 | 20-40 | m/min |

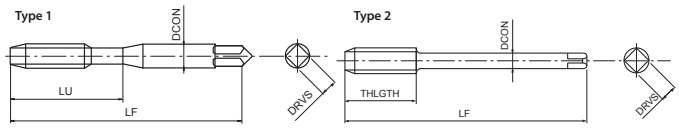
| M | HSSE | CrN | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 48114125 | 2 | 0,4 | 80 | 8 | - | 2,8 | 2,1 | 2 | 1 |
| 48114133 | 2,5 | 0,45 | 100 | 9 | - | 2,8 | 2,1 | 2 | 1 |
| 48114138 | 3 | 0,5 | 100 | - | 18 | 3,5 | 2,7 | 3 | 2 |
| 48114144 | 4 | 0,7 | 125 | - | 21 | 4,5 | 3,4 | 3 | 2 |
| 48114149 | 5 | 0,8 | 140 | - | 25 | 6 | 4,9 | 3 | 2 |
| 48114155 | 6 | 1 | 160 | - | 30 | 6 | 4,9 | 3 | 2 |
| 48114161 | 8 | 1,25 | 180 | - | 35 | 8 | 6,2 | 3 | 2 |
| 48114169 | 10 | 1,5 | 200 | - | 39 | 10 | 8 | 3 | 2 |
| 48114179 | 12 | 1,75 | 200 | 28 | - | 9 | 7 | 3 | 3 |

# HS-RFT-TIN

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-flute cutting tap for through holes
- TiN coating
- For high speed tapping in various materials
- Right-hand cut with left-hand flute for chip evacuation towards front

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 27-32 | 27-32 | 22-27 | 22-27 | 15-20 | 50-100 | 40-100 | m/min |

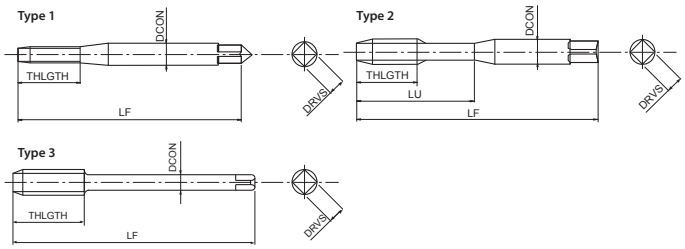
| M | HSSE | TiN | 20° | ISO 2 6H | A/6 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 20710 | 3 | 0,5 | 46 | 11 | 19 | 4 | 3,2 | 3 | 1 |
| 20714 | 4 | 0,7 | 52 | 13 | 21 | 6 | 4,5 | 3 | 1 |
| 20718 | 5 | 0,8 | 60 | 16 | 24 | 6 | 4,5 | 3 | 1 |
| 20722 | 6 | 1 | 62 | 19 | 29 | 6 | 4,5 | 3 | 1 |
| 20728 | 8 | 1,25 | 70 | 22 | 37 | 8 | 6 | 3 | 1 |
| 20734 | 10 | 1,5 | 75 | 24 | 41 | 8 | 6 | 3 | 2 |
| 20739 | 12 | 1,75 | 82 | 29 | 48 | 10 | 8 | 3 | 2 |

# AL-POT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-point cutting tap for through holes
- Bright finish
- For aluminium and cast aluminium

15-25

15-20

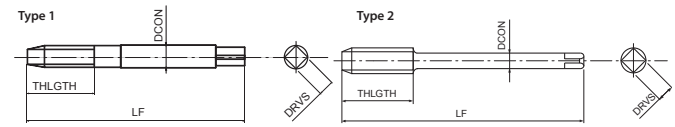
m/min

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48019125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48019133 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 66113860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 66114460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 66114960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 66115560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 66116160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 66116960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48019179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48019191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48019202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 3 | 3 | 376 |
| 48019214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 3 | 3 | 376 |
| 48019228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 3 | 3 | 376 |

# V-TI-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For Titanium alloys

4-6

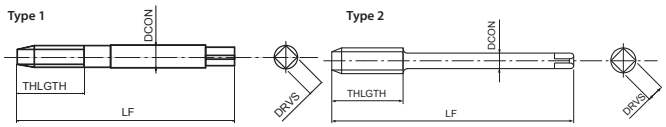
m/min

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48012138 | 3 | 0,5 | 56 | 12 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48012144 | 4 | 0,7 | 63 | 16 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48012149 | 5 | 0,8 | 70 | 19 | 6 | 4,9 | 3 | 1 | 371 |
| 48012155 | 6 | 1 | 80 | 23 | 6 | 4,9 | 3 | 1 | 371 |
| 48012161 | 8 | 1,25 | 90 | 30 | 8 | 6,2 | 3 | 1 | 371 |
| 48012169 | 10 | 1,5 | 100 | 38 | 10 | 8 | 3 | 1 | 371 |
| 48012179 | 12 | 1,75 | 110 | 28 | 10 | 8 | 3 | 2 | - |

# E-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni 2-4

m/min

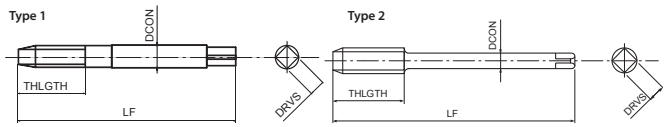
M | PM | ISO 2 6H | B/5 | DIN 371

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 89313860 | 3 | 0,5 | 56 | 12 | 3,5 | 2,7 | 3 | 1 | 371 |
| 89314460 | 4 | 0,7 | 63 | 16 | 4,5 | 3,4 | 3 | 1 | 371 |
| 89314960 | 5 | 0,8 | 70 | 19 | 6 | 4,9 | 3 | 1 | 371 |
| 89315560 | 6 | 1 | 80 | 23 | 6 | 4,9 | 3 | 1 | 371 |
| 89316160 | 8 | 1,25 | 90 | 30 | 8 | 6,2 | 3 | 1 | 371 |
| 89316960 | 10 | 1,5 | 100 | 38 | 10 | 8 | 3 | 1 | 371 |
| 89417960 | 12 | 1,75 | 110 | 28 | 10 | 8 | 3 | 2 | - |

# WHR-NI-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 2-4

m/min

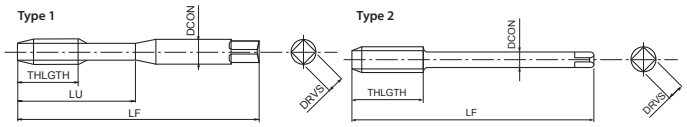
M | PM | HR | ISO 2 6H | B/5 | DIN 371

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48079138 | 3 | 0,5 | 56 | 12 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48079144 | 4 | 0,7 | 63 | 16 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48079149 | 5 | 0,8 | 70 | 19 | 6 | 4,9 | 3 | 1 | 371 |
| 48079155 | 6 | 1 | 80 | 23 | 6 | 4,9 | 3 | 1 | 371 |
| 48079161 | 8 | 1,25 | 90 | 30 | 8 | 6,2 | 3 | 1 | 371 |
| 48079169 | 10 | 1,5 | 100 | 38 | 10 | 8 | 3 | 1 | 371 |
| 48079179 | 12 | 1,75 | 110 | 28 | 10 | 8 | 3 | 2 | - |

# CPM-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For steels up to 900 N/mm² and cast iron

| P | K | H | H |
|---|---|---|---|
| C ≥ 0,45% | GGG | 25-35 HRC | 35-45 HRC |
| 8-13 | 10-15 | 6-10 | 6-10 |

m/min

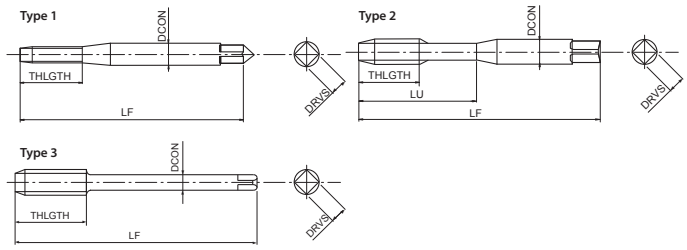
M | PM | ISO 2 6H | B/5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 80713860 | 3 | 0,5 | 56 | - | 11 | 3,5 | 2,7 | 3 | 1 | 371 |
| 80714460 | 4 | 0,7 | 63 | - | 13 | 4,5 | 3,4 | 3 | 1 | 371 |
| 80714960 | 5 | 0,8 | 70 | - | 16 | 6 | 4,9 | 3 | 1 | 371 |
| 80715560 | 6 | 1 | 80 | - | 19 | 6 | 4,9 | 3 | 1 | 371 |
| 80716160 | 8 | 1,25 | 90 | - | 22 | 8 | 6,2 | 3 | 1 | 371 |
| 80716960 | 10 | 1,5 | 100 | - | 24 | 10 | 8 | 3 | 1 | 371 |
| 80815560 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 80816160 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 3 | 2 | 376 |
| 80816960 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 3 | 2 | 376 |
| 80817960 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 80819160 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 80820260 | 16 | 2 | 110 | 32 | - | 12 | 9 | 4 | 2 | 376 |
| 80821460 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 4 | 2 | 376 |
| 80822860 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 4 | 2 | 376 |

# H-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P | K | S | S | H | H |
|---|---|---|---|---|---|
| C ≥ 0,45% | GGG | Ti | Ni | 25-35 HRC | 35-45 HRC |
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 |

m/min

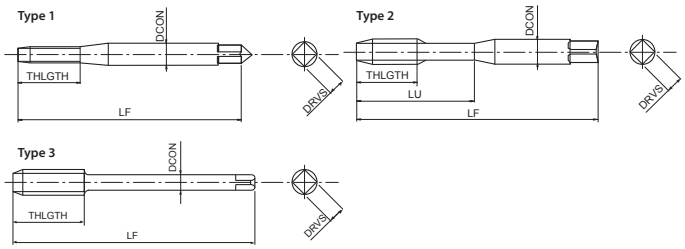
M | PM | OX | ISO 2 6H | B/5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 88412560 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 88413360 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 88413860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 88414460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 88414960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 88415560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 88416160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 88416960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 88517960 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 88519160 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 88520260 | 16 | 2 | 110 | 32 | - | 12 | 9 | 4 | 3 | 376 |
| 88521460 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 4 | 3 | 376 |
| 88522860 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 4 | 3 | 376 |

# VP-H-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For hardened steels up to 45 HRC

| P | K | S | S | H | H |
|---|---|---|---|---|---|
| C ≥ 0,45% | GGG | Ti | Ni | 25-35 HRC | 35-45 HRC |
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 |

m/min

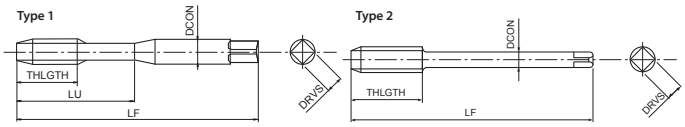
M | PM | V | ISO 2 6HX | B/5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48084125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48084133 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 2 | 1 | 371 |
| 48084138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48084144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48084149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48084155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48084161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48084169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48084179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 3 | 376 |
| 48084191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 3 | 376 |
| 48084202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 4 | 3 | 376 |
| 48084214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 4 | 3 | 376 |
| 48084228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 4 | 3 | 376 |
| 48084238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48084247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48084262 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 3 | 376 |
| 48084271 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 3 | 376 |
| 48084281 | 33 | 3,5 | 180 | 50 | - | 25 | 20 | 4 | 3 | 376 |
| 48084294 | 36 | 4 | 200 | 56 | - | 28 | 22 | 4 | 3 | 376 |

# VPO-H-POT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For hardened steels up to 45 HRC
- Side through coolant

| P | K | S | S | H | H |
|---|---|---|---|---|---|
| C ≥ 0,45% | GGG | Ti | Ni | 25-35 HRC | 35-45 HRC |
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 |

m/min

M | PM | V | ISO 2 6HX | B/5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48085155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48085161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48085169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 48085179 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 3 | 2 | 376 |
| 48085191 | 14 | 2 | 110 | 30 | - | 11 | 9 | 3 | 2 | 376 |
| 48085202 | 16 | 2 | 110 | 32 | - | 12 | 9 | 4 | 2 | 376 |
| 48085214 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 4 | 2 | 376 |
| 48085228 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 4 | 2 | 376 |
| 48085238 | 22 | 2,5 | 140 | 34 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48085247 | 24 | 3 | 160 | 38 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48085262 | 27 | 3 | 160 | 38 | - | 20 | 16 | 4 | 2 | 376 |
| 48085271 | 30 | 3,5 | 180 | 45 | - | 22 | 18 | 4 | 2 | 376 |
| 48085281 | 33 | 3,5 | 180 | 50 | - | 25 | 20 | 4 | 2 | 376 |
| 48085294 | 36 | 4 | 200 | 56 | - | 28 | 22 | 4 | 2 | 376 |

# A-SFT

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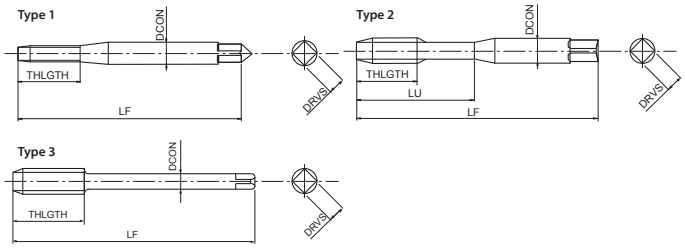
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|

| | DIN 371 | DIN 376 |
|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48139111 | 1 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139112 | 1,1 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139113 | 1,2 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139115 | 1,4 | 0,3 | 40 | - | 6 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139118 | 1,6 | 0,35 | 40 | - | 7 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139119 | 1,7 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139120 | 1,8 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48139125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48139127 | 2,2 | 0,45 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48139128 | 2,3 | 0,4 | 45 | 3,6 | 12 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48139133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48139136 | 2,6 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48139138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48139142 | 3,5 | 0,6 | 56 | 4,8 | 20 | 4 | 3 | 3 | 2 | 371 |
| 48139144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48139147 | 4,5 | 0,75 | 70 | 6 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48139149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48139152 | 5,5 | 0,9 | 80 | 7,2 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48139155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48139158 | 7 | 1 | 80 | 8 | 30 | 7 | 5,5 | 3 | 2 | 371 |
| 48139161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48139165 | 9 | 1,25 | 90 | 10 | 35 | 9 | 7 | 3 | 2 | 371 |
| 48139169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48139139 | 3 | 0,5 | 56 | 4 | - | 2,2 | - | 3 | 3 | 376 |
| 48139185 | 4 | 0,7 | 63 | 5,6 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 48139150 | 5 | 0,8 | 70 | 6,4 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 48139187 | 6 | 1 | 80 | 8 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 48139159 | 7 | 1 | 80 | 8 | - | 5,5 | 4,3 | 3 | 3 | 376 |
| 48139188 | 8 | 1,25 | 90 | 10 | - | 6 | 4,9 | 3 | 3 | 376 |
| 48139166 | 9 | 1,25 | 90 | 10 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48139189 | 10 | 1,5 | 100 | 12 | - | 7 | 5,5 | 3 | 3 | 376 |
| 48139175 | 11 | 1,5 | 100 | 12 | - | 8 | 6,2 | 3 | 3 | 376 |
| 48139179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 3 | 376 |
| 48139191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 3 | 3 | 376 |
| 48139202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 3 | 376 |
| 48139214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 48139228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 48139238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48139247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |

# A-OIL-SFT

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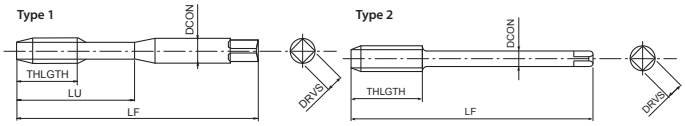
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|

| | | DIN 371 | DIN 376 |
|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48140155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48140161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48140169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48140179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48140191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48140202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |
| 48140214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48140228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48140238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48140247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48140262 | 27 | 3 | 160 | 36 | - | 20 | 16 | 4 | 2 | 376 |
| 48140271 | 30 | 3,5 | 180 | 42 | - | 22 | 18 | 4 | 2 | 376 |
| 48140281 | 33 | 3,5 | 180 | 42 | - | 25 | 20 | 4 | 2 | 376 |
| 48140294 | 36 | 4 | 200 | 48 | - | 28 | 22 | 4 | 2 | 376 |
| 48140304 | 39 | 4 | 200 | 48 | - | 32 | 24 | 4 | 2 | 376 |
| 48140314 | 42 | 4,5 | 200 | 54 | - | 32 | 24 | 4 | 2 | 376 |
| 48140319 | 45 | 4,5 | 220 | 54 | - | 36 | 29 | 4 | 2 | 376 |
| 48140325 | 48 | 5 | 250 | 60 | - | 36 | 29 | 4 | 2 | 376 |
| 48140337 | 52 | 5 | 250 | 60 | - | 40 | 32 | 4 | 2 | 376 |
| 48140347 | 56 | 5,5 | 250 | 66 | - | 40 | 32 | 4 | 2 | 376 |

# A-SFT 6GX

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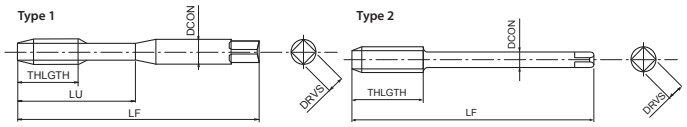
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | ISO 3 6GX | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48201125 | 2 | 0,4 | 0.019 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48201133 | 2,5 | 0,45 | 0.02 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48201138 | 3 | 0,5 | 0.02 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48201144 | 4 | 0,7 | 0.022 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48201149 | 5 | 0,8 | 0.024 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48201155 | 6 | 1 | 0.026 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48201161 | 8 | 1,25 | 0.028 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48201169 | 10 | 1,5 | 0.032 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48201179 | 12 | 1,75 | 0.034 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48201191 | 14 | 2 | 0.038 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48201202 | 16 | 2 | 0.038 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |

# A-SFT 7GX

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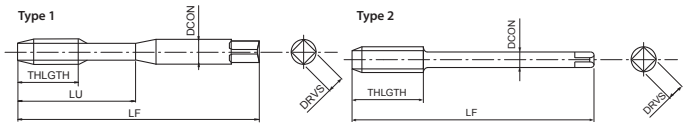
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | 7GX | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48202125 | 2 | 0,4 | 0.038 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48202133 | 2,5 | 0,45 | 0.04 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48202138 | 3 | 0,5 | 0.04 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48202144 | 4 | 0,7 | 0.044 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48202149 | 5 | 0,8 | 0.048 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48202155 | 6 | 1 | 0.052 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48202161 | 8 | 1,25 | 0.056 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48202169 | 10 | 1,5 | 0.064 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48202179 | 12 | 1,75 | 0.068 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48202191 | 14 | 2 | 0.076 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48202202 | 16 | 2 | 0.076 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |

# A-SFT +0.1

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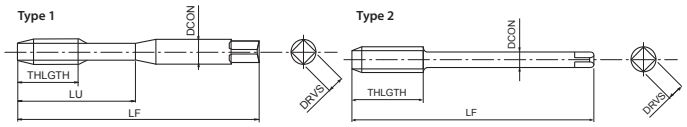
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Oversized tap for 6H +0,1mm thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

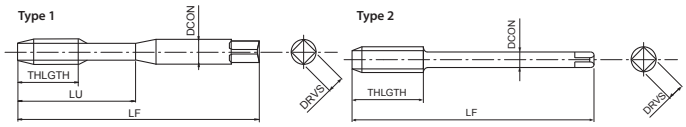
| A | M | PM | V | 45° | 6H +0.1 | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48204138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48204144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48204149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48204155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48204161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48204169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48204179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48204202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |

# A-SFT FORM E

INDEX

## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | ISO 2 6HX | E/1,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48203125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203127 | 2,2 | 0,45 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203128 | 2,3 | 0,4 | 45 | 3,6 | 12 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203136 | 2,6 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48203142 | 3,5 | 0,6 | 56 | 4,8 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48203144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48203147 | 4,5 | 0,75 | 70 | 6 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48203149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48203152 | 5,5 | 0,9 | 80 | 7,2 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48203155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48203158 | 7 | 1 | 80 | 8 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48203161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48203165 | 9 | 1,25 | 90 | 10 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48203169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48203139 | 3 | 0,5 | 56 | 4 | - | 2,2 | - | 3 | 2 | 376 |
| 48203185 | 4 | 0,7 | 63 | 5,6 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 48203150 | 5 | 0,8 | 70 | 6,4 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 48203187 | 6 | 1 | 80 | 5 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48203159 | 7 | 1 | 80 | 8 | - | 5,5 | 4,3 | 3 | 2 | 376 |
| 48203188 | 8 | 1,25 | 90 | 10 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48203166 | 9 | 1,25 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48203189 | 10 | 1,5 | 100 | 12 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48203175 | 11 | 1,5 | 100 | 12 | - | 8 | 6,2 | 3 | 2 | 376 |
| 48203179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48203191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48203202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |
| 48203214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48203228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48203238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48203247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# A-LT-SFT

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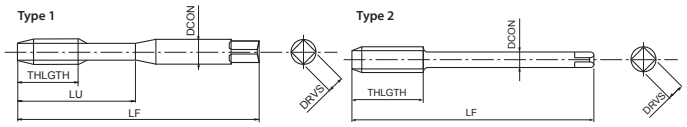
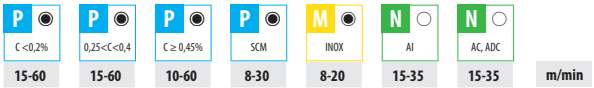
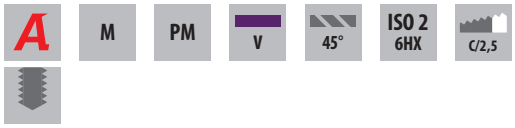
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- With long shank for long reach threading




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 48208125 | 2 | 0,4 | 80 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 |
| 48208133 | 2,5 | 0,45 | 100 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 |
| 48208138 | 3 | 0,5 | 100 | 4 | 18 | 3,5 | 2,7 | 3 | 1 |
| 48208144 | 4 | 0,7 | 125 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 |
| 48208149 | 5 | 0,8 | 160 | 6,4 | 25 | 6 | 4,9 | 3 | 1 |
| 48208155 | 6 | 1 | 160 | 8 | 30 | 6 | 4,9 | 3 | 1 |
| 48209155 | 6 | 1 | 160 | 10 | - | 4,5 | 3,4 | 3 | 2 |
| 48208161 | 8 | 1,25 | 180 | 10 | 35 | 8 | 6,2 | 3 | 1 |
| 48209161 | 8 | 1,25 | 180 | 11 | - | 6 | 4,9 | 3 | 2 |
| 48208169 | 10 | 1,5 | 200 | 12 | 39 | 10 | 8 | 3 | 1 |
| 48209169 | 10 | 1,5 | 200 | 14 | - | 7 | 5,5 | 3 | 2 |
| 48209179 | 12 | 1,75 | 200 | 14 | - | 9 | 7 | 3 | 2 |
| 48209191 | 14 | 2 | 200 | 16 | - | 11 | 9 | 3 | 2 |
| 48209202 | 16 | 2 | 200 | 16 | - | 12 | 9 | 3 | 2 |
| 48209214 | 18 | 2,5 | 200 | 25 | - | 14 | 11 | 4 | 2 |
| 48209228 | 20 | 2,5 | 200 | 25 | - | 16 | 12 | 4 | 2 |

# A-SFT-LH

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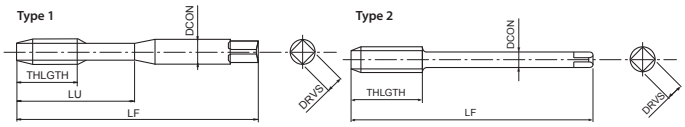
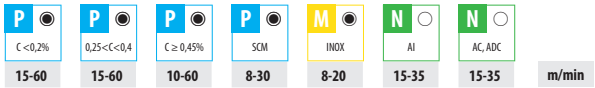
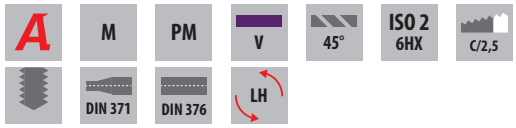
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For left-hand threads




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48217138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48217144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48217149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48217155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48217161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48217169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48217179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48217191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48217202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |
| 48217214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48217228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48217238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48217247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# A-SFT-HB Weldon

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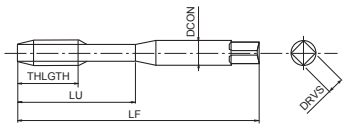
## Threading | Cutting taps | Metric




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- With Weldon shank

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | M | PM | V | 45° | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 1835 | HB | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48220138 | 3 | 0,5 | 56 | 4 | 18 | 6 | 4,9 | 3 | 371/1835 |
| 48220144 | 4 | 0,7 | 63 | 5,6 | 21 | 6 | 4,9 | 3 | 371/1835 |
| 48220149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 371/1835 |
| 48220155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 371/1835 |
| 48220161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 371/1835 |
| 48220169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 371/1835 |
| 48220179 | 12 | 1,75 | 110 | 14 | 46 | 12 | 9 | 3 | 371/1835 |
| 48220191 | 14 | 2 | 110 | 16 | 49 | 14 | 11 | 3 | 371/1835 |
| 48220202 | 16 | 2 | 110 | 16 | 56 | 16 | 12 | 3 | 371/1835 |

# A-SFT-INOX

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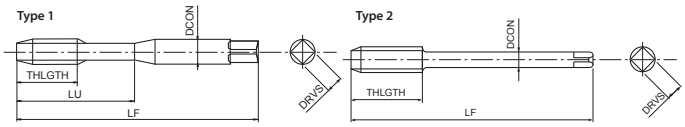
## Threading | Cutting taps | Metric

**NEW**




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer VI coating
- Eliminates chip entanglement issues in stainless steel

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-20 | 5-50 | 5-50 | 5-30 | 5-15 | 5-50 | m/min |

| A | M | PM | VI | 45° | ISO 2 6HX |
|---|---|---|---|---|---|
| C/2,5 | | DIN 371 | DIN 376 | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48455125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455127 | 2,2 | 0,45 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455128 | 2,3 | 0,4 | 45 | 3,6 | 12 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455136 | 2,6 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48455142 | 3,5 | 0,6 | 56 | 4,8 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48455144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48455147 | 4,5 | 0,75 | 70 | 6 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48455149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48455152 | 5,5 | 0,9 | 80 | 7,2 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48455155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48455158 | 7 | 1 | 80 | 8 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48455161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48455165 | 9 | 1,25 | 90 | 10 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48455169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48455139 | 3 | 0,5 | 56 | 4 | - | 2,2 | - | 3 | 2 | 376 |
| 48455185 | 4 | 0,7 | 63 | 5,6 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 48455150 | 5 | 0,8 | 70 | 6,4 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 48455187 | 6 | 1 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48455159 | 7 | 1 | 80 | 8 | - | 5,5 | 4,3 | 3 | 2 | 376 |
| 48455188 | 8 | 1,25 | 90 | 10 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48455166 | 9 | 1,25 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48455189 | 10 | 1,5 | 100 | 12 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48455175 | 11 | 1,5 | 100 | 12 | - | 8 | 6,2 | 3 | 2 | 376 |
| 48455179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 3 | 2 | 376 |
| 48455191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 3 | 2 | 376 |
| 48455202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 3 | 2 | 376 |
| 48455214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48455228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48455238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48455247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# A-SFT-AL

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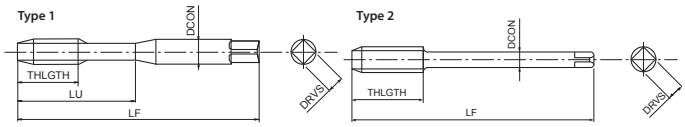
**Threading | Cutting taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in aluminium cast and aluminium die cast

N
AC, ADC
5-50 m/min

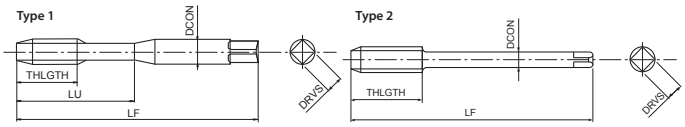
A | M | PM | V | 45° | ISO 2 6HX | C/2,5
DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48456125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48456133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48456138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 2 | 1 | 371 |
| 48456144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 2 | 1 | 371 |
| 48456149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 2 | 1 | 371 |
| 48456155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 2 | 1 | 371 |
| 48456161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 2 | 1 | 371 |
| 48456169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 2 | 1 | 371 |
| 48456179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 2 | 2 | 376 |

# A-SFT-AL FORM E

INDEX

**Threading | Cutting taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in aluminium cast and aluminium die cast
- Form E chamfer

N
AC, ADC
5-30 m/min

A | M | PM | V | 45° | ISO 2 6HX | E/1,5
DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48457125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48457133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48457138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 2 | 1 | 371 |
| 48457144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 2 | 1 | 371 |
| 48457149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 2 | 1 | 371 |
| 48457155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 2 | 1 | 371 |
| 48457161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 2 | 1 | 371 |
| 48457169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 2 | 1 | 371 |
| 48457179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 2 | 2 | 376 |

# A-CSF OIL

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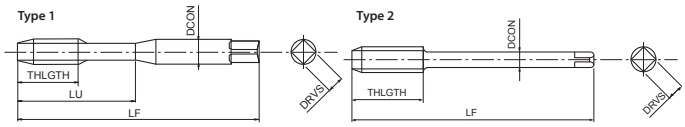
**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Carbide spiral-fluted cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | M | CARBIDE | FX | h6 | 15° | ISO 2 6HX |
|---|---|---|---|---|---|---|
| C/2,5 | | | DIN 371 | DIN 376 | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48267149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48267155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48267161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48267169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48267179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 3 | 2 | 376 |

# A-CSF OIL FORM E

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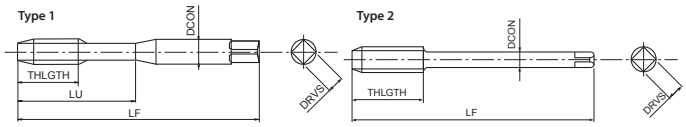
**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Carbide spiral-fluted cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant, Form E chamfer

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | M | CARBIDE | FX | h6 | 15° | ISO 2 6HX |
|---|---|---|---|---|---|---|
| E/1,5 | | | DIN 371 | DIN 376 | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48266149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48266155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48266161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48266169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48266179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 3 | 2 | 376 |

# S-SFT

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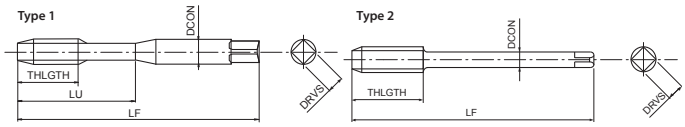
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P | P | P | P | M | K | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG | |
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | ISO 1 5H≤M1,4 | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | |

* Tolerance 5H

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48223111* | 1 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223112* | 1,1 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223113* | 1,2 | 0,25 | 40 | - | 5 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223115* | 1,4 | 0,3 | 40 | - | 6 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223118 | 1,6 | 0,35 | 40 | - | 7 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223119 | 1,7 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223120 | 1,8 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48223125 | 2 | 0,4 | 45 | 4 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48223127 | 2,2 | 0,45 | 45 | 5 | 11 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48223128 | 2,3 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48223133 | 2,5 | 0,45 | 50 | 4,5 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48223136 | 2,6 | 0,45 | 50 | 4,5 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48223138 | 3 | 0,5 | 56 | 5 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48223142 | 3,5 | 0,6 | 56 | 6 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48223144 | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48223147 | 4,5 | 0,75 | 70 | 7,5 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48223149 | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48223152 | 5,5 | 0,9 | 80 | 9 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48223155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48223158 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48223161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48223165 | 9 | 1,25 | 90 | 13 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48223169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48223140 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 2 | 376 |
| 48223185 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 48223150 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 48223187 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48223159 | 7 | 1 | 80 | 10 | - | 5,5 | 4,3 | 3 | 2 | 376 |
| 48223188 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48223166 | 9 | 1,25 | 90 | 13 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48223189 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48223175 | 11 | 1,5 | 100 | 15 | - | 8 | 6,2 | 3 | 2 | 376 |
| 48223179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 4 | 2 | 376 |
| 48223191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 4 | 2 | 376 |
| 48223202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 4 | 2 | 376 |
| 48223214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48223228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48223238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48223247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# S-SFT 6G

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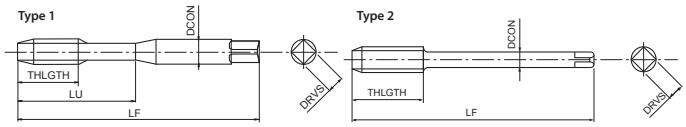
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P | P | P | P | M | K | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG | |
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6G | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48269125 | 2 | 0,4 | 0.019 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48269133 | 2,5 | 0,45 | 0.02 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48269138 | 3 | 0,5 | 0.02 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48269144 | 4 | 0,7 | 0.022 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48269149 | 5 | 0,8 | 0.024 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48269155 | 6 | 1 | 0.026 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48269161 | 8 | 1,25 | 0.028 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48269169 | 10 | 1,5 | 0.032 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48269179 | 12 | 1,75 | 0.034 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48269191 | 14 | 2 | 0.038 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48269202 | 16 | 2 | 0.038 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |

# S-SFT 7G

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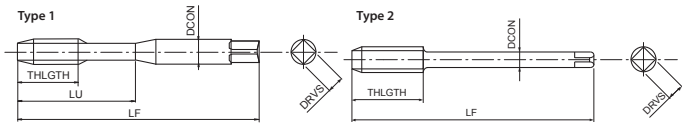
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

M | HSSE | 0X | 40° | 7G | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48274125 | 2 | 0,4 | 0.038 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48274133 | 2,5 | 0,45 | 0.04 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48274138 | 3 | 0,5 | 0.04 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48274144 | 4 | 0,7 | 0.044 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48274149 | 5 | 0,8 | 0.048 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48274155 | 6 | 1 | 0.052 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48274161 | 8 | 1,25 | 0.056 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48274169 | 10 | 1,5 | 0.064 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48274179 | 12 | 1,75 | 0.068 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48274191 | 14 | 2 | 0.076 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48274202 | 16 | 2 | 0.076 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |

# S-SFT +0.1

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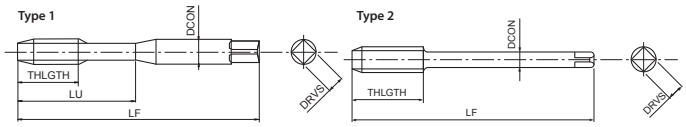
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- Oversized tap for 6H +0,1mm thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

M | HSSE | 0X | 40° | 6H +0.1 | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48270138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48270144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48270149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48270155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48270161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48270169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48270179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48270191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48270202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |

# S-SFT FORM E

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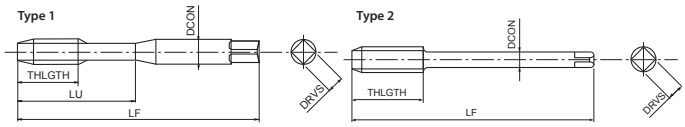
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | E/1,5 | |
|---|---|---|---|---|---|---|

| DIN 371 | DIN 376 |
|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48268125 | 2 | 0,4 | 45 | 4 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48268127 | 2,2 | 0,45 | 45 | 5 | 11 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48268128 | 2,3 | 0,4 | 45 | 4 | 12 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48268133 | 2,5 | 0,45 | 50 | 4,5 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48268136 | 2,6 | 0,45 | 50 | 4,5 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48268138 | 3 | 0,5 | 56 | 5 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48268142 | 3,5 | 0,6 | 56 | 6 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48268144 | 4 | 0,7 | 63 | 7 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48268147 | 4,5 | 0,75 | 70 | 7,5 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48268149 | 5 | 0,8 | 70 | 8 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48268152 | 5,5 | 0,9 | 80 | 9 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48268155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48268158 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48268161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48268165 | 9 | 1,25 | 90 | 13 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48268169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48268140 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 2 | 376 |
| 48268185 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 48268150 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 48268187 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48268159 | 7 | 1 | 80 | 10 | - | 5,5 | 4,3 | 3 | 2 | 376 |
| 48268188 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48268166 | 9 | 1,25 | 90 | 13 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48268189 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 2 | 376 |
| 48268175 | 11 | 1,5 | 100 | 15 | - | 8 | 6,2 | 3 | 2 | 376 |
| 48268179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 4 | 2 | 376 |
| 48268191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 4 | 2 | 376 |
| 48268202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 4 | 2 | 376 |
| 48268214 | 18 | 2,5 | 125 | 15 | - | 14 | 11 | 4 | 2 | 376 |
| 48268228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48268238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48268247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# S-LT-SFT

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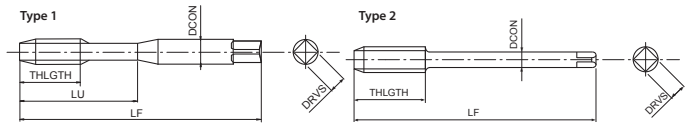
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- With long shank for long reach threading

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 48275125 | 2 | 0,4 | 80 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 |
| 48275133 | 2,5 | 0,45 | 100 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 |
| 48275138 | 3 | 0,5 | 100 | 4 | 18 | 3,5 | 2,7 | 3 | 1 |
| 48275144 | 4 | 0,7 | 125 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 |
| 48275149 | 5 | 0,8 | 160 | 6,4 | 25 | 6 | 4,9 | 3 | 1 |
| 48275155 | 6 | 1 | 160 | 8 | 30 | 6 | 4,9 | 3 | 1 |
| 48275187 | 6 | 1 | 160 | 10 | - | 4,5 | 3,4 | 3 | 2 |
| 48275161 | 8 | 1,25 | 180 | 10 | 35 | 8 | 6,2 | 3 | 1 |
| 48275188 | 8 | 1,25 | 180 | 11 | - | 6 | 4,9 | 3 | 2 |
| 48275169 | 10 | 1,5 | 200 | 12 | 39 | 10 | 8 | 3 | 1 |
| 48275189 | 10 | 1,5 | 200 | 14 | - | 7 | 5,5 | 3 | 2 |
| 48275179 | 12 | 1,75 | 200 | 14 | - | 9 | 7 | 4 | 2 |
| 48275191 | 14 | 2 | 200 | 16 | - | 11 | 9 | 4 | 2 |
| 48275202 | 16 | 2 | 200 | 16 | - | 12 | 9 | 4 | 2 |
| 48275214 | 18 | 2,5 | 200 | 25 | - | 14 | 11 | 4 | 2 |
| 48275228 | 20 | 2,5 | 200 | 25 | - | 16 | 12 | 4 | 2 |

# S-SFT-LH

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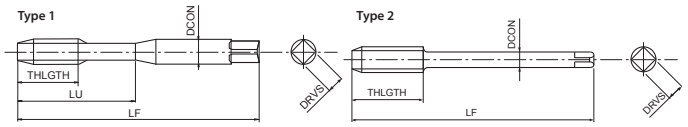
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For left-hand threads

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | LH | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48276138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48276144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48276149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48276155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48276161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48276169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48276179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48276191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48276202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |
| 48276214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48276228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48276238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48276247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |

# S-SFT-HB Weldon

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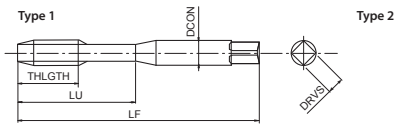
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- With Weldon shank

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 1835 | HB | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48277138 | 3 | 0,5 | 56 | 4 | 18 | 6 | 4,9 | 3 | 371/1835 |
| 48277144 | 4 | 0,7 | 63 | 5,6 | 21 | 6 | 4,9 | 3 | 371/1835 |
| 48277149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 371/1835 |
| 48277155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 371/1835 |
| 48277161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 371/1835 |
| 48277169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 3 | 371/1835 |
| 48277179 | 12 | 1,75 | 110 | 14 | 46 | 12 | 9 | 4 | 371/1835 |
| 48277191 | 14 | 2 | 110 | 16 | 49 | 14 | 11 | 4 | 371/1835 |
| 48277202 | 16 | 2 | 110 | 16 | 56 | 16 | 12 | 4 | 371/1835 |

# VA-SFT

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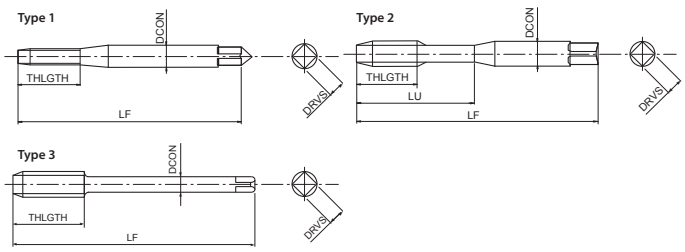
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 65312560 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 65312860 | 2,2 | 0,45 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 65313360 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 65313860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 65314060 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 65314460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 65314960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 65315560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 65316160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 65316960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 65413860 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 3 | 376 |
| 65414460 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 65414960 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 65415560 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 65416160 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 3 | 376 |
| 65416960 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 3 | 376 |
| 65417960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 4 | 3 | 376 |
| 65419160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 4 | 3 | 376 |
| 65420260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 4 | 3 | 376 |
| 65421460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 65422860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 65423860 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 65424760 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |
| 65426260 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 3 | 376 |
| 65427160 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 5 | 3 | 376 |
| 65428160 | 33 | 3,5 | 180 | 35 | - | 25 | 20 | 5 | 3 | 376 |
| 65429460 | 36 | 4 | 200 | 40 | - | 28 | 22 | 5 | 3 | 376 |

# VA-SFT 6G

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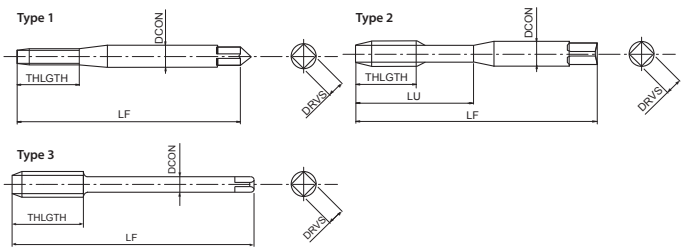
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | 0X | 40° | ISO 3 6G | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 65312599 | 2 | 0,4 | 0.019 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 65313399 | 2,5 | 0,45 | 0.02 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 65313899 | 3 | 0,5 | 0.02 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 65314499 | 4 | 0,7 | 0.022 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 65314999 | 5 | 0,8 | 0.024 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 65315599 | 6 | 1 | 0.026 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 65316199 | 8 | 1,25 | 0.028 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 65316999 | 10 | 1,5 | 0.032 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 65417999 | 12 | 1,75 | 0.034 | 110 | 18 | - | 9 | 7 | 4 | 3 | 376 |
| 65419199 | 14 | 2 | 0.038 | 110 | 20 | - | 11 | 9 | 4 | 3 | 376 |
| 65420299 | 16 | 2 | 0.038 | 110 | 20 | - | 12 | 9 | 4 | 3 | 376 |

# VA-SFT FORM E

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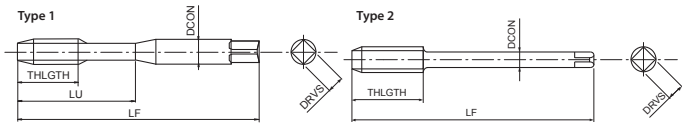
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| M | HSSE | OX | 40° | ISO 2 6H | E/1,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48036138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48036144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48036149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48036155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48036161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48036169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 48036179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 2 | 376 |
| 48036191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 2 | 376 |
| 48036202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 2 | 376 |

# Z-SFT

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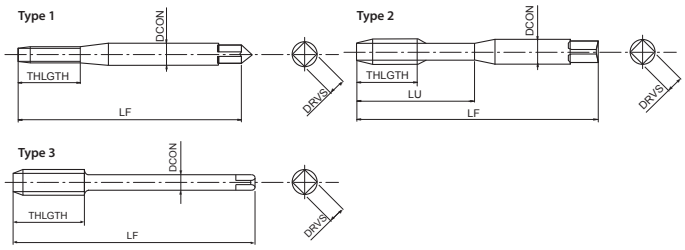
## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-25 | 10-25 | 10-25 | 8-20 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC | | | | | | |
|---|---|---|---|---|---|---|---|
| 5-10 | 8-15 | | | | | | |

| M | PM | V | 50° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 80512568 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 80513368 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 80513868 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 80514468 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 80514968 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 80515568 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 80516168 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 80516968 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 80613868 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 3 | 376 |
| 80614468 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 80614968 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 80615568 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 80616168 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 3 | 376 |
| 80616968 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 3 | 376 |
| 80617968 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 4 | 3 | 376 |
| 80619168 | 14 | 2 | 110 | 20 | - | 11 | 9 | 4 | 3 | 376 |
| 80620268 | 16 | 2 | 110 | 20 | - | 12 | 9 | 4 | 3 | 376 |
| 80621468 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 80622868 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 81623868 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 81624768 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |
| 81626268 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 3 | 376 |
| 81627168 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 4 | 3 | 376 |

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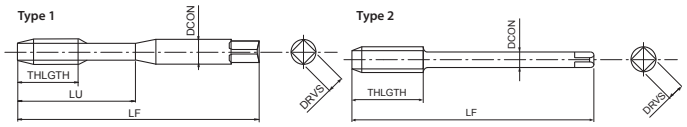
## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-25 | 10-25 | 10-25 | 8-20 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-15 |

| M | PM | V | 50° | ISO 2 6H | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 80515588 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 80516188 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 80516988 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 80617988 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 4 | 2 | 376 |
| 80619188 | 14 | 2 | 110 | 20 | - | 11 | 9 | 4 | 2 | 376 |
| 80620288 | 16 | 2 | 110 | 20 | - | 12 | 9 | 4 | 2 | 376 |
| 80621488 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 80622888 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |

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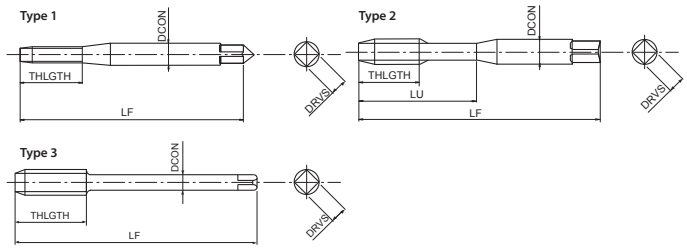
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For general purpose applications

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GGG | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 6-8 | 10-20 | 10-15 | m/min |

| M | HSSE | 40° | ISO 2 6H | C/2,5 | | DIN 371 | |
|---|---|---|---|---|---|---|---|
| DIN 376 | | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 61312560 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 61313360 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 61313860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 61314060 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 61314460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 61314960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 61315560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 61316160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 61316960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 61413860 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 3 | 376 |
| 61414460 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 61414960 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 61415560 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 61416160 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 3 | 376 |
| 61416960 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 3 | 376 |
| 61417960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 61419160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 61420260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 61421460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 61422860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 61423860 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 61424760 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |
| 61426260 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 3 | 376 |
| 61427160 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 4 | 3 | 376 |
| 61428160 | 33 | 3,5 | 180 | 35 | - | 25 | 20 | 4 | 3 | 376 |
| 61429460 | 36 | 4 | 200 | 40 | - | 28 | 22 | 4 | 3 | 376 |

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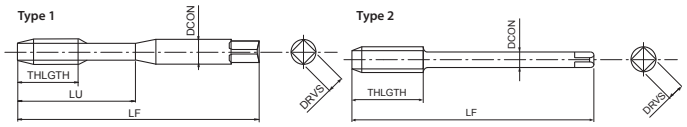
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For general purpose applications
- According to DIN 352 shank reduced length

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GGG | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 6-8 | 10-20 | 10-15 | m/min |

| M | HSSE | 40° | ISO 2 6H | C/2,5 | | DIN 352 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 60413860 | 3 | 0,5 | 40 | 18 | 3,5 | 2,7 | 3 | 1 | 352 |
| 60414460 | 4 | 0,7 | 45 | 21 | 4,5 | 3,4 | 3 | 1 | 352 |
| 60414960 | 5 | 0,8 | 50 | 24 | 6 | 4,9 | 3 | 1 | 352 |
| 60415560 | 6 | 1 | 50 | 27 | 6 | 4,9 | 3 | 1 | 352 |
| 60416160 | 8 | 1,25 | 63 | 13 | 6 | 4,9 | 3 | 2 | 352 |
| 60416960 | 10 | 1,5 | 70 | 15 | 7 | 5,5 | 3 | 2 | 352 |

# TIN-SFT

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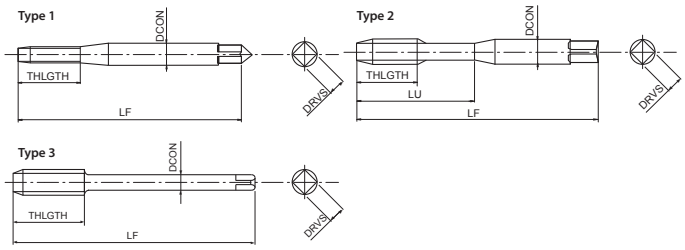
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- TiN coating
- For steels up to 850 N/mm²

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 10-20 | 10-15 | m/min |

| M | HSSE | TiN | 40° | ISO 2 6H | C/2,5 | | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 6131256001 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 6131336001 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 6131386001 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 6131406001 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 6131446001 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 6131496001 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 6131556001 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 6131616001 | 8 | 1,25 | 90 | - | 36 | 8 | 6,2 | 3 | 2 | 371 |
| 6131696001 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 6141386001 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 3 | 376 |
| 6141446001 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 6141496001 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 6141556001 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 6141616001 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 3 | 376 |
| 6141696001 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 3 | 376 |
| 6141796001 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 6141916001 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 6142026001 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 6142146001 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 6142286001 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 6142386001 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 6142476001 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |
| 6142626001 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 3 | 376 |
| 6142716001 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 4 | 3 | 376 |

# TICN-SFT

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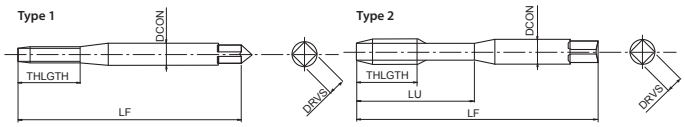
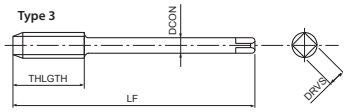
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For steels up to 850 N/mm²

| P ○ | P ○ | P ◉ | P ○ | M ○ | K ○ | N ○ | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG | Al | |
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 10-20 | m/min |

| N ○ | |
|---|---|
| AC, ADC | |
| 10-15 | |

| M | HSSE | V | 40° | ISO 2 6H | C/2,5 | |
|---|---|---|---|---|---|---|

| DIN 371 | DIN 376 |
|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 6131256002 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 6131386002 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 6131446002 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 6131496002 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 6131556002 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 6131616002 | 8 | 1,25 | 90 | - | 36 | 8 | 6,2 | 3 | 2 | 371 |
| 6131696002 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 6141796002 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 6141916002 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 6142026002 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 6142146002 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 6142286002 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 6142386002 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 6142476002 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |

# HXL-SFT

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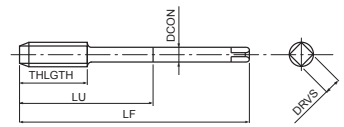
## Threading | Cutting taps | Metric




- HSSE low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For steels and cast iron
- For horizontal applications in oil and heavy industry

| P ○ | P ○ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | |
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 7-12 | m/min |

| H ○ | |
|---|---|
| 25-35 HRC | |
| 3-5 | |

| M | HSSE | 0X | 15° | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48045228 | 20 | 2,5 | 140 | 20 | 69 | 16 | 12 | 5 |
| 48045247 | 24 | 3 | 160 | 24 | 81 | 18 | 14,5 | 5 |
| 48045262 | 27 | 3 | 160 | 24 | 90 | 20 | 16 | 5 |
| 48045271 | 30 | 3,5 | 250 | 28 | 161 | 22 | 18 | 5 |
| 48045281 | 33 | 3,5 | 250 | 28 | 176 | 25 | 20 | 5 |
| 48045294 | 36 | 4 | 250 | 32 | 174 | 28 | 22 | 5 |
| 48045304 | 39 | 4 | 300 | 32 | 188 | 32 | 24 | 5 |
| 48045314 | 42 | 4,5 | 300 | 36 | 203 | 32 | 24 | 6 |
| 48045325 | 48 | 5 | 300 | 40 | 183 | 36 | 29 | 6 |
| 48045337 | 52 | 5 | 300 | 40 | 197 | 40 | 32 | 6 |
| 48045347 | 56 | 5,5 | 300 | 44 | 213 | 45 | 35 | 6 |

# OIL-HXL-SFT

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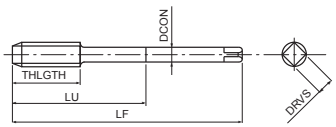
## Threading | Cutting taps | Metric




- HSSE low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For steels and cast iron
- Centre through coolant, for horizontal applications in oil and heavy industry

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48048228 | 20 | 2,5 | 140 | 20 | 69 | 16 | 12 | 5 |
| 48048247 | 24 | 3 | 160 | 24 | 81 | 18 | 14,5 | 5 |
| 48048262 | 27 | 3 | 160 | 24 | 90 | 20 | 16 | 5 |
| 48048271 | 30 | 3,5 | 250 | 28 | 161 | 22 | 18 | 5 |
| 48048281 | 33 | 3,5 | 250 | 28 | 176 | 25 | 20 | 5 |
| 48048294 | 36 | 4 | 250 | 32 | 174 | 28 | 22 | 5 |
| 48048304 | 39 | 4 | 300 | 32 | 188 | 32 | 24 | 5 |
| 48048314 | 42 | 4,5 | 300 | 36 | 203 | 32 | 24 | 6 |
| 48048325 | 48 | 5 | 300 | 40 | 183 | 36 | 29 | 6 |
| 48048337 | 52 | 5 | 300 | 40 | 197 | 40 | 32 | 6 |
| 48048347 | 56 | 5,5 | 300 | 44 | 213 | 45 | 35 | 6 |

# VXL-SFT

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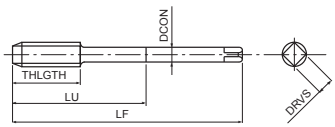
## Threading | Cutting taps | Metric




- HSSE high spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For general steels
- For vertical applications in oil and heavy industry

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48046228 | 20 | 2,5 | 140 | 20 | 69 | 16 | 12 | 4 |
| 48046247 | 24 | 3 | 160 | 24 | 81 | 18 | 14,5 | 4 |
| 48046262 | 27 | 3 | 160 | 24 | 90 | 20 | 16 | 4 |
| 48046271 | 30 | 3,5 | 250 | 28 | 161 | 22 | 18 | 5 |
| 48046281 | 33 | 3,5 | 250 | 28 | 176 | 25 | 20 | 5 |
| 48046294 | 36 | 4 | 250 | 32 | 174 | 28 | 22 | 5 |
| 48046304 | 39 | 4 | 300 | 32 | 188 | 32 | 24 | 5 |
| 48046314 | 42 | 4,5 | 300 | 36 | 203 | 32 | 24 | 6 |
| 48046325 | 48 | 5 | 300 | 40 | 183 | 36 | 29 | 6 |
| 48046337 | 52 | 5 | 300 | 40 | 197 | 40 | 32 | 6 |
| 48046347 | 56 | 5,5 | 300 | 44 | 213 | 45 | 35 | 6 |

# OIL-VXL-SFT

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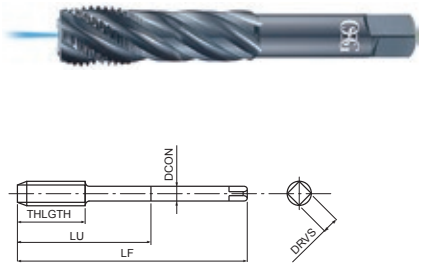
## Threading | Cutting taps | Metric




- HSSE high spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For general steels
- Centre through coolant, for vertical applications in oil and heavy industry

| P | P | P | P | M | H |
|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | 25-35 HRC |
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 3-5 |

m/min

M | HSSE | 0X | 45° | ISO 2 6HX | C/2,5

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48049228 | 20 | 2,5 | 140 | 20 | 69 | 16 | 12 | 4 |
| 48049247 | 24 | 3 | 160 | 24 | 81 | 18 | 14,5 | 4 |
| 48049262 | 27 | 3 | 160 | 24 | 90 | 20 | 16 | 4 |
| 48049271 | 30 | 3,5 | 250 | 28 | 161 | 22 | 18 | 5 |
| 48049281 | 33 | 3,5 | 250 | 28 | 176 | 25 | 20 | 5 |
| 48049294 | 36 | 4 | 250 | 32 | 174 | 28 | 22 | 5 |
| 48049304 | 39 | 4 | 300 | 32 | 188 | 32 | 24 | 5 |
| 48049314 | 42 | 4,5 | 300 | 36 | 203 | 32 | 24 | 6 |
| 48049325 | 48 | 5 | 300 | 40 | 183 | 36 | 29 | 6 |
| 48049337 | 52 | 5 | 300 | 40 | 197 | 40 | 32 | 6 |
| 48049347 | 56 | 5,5 | 300 | 44 | 213 | 45 | 35 | 6 |

# SH-SFT

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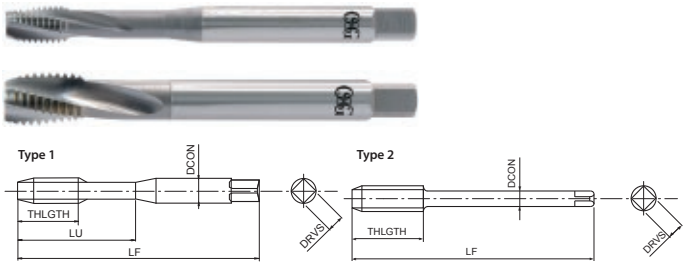
## Threading | Cutting taps | Metric




- HSSE low spiral-fluted cutting tap for blind holes
- Bright finish
- For alloyed steels ≥ 1100N/mm²
- Short chip creation

| P | P | P | K | K | N |
|---|---|---|---|---|---|
| 0,25<C<0,4 | C ≥ 0,45% | SCM | GG | GGG | AC, ADC |
| 7-12 | 7-12 | 6-9 | 7-12 | 6-8 | 10-15 |

m/min

M | HSSE | 15° | ISO 2 6H | C/3 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 72313860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 72314460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 72314960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 72315560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 72316160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 72316960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 72017960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 2 | 376 |
| 72019160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 2 | 376 |
| 72020260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 2 | 376 |
| 72021460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 72022860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |

# M-SFT-DUPLEX

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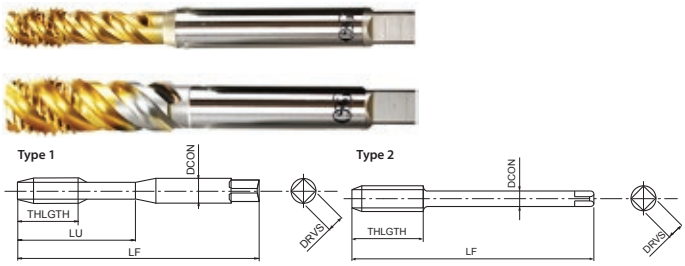
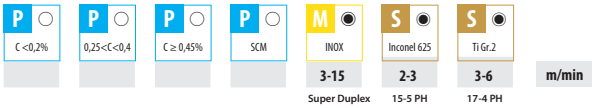
## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex



| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48336125 | 2 | 0,4 | 45 | 3,2 | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48336133 | 2,5 | 0,45 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48336138 | 3 | 0,5 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48336144 | 4 | 0,7 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48336149 | 5 | 0,8 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48336155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48336161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48336169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 4 | 1 | 371 |
| 48336179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48336191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48336202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |
| 48336214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 4 | 2 | 376 |
| 48336228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 4 | 2 | 376 |
| 48336238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48336247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 4 | 2 | 376 |

# M-OIL-SFT-DUPLEX

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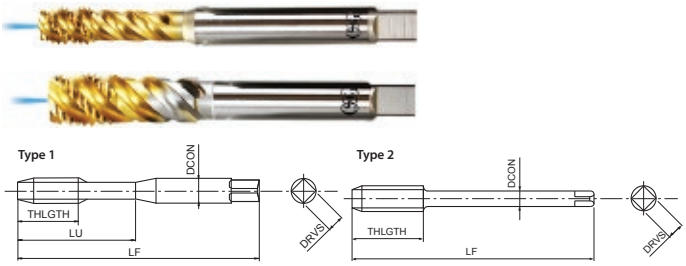
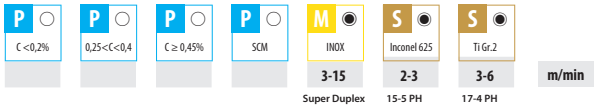
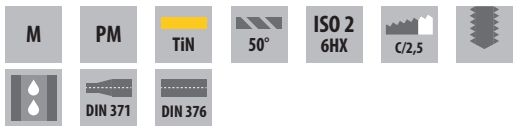
## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex
- Centre through coolant




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48380155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48380161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48380169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 4 | 1 | 371 |
| 48380179 | 12 | 1,75 | 110 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48380191 | 14 | 2 | 110 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48380202 | 16 | 2 | 110 | 16 | - | 12 | 9 | 4 | 2 | 376 |
| 48380214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 4 | 2 | 376 |
| 48380228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 4 | 2 | 376 |
| 48380238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48380247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 4 | 2 | 376 |

# M-LT-SFT-DUPLEX

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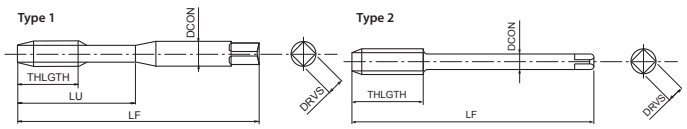
## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex
- With long shank for deep reach threading,up to 3D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | S Inconel 625 | S Ti Gr.2 | |
|---|---|---|---|---|---|---|---|
| | | | | 3-15 Super Duplex | 2-3 15-5 PH | 3-6 17-4 PH | m/min |

| M | PM | TiN | 50° | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48381125 | 2 | 0,4 | 80 | 3,2 | 12 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48381133 | 2,5 | 0,45 | 100 | 3,6 | 15,5 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48381138 | 3 | 0,5 | 100 | 4 | 21 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48381144 | 4 | 0,7 | 125 | 5,6 | 25 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48381149 | 5 | 0,8 | 160 | 6,4 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48381155 | 6 | 1 | 160 | 8 | 36 | 6 | 4,9 | 3 | 1 | 371 |
| 48381161 | 8 | 1,25 | 180 | 10 | 43 | 8 | 6,2 | 3 | 1 | 371 |
| 48381169 | 10 | 1,5 | 200 | 12 | 49 | 10 | 8 | 4 | 1 | 371 |
| 48381187 | 6 | 1 | 160 | 8 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 48381188 | 8 | 1,25 | 180 | 10 | - | 6 | 4,9 | 3 | 2 | 376 |
| 48381189 | 10 | 1,5 | 200 | 12 | - | 7 | 5,5 | 4 | 2 | 376 |
| 48381179 | 12 | 1,75 | 200 | 14 | - | 9 | 7 | 4 | 2 | 376 |
| 48381191 | 14 | 2 | 200 | 16 | - | 11 | 9 | 4 | 2 | 376 |
| 48381202 | 16 | 2 | 200 | 16 | - | 12 | 9 | 4 | 2 | 376 |
| 48381214 | 18 | 2,5 | 200 | 20 | - | 14 | 11 | 4 | 2 | 376 |
| 48381228 | 20 | 2,5 | 200 | 20 | - | 16 | 12 | 4 | 2 | 376 |

# CC-SFT

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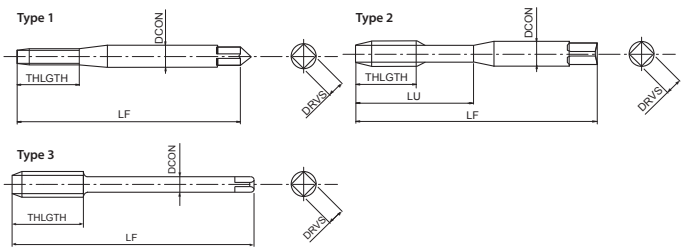
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

| M | HSSE | CrN | 45° | ISO 2 6HX | C/2,5 | ≥2D | DIN 371 | DIN 376 |
|---|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48032125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48032133 | 2,5 | 0,45 | 50 | - | 10 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48032138 | 3 | 0,5 | 56 | - | 12 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48032144 | 4 | 0,7 | 63 | - | 16 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48032149 | 5 | 0,8 | 70 | - | 20 | 6 | 4,9 | 3 | 1 | 371 |
| 48032155 | 6 | 1 | 80 | - | 24 | 6 | 4,9 | 3 | 1 | 371 |
| 48032161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48032169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 4 | 2 | 371 |
| 48035138 | 3 | 0,5 | 56 | 5 | - | 2,2 | - | 3 | 3 | 376 |
| 48035144 | 4 | 0,7 | 63 | 7 | - | 2,8 | 2,1 | 3 | 3 | 376 |
| 48035149 | 5 | 0,8 | 70 | 8 | - | 3,5 | 2,7 | 3 | 3 | 376 |
| 48035155 | 6 | 1 | 80 | 10 | - | 4,5 | 3,4 | 3 | 3 | 376 |
| 48035161 | 8 | 1,25 | 90 | 11 | - | 6 | 4,9 | 3 | 3 | 376 |
| 48035169 | 10 | 1,5 | 100 | 14 | - | 7 | 5,5 | 4 | 3 | 376 |
| 48032179 | 12 | 1,75 | 110 | 16 | - | 9 | 7 | 4 | 3 | 376 |
| 48032191 | 14 | 2 | 110 | 18 | - | 11 | 9 | 4 | 3 | 376 |
| 48032202 | 16 | 2 | 110 | 18 | - | 12 | 9 | 4 | 3 | 376 |
| 48032214 | 18 | 2,5 | 125 | 23 | - | 14 | 11 | 4 | 3 | 376 |
| 48032228 | 20 | 2,5 | 140 | 23 | - | 16 | 12 | 4 | 3 | 376 |
| 48032238 | 22 | 2,5 | 140 | 23 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48032247 | 24 | 3 | 160 | 27 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48032262 | 27 | 3 | 160 | 27 | - | 20 | 16 | 4 | 3 | 376 |
| 48032271 | 30 | 3,5 | 180 | 32 | - | 22 | 18 | 4 | 3 | 376 |
| 48032294 | 36 | 4 | 200 | 36 | - | 28 | 22 | 4 | 3 | 376 |

# CC-LT-SFT

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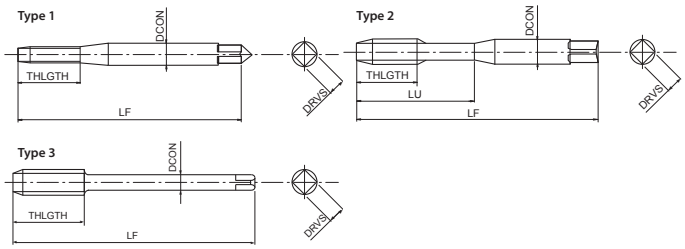
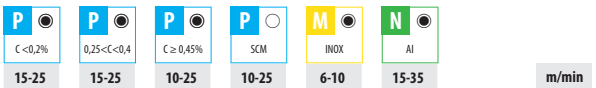
## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- With long shank for long reach threading

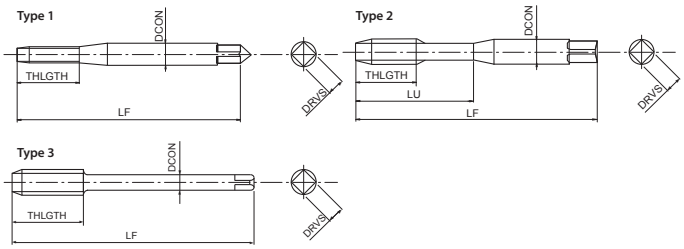


| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 48113125 | 2 | 0,4 | 80 | - | 8 | 2,8 | 2,1 | 2 | 1 |
| 48113133 | 2,5 | 0,45 | 100 | - | 10 | 2,8 | 2,1 | 2 | 1 |
| 48113138 | 3 | 0,5 | 100 | - | 12 | 3,5 | 2,7 | 3 | 1 |
| 48113144 | 4 | 0,7 | 125 | - | 16 | 4,5 | 3,4 | 3 | 1 |
| 48113149 | 5 | 0,8 | 140 | - | 20 | 6 | 4,9 | 3 | 1 |
| 48113155 | 6 | 1 | 160 | - | 24 | 6 | 4,9 | 3 | 1 |
| 48113161 | 8 | 1,25 | 180 | - | 35 | 8 | 6,2 | 3 | 2 |
| 48113169 | 10 | 1,5 | 200 | - | 39 | 10 | 8 | 4 | 2 |
| 48113179 | 12 | 1,75 | 200 | 16 | - | 9 | 7 | 4 | 3 |

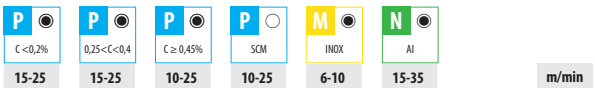
# CC-NEO-SFT

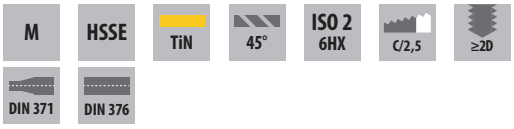
INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- Variable helix for better chip evacuation



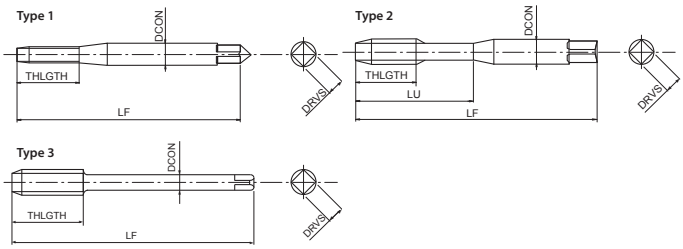




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48081125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48081133 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48081138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 2 | 2 | 371 |
| 48081144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 2 | 2 | 371 |
| 48081149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 2 | 2 | 371 |
| 48081155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 2 | 2 | 371 |
| 48081161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48081169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48081179 | 12 | 1,75 | 110 | 13 | - | 9 | 7 | 3 | 3 | 376 |
| 48081191 | 14 | 2 | 110 | 14 | - | 11 | 9 | 3 | 3 | 376 |
| 48081202 | 16 | 2 | 110 | 14 | - | 12 | 9 | 3 | 3 | 376 |

# SUS-SFT

INDEX

## Threading | Cutting taps | Metric




- HSSE high spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For stainless steels

6-10

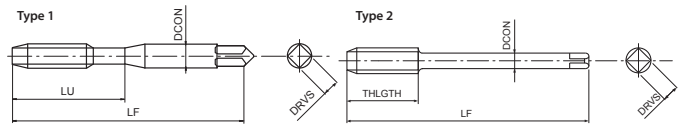
m/min

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48025125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48025128 | 2,2 | 0,45 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48025133 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48025138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48025140 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 3 | 2 | 371 |
| 48025144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48025149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48025155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48025161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48025169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48026179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 48026191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 48026202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 48026214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 48026228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 48026238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48026247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |

# HS-SFT-TIN

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- TiN coating
- For high speed tapping in various materials

27-32 | 27-32 | 22-27 | 22-27 | 15-20 | 50-100 | 40-100

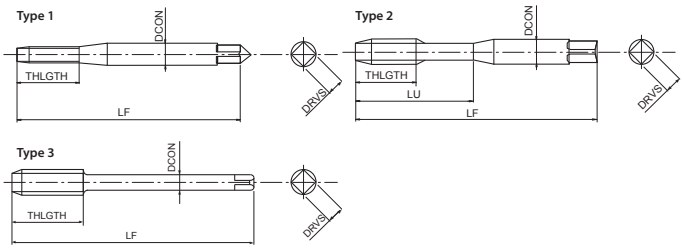
m/min

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 20810 | 3 | 0,5 | 46 | 4 | 19 | 4 | 3,2 | 3 | 1 |
| 20814 | 4 | 0,7 | 52 | 5,6 | 21 | 6 | 4,5 | 3 | 1 |
| 20818 | 5 | 0,8 | 60 | 6,4 | 24 | 6 | 4,5 | 3 | 1 |
| 20822 | 6 | 1 | 62 | 8 | 29 | 6 | 4,5 | 3 | 1 |
| 20828 | 8 | 1,25 | 70 | 10 | 37 | 8 | 6 | 3 | 1 |
| 20834 | 10 | 1,5 | 75 | 12 | 41 | 8 | 6 | 3 | 2 |
| 20839 | 12 | 1,75 | 82 | 14 | 48 | 10 | 8 | 3 | 2 |

# AL-SFT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For aluminium and cast aluminium

N Al 10-20

N AC, ADC 10-15

m/min

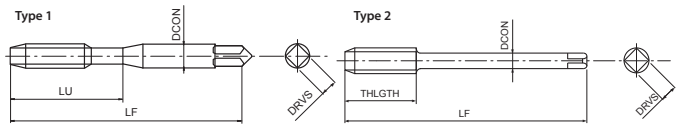
M | HSSE | 50° | ISO 2 6H | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 70211860 | 1,6 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 70212560 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 70212860 | 2,2 | 0,45 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 70213360 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 70213860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 2 | 2 | 371 |
| 70214060 | 3,5 | 0,6 | 56 | - | 20 | 4 | 3 | 2 | 2 | 371 |
| 70214460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 2 | 2 | 371 |
| 70214960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 2 | 2 | 371 |
| 70215560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 2 | 2 | 371 |
| 70216160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 2 | 2 | 371 |
| 70216960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 2 | 2 | 371 |
| 70317960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 2 | 3 | 376 |
| 70319160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 2 | 3 | 376 |
| 70320260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 2 | 3 | 376 |
| 70321460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 2 | 3 | 376 |
| 70322860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 3 | 3 | 376 |

# US-AL-SFT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For high speed tapping in aluminium and cast aluminium
- Developed for rigid tapping on CNC machines

N Al 100-400

N AC, ADC 100-400

m/min

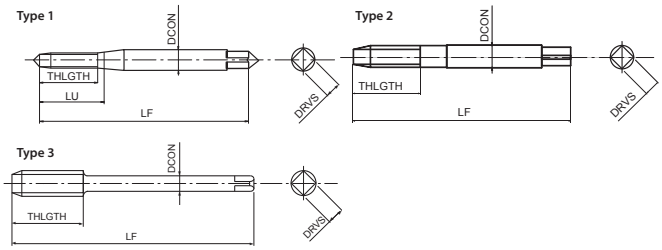
M | HSSE | V | ±45° | ISO 2 6H | C/3

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8311669 | 3 | 0,5 | 46 | 4 | 19 | 4 | 3,2 | 2 | 1 |
| 8311683 | 4 | 0,7 | 52 | 5,6 | 21 | 6 | 4,5 | 2 | 1 |
| 8311697 | 5 | 0,8 | 60 | 6,4 | 24 | 6 | 4,5 | 2 | 1 |
| 8311711 | 6 | 1 | 62 | 8 | 29 | 6 | 4,5 | 2 | 1 |
| 8311725 | 8 | 1,25 | 70 | 10 | 37 | 8 | 6 | 2 | 1 |
| 8311739 | 10 | 1,5 | 75 | 12 | 41 | 8 | 6 | 2 | 2 |
| 8311757 | 12 | 1,75 | 82 | 14 | 48 | 10 | 8 | 2 | 2 |

# V-TI-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For Titanium alloys

S Ti

3-5

m/min

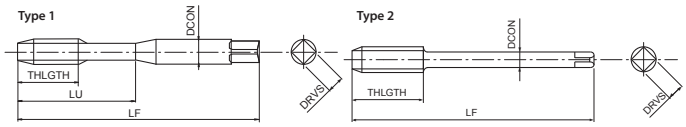
M | PM | V | 10° | ISO 2 6H | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48011118 | 1,6 | 0,35 | 40 | - | 8 | 2,5 | 2,1 | 2 | 1 | 371 |
| 48011125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48011133 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 2 | 371 |
| 48011138 | 3 | 0,5 | 56 | - | 11 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48011144 | 4 | 0,7 | 63 | - | 14 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48011149 | 5 | 0,8 | 70 | - | 17 | 6 | 4,9 | 3 | 2 | 371 |
| 48011155 | 6 | 1 | 80 | - | 21 | 6 | 4,9 | 3 | 2 | 371 |
| 48011161 | 8 | 1,25 | 90 | - | 28 | 8 | 6,2 | 3 | 2 | 371 |
| 48011169 | 10 | 1,5 | 100 | - | 35 | 10 | 8 | 3 | 2 | 371 |
| 48011179 | 12 | 1,75 | 110 | 18 | - | 10 | 8 | 3 | 3 | 376 |

# E-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni

1-3

m/min

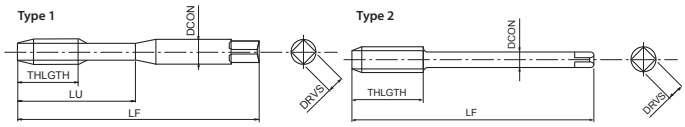
M | PM | 10° | ISO 2 6H | C/2,5 | DIN 371

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 89513860 | 3 | 0,5 | 56 | - | 11 | 3,5 | 2,7 | 3 | 1 | 371 |
| 89514460 | 4 | 0,7 | 63 | - | 14 | 4,5 | 3,4 | 3 | 1 | 371 |
| 89514960 | 5 | 0,8 | 70 | - | 18 | 6 | 4,9 | 3 | 1 | 371 |
| 89515560 | 6 | 1 | 80 | - | 21 | 6 | 4,9 | 3 | 1 | 371 |
| 89516160 | 8 | 1,25 | 90 | - | 28 | 8 | 6,2 | 3 | 1 | 371 |
| 89516960 | 10 | 1,5 | 100 | - | 35 | 10 | 8 | 3 | 1 | 371 |
| 89617960 | 12 | 1,75 | 110 | 18 | - | 10 | 8 | 3 | 2 | - |

# WHR-NI-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 1-3 — m/min

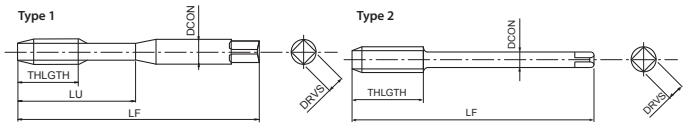
M | PM | HR | 11° | ISO 2 6H | C/2,5 | DIN 371

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48078138 | 3 | 0,5 | 56 | - | 11 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48078144 | 4 | 0,7 | 63 | - | 14 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48078149 | 5 | 0,8 | 70 | - | 18 | 6 | 4,9 | 3 | 1 | 371 |
| 48078155 | 6 | 1 | 80 | - | 21 | 6 | 4,9 | 3 | 1 | 371 |
| 48078161 | 8 | 1,25 | 90 | - | 28 | 8 | 6,2 | 3 | 1 | 371 |
| 48078169 | 10 | 1,5 | 100 | - | 35 | 10 | 8 | 3 | 1 | 371 |
| 48078179 | 12 | 1,75 | 110 | 18 | - | 10 | 8 | 3 | 2 | - |

# CPM-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For steels up to 900 N/mm² and cast iron

P C ≥ 0,45% 7-12 | P SCM 7-12 | K GG 7-12 | K GGG 7-12 | H 25-35 HRC 4-8 | H 35-45 HRC 4-8 — m/min

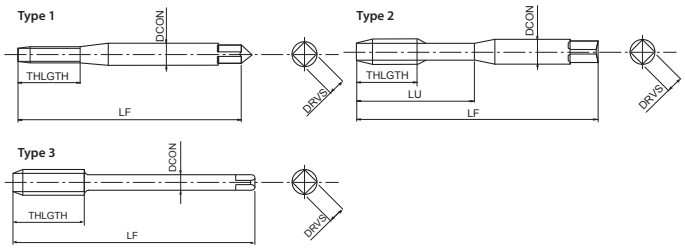
M | PM | 15° | ISO 2 6H | C/3 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 81913860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 81914460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 81914960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 81915560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 81916160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 81916960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 82016160 | 8 | 1,25 | 90 | 13 | - | 6 | 4,9 | 3 | 2 | 376 |
| 82016960 | 10 | 1,5 | 100 | 15 | - | 7 | 5,5 | 3 | 2 | 376 |
| 82017960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 2 | 376 |
| 82019160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 2 | 376 |
| 82020260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 2 | 376 |
| 82021460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 82022860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |

# H-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

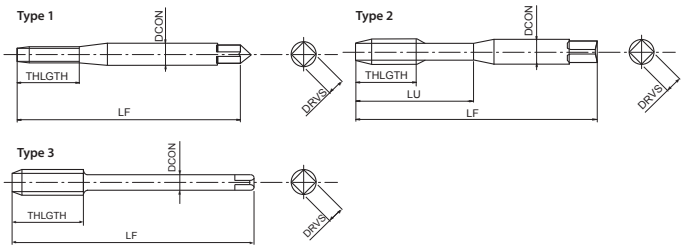
| M | PM | 0X | 15° | ISO 2 6H | C/3 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 83212560 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 83213360 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 83213860 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 83214460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 83214960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 83215560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 83216160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 83216960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 83317960 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 83319160 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 83320260 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 83321460 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 83322860 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |

# VP-H-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal low spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

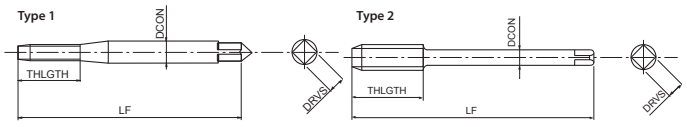
| M | PM | V | 15° | ISO 2 6HX | C/3 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48082125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48082133 | 2,5 | 0,45 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48082138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48082144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48082149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48082155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48082161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48082169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48082179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 3 | 376 |
| 48082191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 3 | 376 |
| 48082202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 3 | 376 |
| 48082214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 3 | 376 |
| 48082228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 3 | 376 |
| 48082238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48082247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 3 | 376 |
| 48082262 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 3 | 376 |
| 48082271 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 4 | 3 | 376 |
| 48082281 | 33 | 3,5 | 180 | 35 | - | 25 | 20 | 4 | 3 | 376 |
| 48082294 | 36 | 4 | 200 | 40 | - | 28 | 22 | 4 | 3 | 376 |

# VPO-H-SFT

INDEX

## Threading | Cutting taps | Metric




- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For hardened steels up to 45 HRC
- Centre through coolant

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

M | PM | V | 15° | ISO 2 6HX | C/3

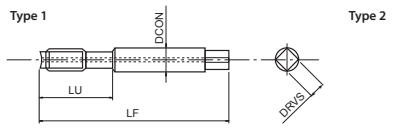
DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48083155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48083161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48083169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 1 | 371 |
| 48083179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 3 | 2 | 376 |
| 48083191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 3 | 2 | 376 |
| 48083202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 3 | 2 | 376 |
| 48083214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 4 | 2 | 376 |
| 48083228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 4 | 2 | 376 |
| 48083238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48083247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 4 | 2 | 376 |
| 48083262 | 27 | 3 | 160 | 30 | - | 20 | 16 | 4 | 2 | 376 |
| 48083271 | 30 | 3,5 | 180 | 35 | - | 22 | 18 | 4 | 2 | 376 |
| 48083281 | 33 | 3,5 | 180 | 35 | - | 25 | 20 | 4 | 2 | 376 |
| 48083294 | 36 | 4 | 200 | 40 | - | 28 | 22 | 4 | 2 | 376 |

# V-EM-SFT

INDEX

## Threading | Cutting taps | Metric




- HSSE spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For die cast aluminium
- Centre through coolant, with end cut, for pre-formed cast holes

| N AC, ADC | |
|---|---|
| 10-15 | m/min |

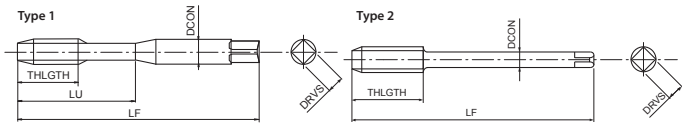
M | HSSE | V | 45° | ISO 2 6H | C/2,5

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|
| 1001480570 | 4 | 0,7 | 80 | 21 | 6 | 4,5 | 3 |
| 1001480580 | 5 | 0,8 | 80 | 24 | 6 | 4,5 | 3 |
| 1001480450 | 6 | 1 | 100 | 29 | 6 | 4,5 | 3 |
| 1001480210 | 8 | 1,25 | 100 | 37 | 8 | 6 | 3 |
| 1001480590 | 10 | 1,5 | 100 | 41 | 8 | 6 | 3 |
| 1001480610 | 12 | 1,75 | 100 | 48 | 10 | 8 | 3 |
| 1001480640 | 14 | 2 | 120 | 48 | 12 | 10 | 3 |
| 1001480650 | 16 | 2 | 120 | 52 | 16 | 12 | 3 |

# VP-DC-MT

INDEX

## Threading | Cutting taps | Metric




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

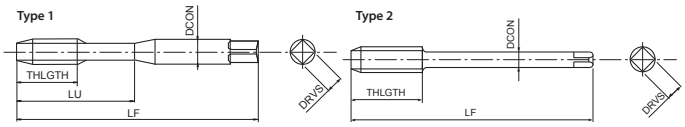
| M | PM | V | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48020125 | 2 | 0,4 | 45 | 8 | 10 | 2,8 | 2,1 | 3 | 15 | 1 | 371 |
| 48020133 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 3 | 14 | 1 | 371 |
| 48020138 | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 371 |
| 48020142 | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 3 | 24 | 1 | 371 |
| 48020144 | 4 | 0,7 | 63 | 9 | 21 | 4,5 | 3,4 | 3 | 26 | 1 | 371 |
| 48020149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 31 | 1 | 371 |
| 48020155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 36 | 1 | 371 |
| 48020158 | 7 | 1 | 80 | 12 | 30 | 7 | 5,5 | 4 | 36 | 1 | 371 |
| 48020161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 43 | 1 | 371 |
| 48020169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 49 | 1 | 371 |
| 48020175 | 11 | 1,5 | 100 | 18 | - | 8 | 6,2 | 4 | 40 | 2 | 376 |
| 48020179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 44 | 2 | 376 |
| 48022191 | 14 | 2 | 110 | 24 | - | 11 | 9 | 4 | 44 | 2 | 376 |
| 48022202 | 16 | 2 | 110 | 24 | - | 12 | 9 | 4 | 44 | 2 | 376 |
| 48022214 | 18 | 2,5 | 125 | 30 | - | 14 | 11 | 4 | 50 | 2 | 376 |
| 48022228 | 20 | 2,5 | 140 | 30 | - | 16 | 12 | 4 | 56 | 2 | 376 |
| 48020238 | 22 | 2,5 | 140 | 30 | - | 18 | 14,5 | 5 | 56 | 2 | 376 |
| 48020247 | 24 | 3 | 160 | 36 | - | 18 | 14,5 | 5 | 64 | 2 | 376 |
| 48020271 | 30 | 3,5 | 180 | 42 | - | 22 | 18 | 6 | 72 | 2 | 376 |

# VP-DC-MT FORM E

INDEX

## Threading | Cutting taps | Metric




Type 3

- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, chamfer Form E

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

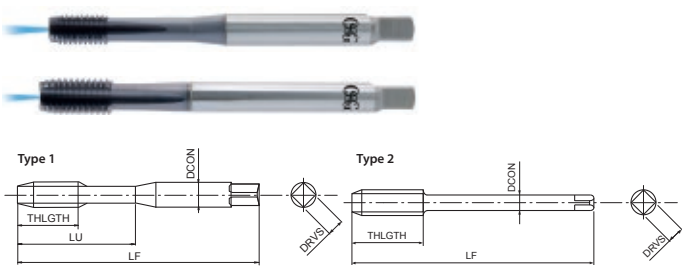
| M | PM | V | ISO 2 6HX | E/1,5 | ≥2D | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48037138 | 3 | 0,5 | 56 | 6 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 371 |
| 48037144 | 4 | 0,7 | 63 | 9 | 21 | 4,5 | 3,4 | 3 | 26 | 1 | 371 |
| 48037149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 31 | 1 | 371 |
| 48037155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 36 | 1 | 371 |
| 48037161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 43 | 1 | 371 |
| 48037169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 49 | 1 | 371 |
| 48037179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 44 | 2 | 376 |
| 48037191 | 14 | 2 | 110 | 24 | - | 11 | 9 | 4 | 44 | 2 | 376 |
| 48037202 | 16 | 2 | 110 | 24 | - | 12 | 9 | 4 | 44 | 2 | 376 |
| 48037214 | 18 | 2,5 | 125 | 30 | - | 14 | 11 | 4 | 50 | 2 | 376 |
| 48037228 | 20 | 2,5 | 140 | 30 | - | 16 | 12 | 4 | 56 | 2 | 376 |
| 48037238 | 22 | 2,5 | 140 | 30 | - | 18 | 14,5 | 5 | 56 | 2 | 376 |
| 48037247 | 24 | 3 | 160 | 36 | - | 18 | 14,5 | 5 | 64 | 2 | 376 |

# VPO-DC-MT Center

INDEX

## Threading | Cutting taps | Metric




- Powder metal straight flute cutting tap for blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with centre through coolant

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

| M | PM | V | ISO 2 6HX | C/2,5 | ≥2D | | |
|---|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48021155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 36 | 1 | 371 |
| 48021161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 43 | 1 | 371 |
| 48021169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 49 | 1 | 371 |
| 48300179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 44 | 2 | 376 |
| 48300191 | 14 | 2 | 110 | 24 | - | 11 | 9 | 4 | 44 | 2 | 376 |
| 48300202 | 16 | 2 | 110 | 24 | - | 12 | 9 | 4 | 44 | 2 | 376 |
| 48300214 | 18 | 2,5 | 125 | 30 | - | 14 | 11 | 4 | 50 | 2 | 376 |
| 48300228 | 20 | 2,5 | 140 | 30 | - | 16 | 12 | 4 | 56 | 2 | 376 |

# VPO-DC-MT Side

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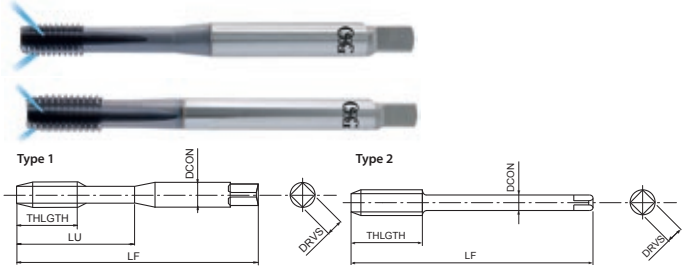
## Threading | Cutting taps | Metric




- Powder metal straight flute cutting tap for through holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with side through coolant

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

| M | PM | V | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48299155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 3 | 36 | 1 | 371 |
| 48299161 | 8 | 1,25 | 90 | 10 | 35 | 8 | 6,2 | 4 | 36 | 1 | 371 |
| 48299169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 4 | 49 | 1 | 371 |
| 48021179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 44 | 2 | 376 |
| 48024191 | 14 | 2 | 110 | 24 | - | 11 | 9 | 4 | 44 | 2 | 376 |
| 48024202 | 16 | 2 | 110 | 24 | - | 12 | 9 | 4 | 44 | 2 | 376 |
| 48024214 | 18 | 2,5 | 125 | 30 | - | 14 | 11 | 4 | 50 | 2 | 376 |
| 48024228 | 20 | 2,5 | 140 | 30 | - | 16 | 12 | 4 | 56 | 2 | 376 |

# VPO-DC-MT FORM E

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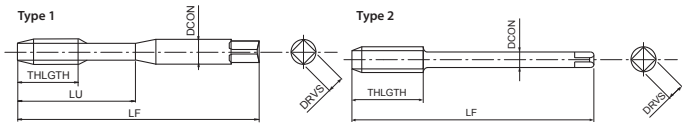
**Threading | Cutting taps | Metric**




- Powder metal straight flute cutting tap for blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with centre through coolant, chamfer Form E

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

M | PM | V | ISO 2 6HX | E/1,5 | ≥2D

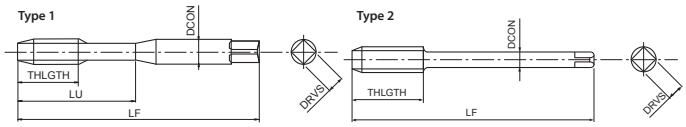
DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48038155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 36 | 1 | 371 |
| 48038161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 43 | 1 | 371 |
| 48038169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 49 | 1 | 371 |
| 48038179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 44 | 2 | 376 |
| 48038191 | 14 | 2 | 110 | 24 | - | 11 | 9 | 4 | 44 | 2 | 376 |
| 48038202 | 16 | 2 | 110 | 24 | - | 12 | 9 | 4 | 44 | 2 | 376 |
| 48038214 | 18 | 2,5 | 125 | 30 | - | 14 | 11 | 4 | 50 | 2 | 376 |
| 48038228 | 20 | 2,5 | 140 | 30 | - | 16 | 12 | 4 | 56 | 2 | 376 |
| 48038238 | 22 | 2,5 | 140 | 30 | - | 18 | 14,5 | 5 | 56 | 2 | 376 |
| 48038247 | 24 | 3 | 160 | 36 | - | 18 | 14,5 | 5 | 64 | 2 | 376 |

# A-CHT OIL Center

INDEX

**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Carbide straight flute cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant

| K | K | N | |
|---|---|---|---|
| GG | GGG | AC, ADC | |
| 10-100 | 10-100 | 10-100 | m/min |

A | M | CARBIDE | FX | h6 | ISO 2 6HX | C/2,5

DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48264149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48264155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48264161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 1 | 371 |
| 48264169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 1 | 371 |
| 48264179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 2 | 376 |

# A-CHT OIL Side

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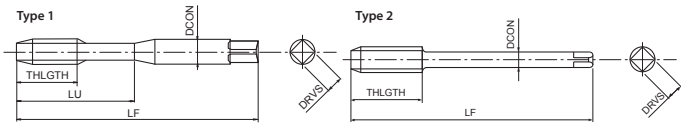
**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Carbide straight flute cutting tap for through holes
- TiAlN coating
- For cast iron and cast aluminium
- Side through coolant

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | M | CARBIDE | FX | h6 | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|
| | | DIN 371 | DIN 376 | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48265149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48265155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48265161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 1 | 371 |
| 48265169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 1 | 371 |
| 48265179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 2 | 376 |

# A-CHT OIL FORM E

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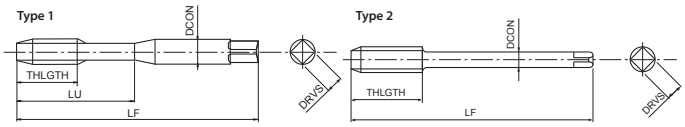
**Threading | Cutting taps | Metric**




- First choice in quality and performance
- Carbide straight flute cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant, Form E chamfer

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | M | CARBIDE | FX | h6 | ISO 2 6HX | E/1,5 |
|---|---|---|---|---|---|---|
| ≥2D | | DIN 371 | DIN 376 | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48263149 | 5 | 0,8 | 70 | 10 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48263155 | 6 | 1 | 80 | 12 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48263161 | 8 | 1,25 | 90 | 15 | 35 | 8 | 6,2 | 4 | 1 | 371 |
| 48263169 | 10 | 1,5 | 100 | 18 | 39 | 10 | 8 | 4 | 1 | 371 |
| 48263179 | 12 | 1,75 | 110 | 21 | - | 9 | 7 | 4 | 2 | 376 |

# GG-MT

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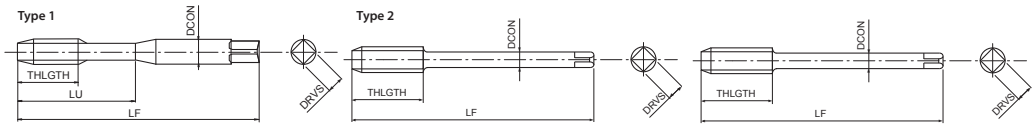
## Threading | Cutting taps | Metric




- HSSE straight flute cutting tap for blind and through holes
- NiOx coating
- For cast iron

K GG 10-15 | K GGG 7-12 — m/min

M | HSSE | NI-OX | ISO 2 6HX | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 62214460 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 62214960 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 62215560 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 62216160 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 4 | 1 | 371 |
| 62216960 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 4 | 1 | 371 |
| 62314460 | 4 | 0,7 | 63 | 13 | - | 2,8 | 2,1 | 3 | 2 | 376 |
| 62314960 | 5 | 0,8 | 70 | 16 | - | 3,5 | 2,7 | 3 | 2 | 376 |
| 62315560 | 6 | 1 | 80 | 19 | - | 4,5 | 3,4 | 3 | 2 | 376 |
| 62316160 | 8 | 1,25 | 90 | 22 | - | 6 | 4,9 | 4 | 2 | 376 |
| 62316960 | 10 | 1,5 | 100 | 24 | - | 7 | 5,5 | 4 | 2 | 376 |
| 62317960 | 12 | 1,75 | 110 | 29 | - | 9 | 7 | 4 | 2 | 376 |
| 62319160 | 14 | 2 | 110 | 30 | - | 11 | 9 | 4 | 2 | 376 |
| 62320260 | 16 | 2 | 110 | 32 | - | 12 | 9 | 4 | 2 | 376 |
| 62321460 | 18 | 2,5 | 125 | 34 | - | 14 | 11 | 4 | 2 | 376 |
| 62322860 | 20 | 2,5 | 140 | 34 | - | 16 | 12 | 4 | 2 | 376 |

# OIL-TXL-MT

INDEX

## Threading | Cutting taps | Metric

- HSSE straight flute cutting tap for blind and through holes
- Steam oxide treatment
- For cast iron and general steels
- For vertical and horizontal applications, side through coolant, up to M56

P C <0,2% 8-13 | P 0,25<C<0,4 7-12 | P C ≥ 0,45% 7-12 | P SCM 6-9 | K GG 10-15 | K GGG 7-12 | H 25-35 HRC 3-5 — m/min

M | HSSE | OX | ISO 2 6HX | C/2,5

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48052228 | 20 | 2,5 | 140 | 20 | 69 | 16 | 12 | 5 |
| 48052247 | 24 | 3 | 160 | 24 | 81 | 18 | 14,5 | 5 |
| 48052262 | 27 | 3 | 160 | 24 | 90 | 20 | 16 | 5 |
| 48052271 | 30 | 3,5 | 250 | 28 | 161 | 22 | 18 | 6 |
| 48052281 | 33 | 3,5 | 250 | 28 | 176 | 25 | 20 | 6 |
| 48052294 | 36 | 4 | 250 | 32 | 174 | 28 | 22 | 6 |
| 48052304 | 39 | 4 | 300 | 32 | 188 | 32 | 24 | 6 |
| 48052314 | 42 | 4,5 | 300 | 36 | 203 | 32 | 24 | 6 |
| 48052325 | 48 | 5 | 300 | 40 | 183 | 36 | 29 | 6 |
| 48052337 | 52 | 5 | 300 | 40 | 197 | 40 | 32 | 6 |
| 48052347 | 56 | 5,5 | 300 | 44 | 213 | 45 | 35 | 6 |

# EX-MCT

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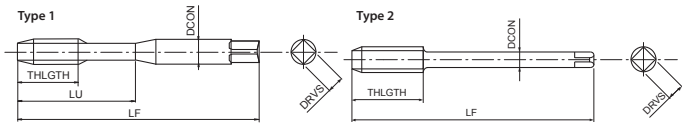
## Threading | Cutting taps | Metric




- HSSE low left-hand helix for blind and through holes
- Steam oxide treatment
- For cast iron, cast aluminium and general steels
- Long shank for long reach tapping

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 10-15 | 7-12 | 10-15 | m/min |

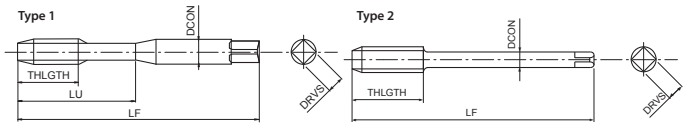
M | HSSE | 0X | 8° | ISO 2 6H | C/3

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 84015560 | 6 | 1 | 120 | - | 28 | 6 | 4,9 | 2 | 1 |
| 84016160 | 8 | 1,25 | 120 | - | 35 | 8 | 6,2 | 3 | 1 |
| 84016960 | 10 | 1,5 | 150 | 24 | - | 7 | 5,5 | 3 | 2 |
| 84017960 | 12 | 1,75 | 150 | 29 | - | 9 | 7 | 3 | 2 |
| 84019160 | 14 | 2 | 150 | 30 | - | 11 | 9 | 3 | 2 |
| 84020260 | 16 | 2 | 150 | 32 | - | 12 | 9 | 3 | 2 |
| 84021460 | 18 | 2,5 | 200 | 34 | - | 14 | 11 | 4 | 2 |
| 84022860 | 20 | 2,5 | 200 | 34 | - | 16 | 12 | 4 | 2 |

# V-XPM-HT

INDEX

## Threading | Cutting taps | Metric




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For hardened steels up to 52 HRC
- Highly wear resistant XPM tool substrate

| H 45-52 HRC | |
|---|---|
| 1-3 | m/min |

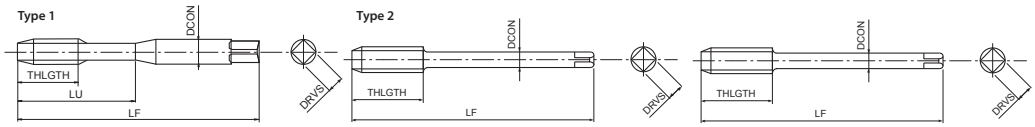
M | XPM | V | ISO 2 6HX | C/2,5

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 89913868 | 3 | 0,5 | 46 | 11 | 19 | 3,5 | 2,7 | 4 | 1 |
| 89914468 | 4 | 0,7 | 52 | 13 | 21 | 4,5 | 3,4 | 4 | 1 |
| 89914968 | 5 | 0,8 | 60 | 16 | 24 | 6 | 4,9 | 4 | 1 |
| 89915568 | 6 | 1 | 62 | 19 | 29 | 6 | 4,9 | 5 | 1 |
| 89916168 | 8 | 1,25 | 70 | 22 | 37 | 6 | 4,9 | 5 | 2 |
| 89916968 | 10 | 1,5 | 75 | 24 | 41 | 7 | 5,5 | 5 | 2 |
| 89917968 | 12 | 1,75 | 82 | 29 | 48 | 9 | 7 | 5 | 2 |

# V-XPM-HT FORM D

INDEX

**Threading | Cutting taps | Metric**




- Powder metal straight flute cutting tap for through holes
- Multilayer TiCN coating
- For hardened steels up to 52 HRC
- Highly wear resistant XPM tool substrate

1-3

m/min

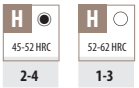
| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|
| 48335138 | 3 | 0,5 | 46 | 19 | 3,5 | 2,7 | 4 | 1 |
| 48335144 | 4 | 0,7 | 52 | 21 | 4,5 | 3,4 | 4 | 1 |
| 48335149 | 5 | 0,8 | 60 | 24 | 6 | 4,9 | 4 | 1 |
| 48335155 | 6 | 1 | 62 | 29 | 6 | 4,9 | 5 | 1 |
| 48335161 | 8 | 1,25 | 70 | 22 | 6 | 4,9 | 5 | 2 |
| 48335169 | 10 | 1,5 | 75 | 24 | 7 | 5,5 | 5 | 2 |
| 48335179 | 12 | 1,75 | 82 | 29 | 9 | 7 | 5 | 2 |

# WH55-OT

INDEX

**Threading | Cutting taps | Metric**

- Carbide straight flute cutting tap for blind and through holes
- Multilayer TiCN coating
- For hardened steels up to 55 HRC




2-4 | 1-3

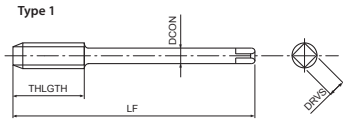
m/min

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48100138 | 3 | 0,5 | 46 | 11 | 19 | 3,5 | 2,7 | 4 |
| 48100144 | 4 | 0,7 | 52 | 13 | 21 | 4,5 | 3,4 | 4 |
| 48100149 | 5 | 0,8 | 60 | 16 | 24 | 6 | 4,9 | 4 |
| 48100155 | 6 | 1 | 62 | 19 | 29 | 6 | 4,9 | 4 |
| 48100161 | 8 | 1,25 | 70 | 22 | - | 6 | 4,9 | 5 |
| 48100169 | 10 | 1,5 | 75 | 24 | - | 7 | 5,5 | 5 |
| 48100179 | 12 | 1,75 | 82 | 29 | - | 9 | 7 | 5 |

# WH55-OT FORM D

INDEX

## Threading | Cutting taps | Metric




- Carbide straight flute cutting tap for through holes
- Multilayer TiCN coating
- For hardened steels up to 55 HRC
- Chamfer Form D

H 45-52 HRC 2-4 | H 52-62 HRC 1-3 | m/min

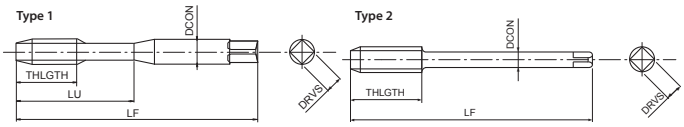
M | CARBIDE | V | D/5

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48111138 | 3 | 0,5 | 46 | 11 | 19 | 3,5 | 2,7 | 4 |
| 48111144 | 4 | 0,7 | 52 | 13 | 21 | 4,5 | 3,4 | 4 |
| 48111149 | 5 | 0,8 | 60 | 16 | 24 | 6 | 4,9 | 4 |
| 48111155 | 6 | 1 | 62 | 19 | 29 | 6 | 4,9 | 4 |
| 48111161 | 8 | 1,25 | 70 | 22 | - | 6 | 4,9 | 5 |
| 48111169 | 10 | 1,5 | 75 | 24 | - | 7 | 5,5 | 5 |
| 48111179 | 12 | 1,75 | 82 | 29 | - | 9 | 7 | 5 |

# VX-OT

INDEX

## Threading | Cutting taps | Metric




- Carbide straight flute cutting tap for blind and through holes
- Multilayer TiCN coating
- For hardened steels up to 62 HRC

H 52-62 HRC 1-3 | m/min

M | CARBIDE | V | ISO 2 6HX | C/3

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 93413868 | 3 | 0,5 | 46 | 11 | 19 | 3,5 | 2,7 | 4 | 1 |
| 93414468 | 4 | 0,7 | 52 | 13 | 21 | 4,5 | 3,4 | 4 | 1 |
| 93414968 | 5 | 0,8 | 60 | 16 | 24 | 6 | 4,9 | 4 | 1 |
| 93415568 | 6 | 1 | 62 | 19 | 29 | 6 | 4,9 | 5 | 1 |
| 93416168 | 8 | 1,25 | 70 | 22 | - | 6 | 4,9 | 5 | 2 |
| 93416968 | 10 | 1,5 | 75 | 24 | - | 7 | 5,5 | 5 | 2 |
| 93417968 | 12 | 1,75 | 82 | 29 | - | 9 | 7 | 5 | 2 |

# A-XPF

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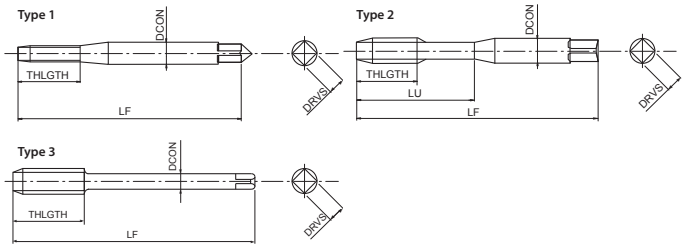
## Threading | Forming taps | Metric




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- Powder metal for long tool life

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

| A | M | PM | VI | ISO 2 6HX | M≤1,4 4HX | C/2,5 |
|---|---|---|---|---|---|---|
| | | DIN 2174 | DIN 2174 | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48133111* | 1 | 0,25 | 40 | 5,5 | 5,5 | 2,5 | 2,1 | 4 | 0,89 ~ 0,90 | 1 | 2174 |
| 48133112* | 1,1 | 0,25 | 40 | 5,5 | 5,5 | 2,5 | 2,1 | 4 | 0,99 ~ 1,00 | 1 | 2174 |
| 48133113* | 1,2 | 0,25 | 40 | 5,5 | 5,5 | 2,5 | 2,1 | 4 | 1,09 ~ 1,10 | 1 | 2174 |
| 48133115* | 1,4 | 0,3 | 40 | 7 | 7 | 2,5 | 2,1 | 4 | 1,26 ~ 1,28 | 1 | 2174 |
| 48133118 | 1,6 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,45 ~ 1,48 | 1 | 2174 |
| 48133119 | 1,7 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,55 ~ 1,58 | 1 | 2174 |
| 48133120 | 1,8 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,65 ~ 1,68 | 1 | 2174 |
| 48133125 | 2 | 0,4 | 45 | 8 | 8 | 2,8 | 2,1 | 5 | 1,82 ~ 1,85 | 1 | 2174 |
| 48133127 | 2,2 | 0,45 | 45 | 9 | 9 | 2,8 | 2,1 | 5 | 2,00 ~ 2,04 | 1 | 2174 |
| 48133128 | 2,3 | 0,4 | 45 | 9 | 9 | 2,8 | 2,1 | 5 | 2,12 ~ 2,15 | 1 | 2174 |
| 48133133 | 2,5 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 5 | 2,30 ~ 2,34 | 1 | 2174 |
| 48133136 | 2,6 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 5 | 2,40 ~ 2,44 | 1 | 2174 |
| 48133138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 5 | 2,77~2,82 | 2 | 2174 |
| 48133142 | 3,5 | 0,6 | 56 | 9 | 20 | 4 | 3 | 5 | 3,23 ~ 3,28 | 2 | 2174 |
| 48133144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,66~3,72 | 2 | 2174 |
| 48133147 | 4,5 | 0,75 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,14 ~ 4,20 | 2 | 2174 |
| 48133149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 6 | 4,62~4,68 | 2 | 2174 |
| 48133152 | 5,5 | 0,9 | 80 | 12 | 30 | 6 | 4,9 | 6 | 5,06 ~ 5,13 | 2 | 2174 |
| 48133155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 6 | 5,51~5,59 | 2 | 2174 |
| 48133158 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 6 | 6,51 ~ 6,59 | 2 | 2174 |
| 48133161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 6 | 7,37~7,45 | 2 | 2174 |
| 48133165 | 9 | 1,25 | 90 | 12 | 35 | 9 | 7 | 6 | 8,37 ~ 8,45 | 2 | 2174 |
| 48133169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24~9,33 | 2 | 2174 |
| 48133175 | 11 | 1,5 | 100 | 15 | - | 8 | 6,2 | 8 | 10,24 ~ 10,33 | 3 | 2174 |
| 48133179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 9 | 11,10~11,20 | 3 | 2174 |
| 48133191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 9 | 12,96~13,08 | 3 | 2174 |
| 48133202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 9 | 14,96~15,08 | 3 | 2174 |
| 48133214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 8 | 16,66~16,81 | 3 | 2174 |
| 48133228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 8 | 18,66~18,81 | 3 | 2174 |
| 48133238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 8 | 20,66~20,81 | 3 | 2174 |
| 48133247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 8 | 22,39~22,56 | 3 | 2174 |
| 48133262 | 27 | 3 | 160 | 18 | - | 20 | 16 | 8 | 25,39~25,56 | 3 | 2174 |
| 48133271 | 30 | 3,5 | 180 | 21 | - | 22 | 18 | 8 | 28,09~28,68 | 3 | 2174 |

# A-OIL-XPF

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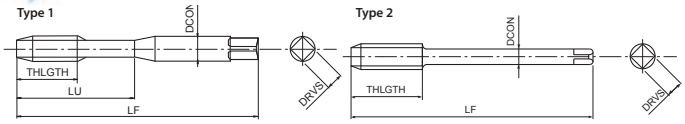
## Threading | Forming taps | Metric

**NEW SIZE**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

| A | M | PM | V | VI (TD≥27) | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|
| | | | DIN 2174 | DIN 2174 | | |

* Centre through coolant

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48225144* | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,66~3,72 | 1 | 2174 |
| 48225149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48225155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48225161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48225169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48225179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48225191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48225202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |
| 48225214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 8 | 16,66 ~ 16,81 | 2 | 2174 |
| 48225228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 8 | 18,66 ~ 18,81 | 2 | 2174 |
| 48225238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 8 | 20,66 ~ 20,81 | 2 | 2174 |
| 48225247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 8 | 22,39 ~ 22,56 | 2 | 2174 |
| 48225262 | 27 | 3 | 160 | 18 | - | 20 | 16 | 8 | 25,39 ~ 25,56 | 2 | 2174 |
| 48225271 | 30 | 3,5 | 180 | 21 | - | 22 | 18 | 8 | 28,09 ~ 28,28 | 2 | 2174 |
| 48225281 | 33 | 3,5 | 180 | 21 | - | 25 | 20 | 8 | 31,09 ~ 31,28 | 2 | 2174 |
| 48225294 | 36 | 4 | 200 | 32 | - | 28 | 22 | 8 | 33,80 ~ 34,01 | 2 | 2174 |
| 48225304 | 39 | 4 | 200 | 32 | - | 32 | 24 | 9 | 36,80 ~ 37,01 | 2 | 2174 |
| 48225314 | 42 | 4,5 | 200 | 36 | - | 32 | 24 | 9 | 39,52 ~ 39,73 | 2 | 2174 |
| 48225319 | 45 | 4,5 | 220 | 36 | - | 36 | 29 | 9 | 42,52 ~ 42,73 | 2 | 2174 |

# A-XPF 6GX

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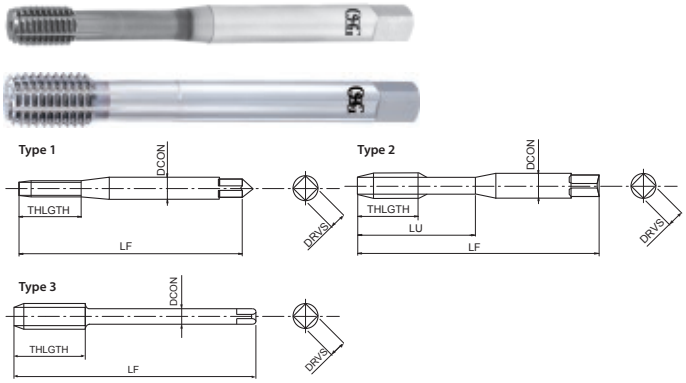
**Threading | Forming taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | M | PM | VI | ISO 3 6GX | C/2,5 | DIN 2174 | DIN 374

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48434125 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 5 | 1,85 ~ 1,88 | 1 | 2174 |
| 48434138 | 3 | 0,5 | 0.02 | 56 | 8 | 18 | 3,5 | 2,7 | 5 | 2,79 ~ 2,83 | 2 | 2174 |
| 48434144 | 4 | 0,7 | 0.022 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,69 ~ 3,75 | 2 | 2174 |
| 48434149 | 5 | 0,8 | 0.024 | 70 | 12 | 25 | 6 | 4,9 | 6 | 4,64 ~ 4,71 | 2 | 2174 |
| 48434155 | 6 | 1 | 0.026 | 80 | 10 | 30 | 6 | 4,9 | 6 | 5,55 ~ 5,63 | 2 | 2174 |
| 48434161 | 8 | 1,25 | 0.028 | 90 | 12 | 35 | 8 | 6,2 | 6 | 7,40 ~ 7,47 | 2 | 2174 |
| 48434169 | 10 | 1,5 | 0.032 | 100 | 15 | 39 | 10 | 8 | 8 | 9,26 ~ 9,35 | 2 | 2174 |
| 48434179 | 12 | 1,75 | 0.034 | 110 | 17 | - | 9 | 7 | 9 | 11,14 ~ 11,24 | 3 | 2174 |
| 48434202 | 16 | 2 | 0.038 | 110 | 20 | - | 12 | 9 | 9 | 15,00 ~ 15,12 | 3 | 2174 |

# A-XPF 7GX

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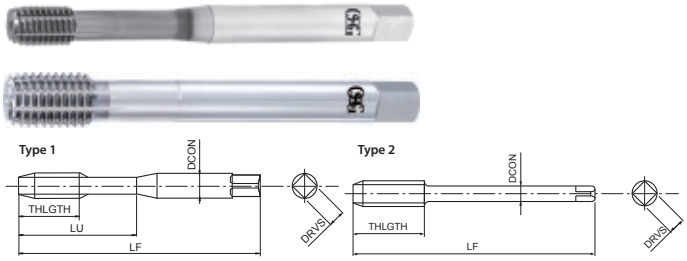
**Threading | Forming taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | M | PM | VI | 7GX | C/2,5 | DIN 2174 | DIN 374

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48435138 | 3 | 0,5 | 0.04 | 56 | 8 | 18 | 3,5 | 2,7 | 5 | 2,81 ~ 2,85 | 1 | 2174 |
| 48435144 | 4 | 0,7 | 0.044 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,71 ~ 3,77 | 1 | 2174 |
| 48435149 | 5 | 0,8 | 0.048 | 70 | 12 | 25 | 6 | 4,9 | 6 | 4,67 ~ 4,73 | 1 | 2174 |
| 48435155 | 6 | 1 | 0.052 | 80 | 10 | 30 | 6 | 4,9 | 6 | 5,56 ~ 5,64 | 1 | 2174 |
| 48435161 | 8 | 1,25 | 0.056 | 90 | 12 | 35 | 8 | 6,2 | 6 | 7,42 ~ 7,50 | 1 | 2174 |
| 48435169 | 10 | 1,5 | 0.064 | 100 | 15 | 39 | 10 | 8 | 8 | 9,30 ~ 9,39 | 1 | 2174 |
| 48435179 | 12 | 1,75 | 0.068 | 110 | 17 | - | 9 | 7 | 9 | 11,17 - 11,28 | 2 | 2174 |

# A-XPF FORM E

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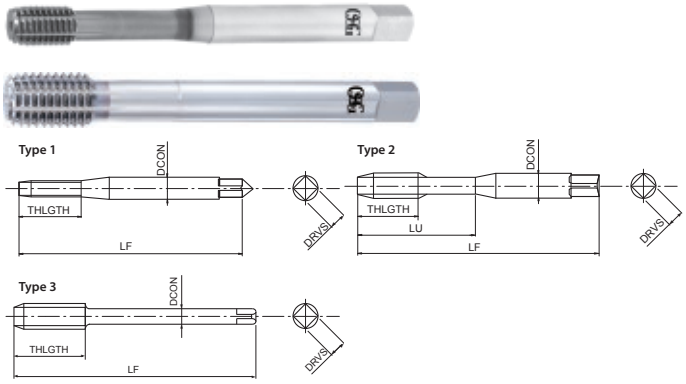
**Threading | Forming taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | M | PM | VI | ISO 2 6HX | E/1,5 | DIN 2174 | DIN 374

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48436125 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 5 | 1,82 ~ 1,85 | 1 | 2174 |
| 48436138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 5 | 2,77 ~ 2,82 | 2 | 2174 |
| 48436144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,66 ~ 3,72 | 2 | 2174 |
| 48436149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 6 | 4,62 ~ 4,68 | 2 | 2174 |
| 48436155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 6 | 5,51 ~ 5,59 | 2 | 2174 |
| 48436161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 6 | 7,37 ~ 7,45 | 2 | 2174 |
| 48436169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 2 | 2174 |
| 48436179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 9 | 11,10 ~ 11,20 | 3 | 2174 |
| 48436202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 9 | 14,96 ~ 15,08 | 3 | 2174 |

# A-OIL-XPF FORM E

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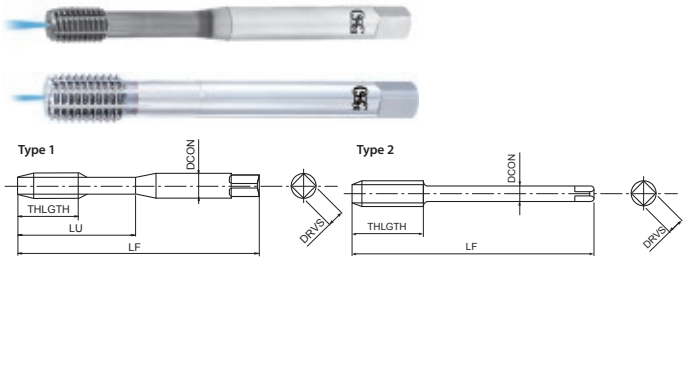
**Threading | Forming taps | Metric** **NEW**




- First choice in quality and performance
- Powder metal forming tap for blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Centre through coolant, Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | M | PM | VI | ISO 2 6HX | E/1,5 | DIN 2174 | DIN 2174

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48437144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 5 | 3,66~3,72 | 1 | 2174 |
| 48437149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 6 | 4,62 ~ 4,68 | 1 | 2174 |
| 48437155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 6 | 5,51 ~ 5,59 | 1 | 2174 |
| 48437161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 6 | 7,37 ~ 7,45 | 1 | 2174 |
| 48437169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 2 | 2174 |
| 48437179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 9 | 11,10 ~ 11,20 | 2 | 2174 |
| 48437202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 9 | 14,96 ~ 15,08 | 2 | 2174 |

# S-XPF

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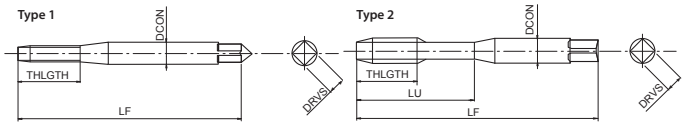
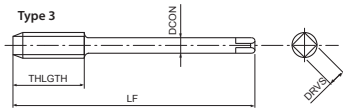
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | |
|---|---|
| 5-20 | |

| A | M | HSS-Co | V | ISO 2 6HX | M≤1,4 4HX | C/2,5 |
|---|---|---|---|---|---|---|
| | | DIN 2174 | DIN 2174 | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48030111* | 1 | 0,25 | 40 | 5,5 | 5,5 | 2,5 | 2,1 | 4 | 0,89 ~ 0,90 | 1 | 2174 |
| 48030112* | 1,1 | 0,25 | 40 | 5,5 | 5,5 | 2,5 | 2,1 | 4 | 0,99 ~ 1,00 | 1 | 2174 |
| 48030113* | 1,2 | 0,25 | 40 | 6 | 5,5 | 2,5 | 2,1 | 4 | 1,09 ~ 1,10 | 1 | 2174 |
| 48030115* | 1,4 | 0,3 | 40 | 7 | 7 | 2,5 | 2,1 | 4 | 1,26 ~ 1,28 | 1 | 2174 |
| 48030118 | 1,6 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,45 ~ 1,48 | 1 | 2174 |
| 48030119 | 1,7 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,55 ~ 1,58 | 1 | 2174 |
| 48030120 | 1,8 | 0,35 | 40 | 8 | 8 | 2,5 | 2,1 | 4 | 1,65 ~ 1,68 | 1 | 2174 |
| 48030125 | 2 | 0,4 | 45 | 8 | 8 | 2,8 | 2,1 | 4 | 1,82 ~ 1,85 | 1 | 2174 |
| 48030127 | 2,2 | 0,45 | 45 | 9 | 9 | 2,8 | 2,1 | 4 | 2,00 ~ 2,04 | 1 | 2174 |
| 48030128 | 2,3 | 0,4 | 45 | 9 | 9 | 2,8 | 2,1 | 4 | 2,12 ~ 2,15 | 1 | 2174 |
| 48030133 | 2,5 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 4 | 2,30 ~ 2,34 | 1 | 2174 |
| 48030136 | 2,6 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 4 | 2,40 ~ 2,44 | 1 | 2174 |
| 48030138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,77 ~ 2,82 | 2 | 2174 |
| 48030142 | 3,5 | 0,6 | 56 | 9 | 20 | 4 | 3 | 4 | 3,23 ~ 3,28 | 2 | 2174 |
| 48030144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67 ~ 3,72 | 2 | 2174 |
| 48030147 | 4,5 | 0,75 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,14 ~ 4,20 | 2 | 2174 |
| 48030149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 2 | 2174 |
| 48030152 | 5,5 | 0,9 | 80 | 12 | 30 | 6 | 4,9 | 5 | 5,06 ~ 5,13 | 2 | 2174 |
| 48030155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 2 | 2174 |
| 48030158 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 5 | 6,51 ~ 6,59 | 2 | 2174 |
| 48030161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 2 | 2174 |
| 48030165 | 9 | 1,25 | 90 | 12 | 35 | 9 | 7 | 8 | 8,37 ~ 8,45 | 2 | 2174 |
| 48030169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 2 | 2174 |
| 48030175 | 11 | 1,5 | 100 | 15 | - | 8 | 6,2 | 8 | 10,24 ~ 10,33 | 3 | 2174 |
| 48030179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 3 | 2174 |
| 48030191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 3 | 2174 |
| 48030202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 3 | 2174 |
| 48069214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 8 | 16,66 ~ 16,81 | 3 | 2174 |
| 48069228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 8 | 18,66 ~ 18,81 | 3 | 2174 |
| 48069238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 8 | 20,66 ~ 20,81 | 3 | 2174 |
| 48069247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 8 | 22,39 ~ 22,56 | 3 | 2174 |
| 48069262 | 27 | 3 | 160 | 18 | - | 20 | 16 | 8 | 25,39 ~ 25,56 | 3 | 2174 |
| 48069271 | 30 | 3,5 | 180 | 21 | - | 22 | 18 | 8 | 28,09 ~ 28,28 | 3 | 2174 |

# S-OIL-XPF

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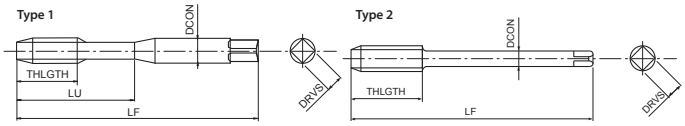
## Threading | Forming taps | Metric

**NEW SIZE**




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | |
|---|---|
| 5-20 | |

| A | M | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2174 | DIN 2174 | | | |

* Centre through coolant

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48042144* | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67~3,72 | 1 | 2174 |
| 48042149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48042155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48042161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48042169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48042179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48042191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48042202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |
| 48071214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 8 | 16,66 ~ 16,81 | 2 | 2174 |
| 48071228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 8 | 18,66 ~ 18,81 | 2 | 2174 |
| 48071238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 8 | 20,66 ~ 20,81 | 2 | 2174 |
| 48071247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 8 | 22,39 ~ 22,56 | 2 | 2174 |
| 48071262 | 27 | 3 | 160 | 18 | - | 20 | 16 | 8 | 25,39 ~ 25,56 | 2 | 2174 |
| 48071271 | 30 | 3,5 | 180 | 21 | - | 22 | 18 | 8 | 28,09 ~ 28,28 | 2 | 2174 |
| 48071281 | 33 | 3,5 | 180 | 21 | - | 25 | 20 | 8 | 31,09 ~ 31,28 | 2 | 2174 |
| 48071294 | 36 | 4 | 200 | 24 | - | 28 | 22 | 8 | 33,80 ~ 34,01 | 2 | 2174 |
| 48071304 | 39 | 4 | 200 | 24 | - | 32 | 24 | 9 | 36,80 ~ 37,01 | 2 | 2174 |
| 48071314 | 42 | 4,5 | 200 | 27 | - | 32 | 24 | 9 | 39,52 ~ 39,73 | 2 | 2174 |
| 48071319 | 45 | 4,5 | 220 | 27 | - | 36 | 29 | 9 | 42,52 ~ 42,73 | 2 | 2174 |

# S-XPF 6GX

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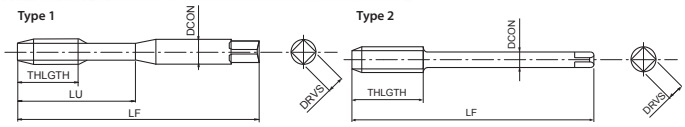
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 3 6GX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48086125 | 2 | 0,4 | 0.019 | 45 | 8 | 8 | 2,8 | 2,1 | 4 | 1,85 ~ 1,88 | 1 | 2174 |
| 48086133 | 2,5 | 0,45 | 0.02 | 50 | 9 | 9 | 2,8 | 2,1 | 4 | 2,32 ~ 2,35 | 1 | 2174 |
| 48086138 | 3 | 0,5 | 0.02 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,79 ~ 2,83 | 1 | 2174 |
| 48086142 | 3,5 | 0,6 | 0.021 | 56 | 9 | 20 | 4 | 3 | 4 | 3,24 ~ 3,29 | 1 | 2174 |
| 48086144 | 4 | 0,7 | 0.022 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,69 ~ 3,75 | 1 | 2174 |
| 48086149 | 5 | 0,8 | 0.024 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,64 ~ 4,71 | 1 | 2174 |
| 48086155 | 6 | 1 | 0.026 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 ~ 5,63 | 1 | 2174 |
| 48086161 | 8 | 1,25 | 0.028 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,40 ~ 7,47 | 1 | 2174 |
| 48086169 | 10 | 1,5 | 0.032 | 100 | 15 | 39 | 10 | 8 | 8 | 9,26 ~ 9,35 | 1 | 2174 |
| 48086179 | 12 | 1,75 | 0.034 | 110 | 17 | - | 9 | 7 | 8 | 11,14 ~ 11,24 | 2 | 2174 |
| 48086191 | 14 | 2 | 0.038 | 110 | 20 | - | 11 | 9 | 8 | 13,00 ~ 13,12 | 2 | 2174 |
| 48086202 | 16 | 2 | 0.038 | 110 | 20 | - | 12 | 9 | 8 | 15,00 ~ 15,12 | 2 | 2174 |

# S-OIL-XPF 6GX

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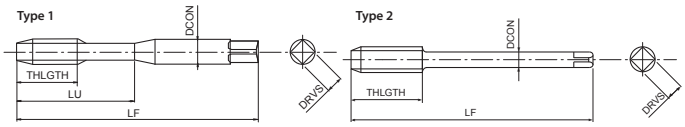
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance, side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 3 6GX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2174 | DIN 2174 | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48293149 | 5 | 0,8 | 0.024 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,64 ~ 4,71 | 1 | 2174 |
| 48293155 | 6 | 1 | 0.026 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 ~ 5,63 | 1 | 2174 |
| 48293161 | 8 | 1,25 | 0.028 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,40 ~ 7,47 | 1 | 2174 |
| 48293169 | 10 | 1,5 | 0.032 | 100 | 15 | 39 | 10 | 8 | 8 | 9,26 ~ 9,35 | 1 | 2174 |
| 48293179 | 12 | 1,75 | 0.034 | 110 | 18 | - | 9 | 7 | 8 | 11,14 ~ 11,24 | 2 | 2174 |
| 48293191 | 14 | 2 | 0.038 | 110 | 20 | - | 11 | 9 | 8 | 13,00 ~ 13,12 | 2 | 2174 |
| 48293202 | 16 | 2 | 0.038 | 110 | 20 | - | 12 | 9 | 8 | 15,00 ~ 15,12 | 2 | 2174 |

# S-XPF 7GX

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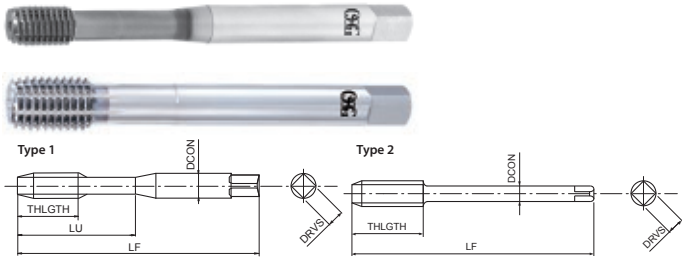
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 7G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | 7GX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48087125 | 2 | 0,4 | 0.038 | 45 | 8 | 8 | 2,8 | 2,1 | 4 | 1,86 ~ 1,90 | 1 | 2174 |
| 48087133 | 2,5 | 0,45 | 0.04 | 50 | 9 | 9 | 2,8 | 2,1 | 4 | 2,34 ~ 2,38 | 1 | 2174 |
| 48087138 | 3 | 0,5 | 0.04 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,81 ~ 2,85 | 1 | 2174 |
| 48087142 | 3,5 | 0,6 | 0.044 | 56 | 9 | 20 | 4 | 3 | 4 | 3,27 ~ 3,31 | 1 | 2174 |
| 48087144 | 4 | 0,7 | 0.044 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,71 ~ 3,77 | 1 | 2174 |
| 48087149 | 5 | 0,8 | 0.048 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,67 ~ 4,73 | 1 | 2174 |
| 48087155 | 6 | 1 | 0.052 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,56 ~ 5,64 | 1 | 2174 |
| 48087161 | 8 | 1,25 | 0.056 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,42 ~ 7,50 | 1 | 2174 |
| 48087169 | 10 | 1,5 | 0.064 | 100 | 15 | 39 | 10 | 8 | 8 | 9,30 ~ 9,39 | 1 | 2174 |
| 48087179 | 12 | 1,75 | 0.068 | 110 | 17 | - | 9 | 7 | 8 | 11,17 ~ 11,28 | 2 | 2174 |
| 48087191 | 14 | 2 | 0.076 | 110 | 20 | - | 11 | 9 | 8 | 13,04 ~ 13,16 | 2 | 2174 |
| 48087202 | 16 | 2 | 0.076 | 110 | 20 | - | 12 | 9 | 8 | 15,04 ~ 15,16 | 2 | 2174 |

# S-XPF +0.1

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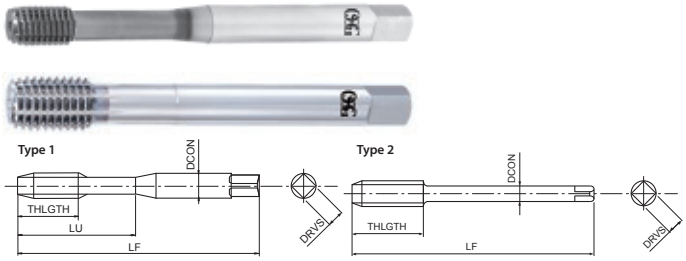
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Oversized tap for 6H +0,1mm thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | 6H +0.1 | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48298138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,87~2,92 | 1 | 2174 |
| 48298144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,77 ~ 3,82 | 1 | 2174 |
| 48298149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,72~4,78 | 1 | 2174 |
| 48298155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,61 ~ 5,69 | 1 | 2174 |
| 48298161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,47 ~ 7,55 | 1 | 2174 |
| 48298169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,34 ~ 9,43 | 1 | 2174 |
| 48298179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 8 | 11,20 ~ 11,30 | 2 | 2174 |
| 48298202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 15,06 ~ 15,18 | 2 | 2174 |

# S-XPF FORM D

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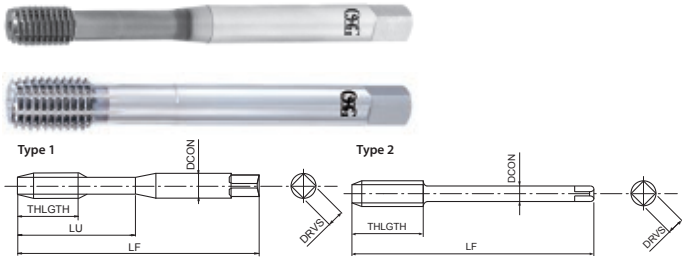
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 2 6HX | D/4 | |
|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48088138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,77~2,82 | 1 | 2174 |
| 48088144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67~3,72 | 1 | 2174 |
| 48088149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62~4,68 | 1 | 2174 |
| 48088155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51~5,59 | 1 | 2174 |
| 48088161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37~7,45 | 1 | 2174 |
| 48088169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24~9,33 | 1 | 2174 |
| 48088179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10~11,20 | 2 | 2174 |
| 48088191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96~13,08 | 2 | 2174 |
| 48088202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96~15,08 | 2 | 2174 |

# S-XPF FORM E

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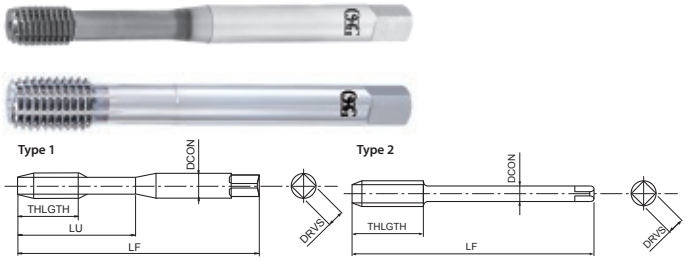
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form E

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 2 6HX | E/1,5 | | |
|---|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | | |

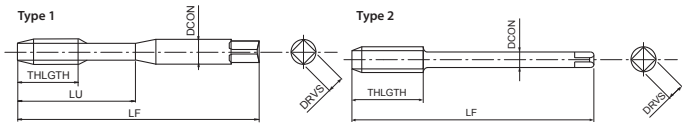
| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48089125 | 2 | 0,4 | 45 | 8 | 8 | 2,8 | 2,1 | 4 | 1,82 ~ 1,85 | 1 | 2174 |
| 48089133 | 2,5 | 0,45 | 50 | 9 | 9 | 2,8 | 2,1 | 4 | 2,30 ~ 2,34 | 1 | 2174 |
| 48089138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,77 ~ 2,82 | 1 | 2174 |
| 48089142 | 3,5 | 0,6 | 56 | 9 | 20 | 4 | 3 | 4 | 3,23 ~ 3,28 | 1 | 2174 |
| 48089144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,66 ~ 3,72 | 1 | 2174 |
| 48089149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48089155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48089161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48089169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48089179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48089191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48089202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |

# S-OIL-XPF FORM E

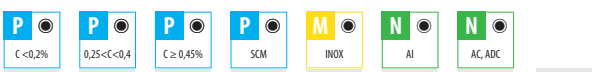
INDEX

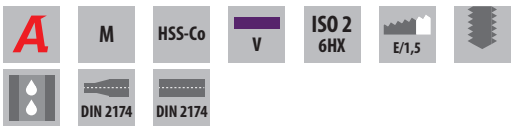
## Threading | Forming taps | Metric

**NEW SIZE**




- First choice in quality and performance
- HSSE forming tap for blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Centre through coolant, chamfer Form E




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48294144 NEW | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67~3,72 | 1 | 2174 |
| 48294149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48294155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48294161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48294169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48294179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48294191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48294202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |

# S-LT-XPF

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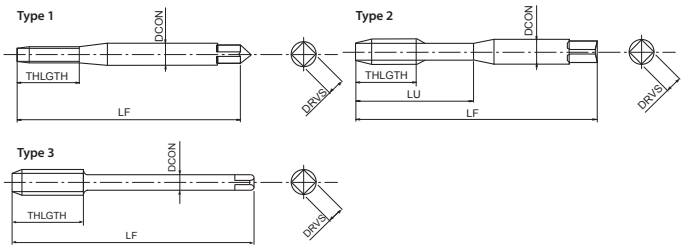
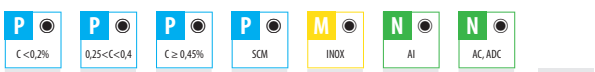
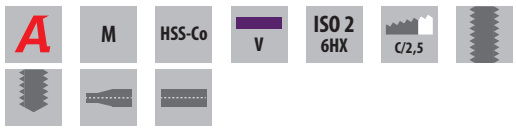
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- With long shank for long reach threading




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 48115125 | 2 | 0,4 | 80 | 8 | 8 | 2,8 | 2,1 | 0 | 1,82 ~ 1,85 | 1 |
| 48115133 | 2,5 | 0,45 | 100 | 9 | 9 | 2,8 | 2,1 | 0 | 2,30 ~ 2,34 | 1 |
| 48115138 | 3 | 0,5 | 100 | 8 | 18 | 3,5 | 2,7 | 4 | 2,77 ~ 2,82 | 2 |
| 48115144 | 4 | 0,7 | 125 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67 ~ 3,72 | 2 |
| 48115149 | 5 | 0,8 | 140 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 2 |
| 48115155 | 6 | 1 | 160 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 2 |
| 48115161 | 8 | 1,25 | 180 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 2 |
| 48115169 | 10 | 1,5 | 200 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 2 |
| 48115179 | 12 | 1,75 | 200 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 3 |

# S-OIL-LT-XPF

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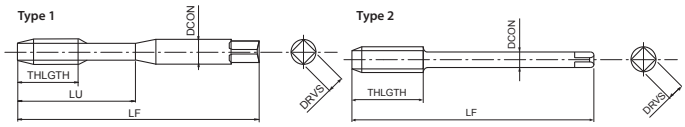
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- With long shank for long reach threading, side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 48295155 | 6 | 1 | 160 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 |
| 48295161 | 8 | 1,25 | 180 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 |
| 48295169 | 10 | 1,5 | 200 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 |
| 48295179 | 12 | 1,75 | 200 | 18 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 |

# S-XPF-LH

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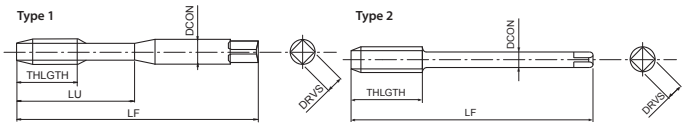
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For left-hand threads

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | LH | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48219138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 4 | 2,77 ~ 2,82 | 1 | 2174 |
| 48219144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 4 | 3,67 ~ 3,72 | 1 | 2174 |
| 48219149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48219155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48219161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48219169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48219179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48219191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48219202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |
| 48219214 | 18 | 2,5 | 125 | 20 | - | 14 | 11 | 8 | 16,66 ~ 16,81 | 2 | 2174 |
| 48219228 | 20 | 2,5 | 140 | 20 | - | 16 | 12 | 8 | 18,66 ~ 18,81 | 2 | 2174 |
| 48219238 | 22 | 2,5 | 140 | 20 | - | 18 | 14,5 | 8 | 20,66 ~ 20,81 | 2 | 2174 |
| 48219247 | 24 | 3 | 160 | 24 | - | 18 | 14,5 | 8 | 22,39 ~ 22,56 | 2 | 2174 |

# S-XPF-HB Weldon

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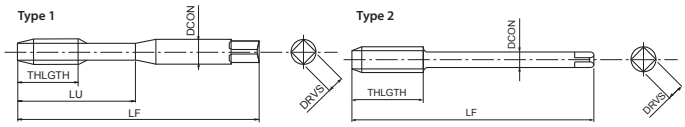
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- With Weldon shank

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | DIN 1835 | HB | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48222138 | 3 | 0,5 | 56 | 8 | 18 | 6 | 4,9 | 4 | 2,77 ~ 2,82 | 1 | 2174/1835 |
| 48222144 | 4 | 0,7 | 63 | 11 | 21 | 6 | 4,9 | 4 | 3,67 ~ 3,72 | 1 | 2174/1835 |
| 48222149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174/1835 |
| 48222155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174/1835 |
| 48222161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174/1835 |
| 48222169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174/1835 |
| 48222179 | 12 | 1,75 | 110 | 17 | 46 | 12 | 9 | 8 | 11,10 ~ 11,20 | 2 | 2174/1835 |
| 48222191 | 14 | 2 | 110 | 20 | 49 | 14 | 11 | 8 | 12,96 ~ 13,08 | 2 | 2174/1835 |
| 48222202 | 16 | 2 | 110 | 20 | 56 | 16 | 12 | 8 | 14,96 ~ 15,08 | 2 | 2174/1835 |

# S-XPF-GL

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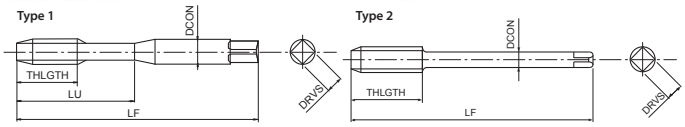
## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Without oil grooves for higher rigidity

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

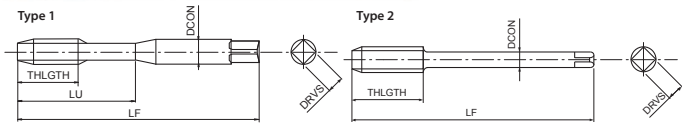
| A | M | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48296138 | 3 | 0,5 | 56 | 8 | 18 | 3,5 | 2,7 | 2,77 ~ 2,82 | 1 | 2174 |
| 48296144 | 4 | 0,7 | 63 | 11 | 21 | 4,5 | 3,4 | 3,67 ~ 3,72 | 1 | 2174 |
| 48296149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 4,62 ~ 4,68 | 1 | 2174 |
| 48296155 | 6 | 1 | 80 | 8 | 30 | 6 | 4,9 | 5,51 ~ 5,59 | 1 | 2174 |
| 48296161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 7,37 ~ 7,45 | 1 | 2174 |
| 48296169 | 10 | 1,5 | 100 | 12 | 39 | 10 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48296179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 11,10 ~ 11,20 | 2 | 2174 |

# S-XPF-GL 6GX

INDEX

## Threading | Forming taps | Metric




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Without oil grooves for higher rigidity, for 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

A | M | HSS-Co | V | ISO 3 6GX | C/2,5 | DIN 2174 | DIN 2174

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48297138 | 3 | 0,5 | 0.02 | 56 | 8 | 18 | 3,5 | 2,7 | 2,79 ~ 2,83 | 1 | 2174 |
| 48297144 | 4 | 0,7 | 0.022 | 63 | 11 | 21 | 4,5 | 3,4 | 3,69 ~ 3,75 | 1 | 2174 |
| 48297149 | 5 | 0,8 | 0.024 | 70 | 12 | 25 | 6 | 4,9 | 4,64 ~ 4,71 | 1 | 2174 |
| 48297155 | 6 | 1 | 0.026 | 80 | 10 | 30 | 6 | 4,9 | 5,55 ~ 5,63 | 1 | 2174 |
| 48297161 | 8 | 1,25 | 0.028 | 90 | 12 | 35 | 8 | 6,2 | 7,40 ~ 7,47 | 1 | 2174 |
| 48297169 | 10 | 1,5 | 0.032 | 100 | 15 | 39 | 10 | 8 | 9,26 ~ 9,35 | 1 | 2174 |
| 48297179 | 12 | 1,75 | 0.034 | 110 | 18 | - | 9 | 7 | 11,14 ~ 11,24 | 2 | 2174 |

# GRT

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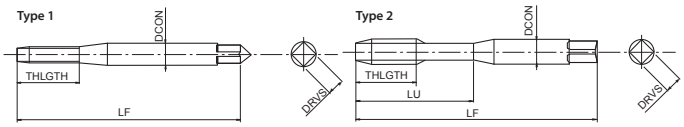
## Threading | Forming taps | Metric

**NEW**




- Environmentally friendly
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 15-40 | 15-30 | 15-30 | 5-15 | 20-40 | 20-40 | m/min |

M | PM | V | ISO 2 6HX | C/2,5 | DIN 2174

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48432125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 1,82~1,85 | 1 | 2174 |
| 48432138 | 3 | 0,5 | 56 | 10,5 | 18 | 3,5 | 2,7 | 2,77~2,82 | 2 | 2174 |
| 48432144 | 4 | 0,7 | 63 | 12 | 21 | 4,5 | 3,4 | 3,66~3,72 | 2 | 2174 |
| 48432149 | 5 | 0,8 | 70 | 13 | 25 | 6 | 4,9 | 4,62~4,68 | 2 | 2174 |
| 48432155 | 6 | 1 | 80 | 14 | 30 | 6 | 4,9 | 5,51~5,59 | 2 | 2174 |

# GRT FORM F

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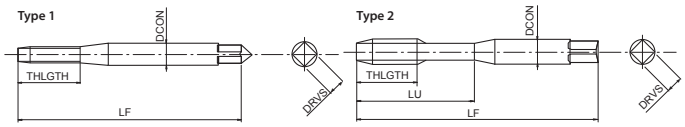
**Threading | Forming taps | Metric**




- Environmentally friendly
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form F

| P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 15-40 | 15-30 | 15-30 | 5-15 | 20-45 | 20-40 | m/min |

| M | PM | V | ISO 2 6HX | M≤1,4 4HX | F/1,0 | | |
|---|---|---|---|---|---|---|---|
| | DIN 2174 | | | | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48423111* | 1 | 0,25 | 40 | 5,5 | - | 2,5 | 2,1 | 0,89~0,90 | 1 | 2174 |
| 48423113* | 1,2 | 0,25 | 40 | 6,5 | - | 2,5 | 2,1 | 1,09~1,10 | 1 | 2174 |
| 48423115* | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 1,26~1,28 | 1 | 2174 |
| 48423125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 1,82~1,85 | 1 | 2174 |
| 48423138 | 3 | 0,5 | 56 | 10,5 | 18 | 3,5 | 2,7 | 2,77~2,82 | 2 | 2174 |
| 48423144 | 4 | 0,7 | 63 | 12 | 21 | 4,5 | 3,4 | 3,66~3,72 | 2 | 2174 |
| 48423149 | 5 | 0,8 | 70 | 13 | 25 | 6 | 4,9 | 4,62~4,68 | 2 | 2174 |
| 48423155 | 6 | 1 | 70 | 14 | 30 | 6 | 4,9 | 5,51~5,59 | 2 | 2174 |

# P-OIL-CXPF

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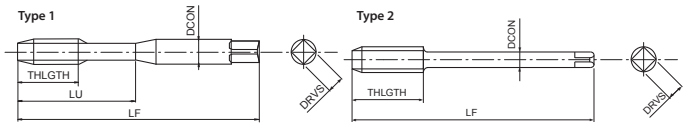
**NEW**

**Threading | Forming taps | Metric**




- Carbide forming tap for blind holes
- EgiAs coating
- For general steels and hardened steels
- With centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Cu | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 15-30 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | H ~40 HRC | H ~45 HRC |
|---|---|---|
| 5-20 | 5-20 | 5-20 |

| M | CARBIDE | EgiAs | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48362149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 6 | 4,62 ~ 4,68 | 1 | 2174 |
| 48362155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 6 | 5,51 ~ 5,59 | 1 | 2174 |
| 48362161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 6 | 7,37 ~ 7,45 | 1 | 2174 |
| 48362169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 9 | 9,24 ~ 9,33 | 1 | 2174 |
| 48362179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 9 | 11,10 ~ 11,20 | 2 | 2174 |
| 48362191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 9 | 12,96 ~ 13,08 | 2 | 2174 |
| 48362202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 9 | 14,96 ~ 15,08 | 2 | 2174 |

# C-OIL-XPF

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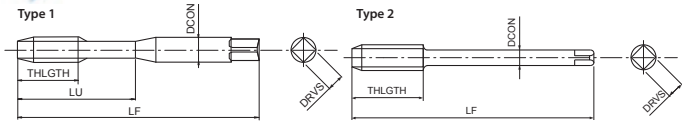
## Threading | Forming taps | Metric




- First choice in quality and performance
- Carbide forming tap for through & blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- With side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | M | CARBIDE | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2174 | DIN 2174 | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Typ | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48226149 | 5 | 0,8 | 70 | 12 | 25 | 6 | 4,9 | 5 | 4,62 ~ 4,68 | 1 | 2174 |
| 48226155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,51 ~ 5,59 | 1 | 2174 |
| 48226161 | 8 | 1,25 | 90 | 12 | 35 | 8 | 6,2 | 5 | 7,37 ~ 7,45 | 1 | 2174 |
| 48226169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 8 | 9,24 ~ 9,33 | 1 | 2174 |
| 48226179 | 12 | 1,75 | 110 | 17 | - | 9 | 7 | 8 | 11,10 ~ 11,20 | 2 | 2174 |
| 48226191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 8 | 12,96 ~ 13,08 | 2 | 2174 |
| 48226202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 8 | 14,96 ~ 15,08 | 2 | 2174 |

# V-NRT

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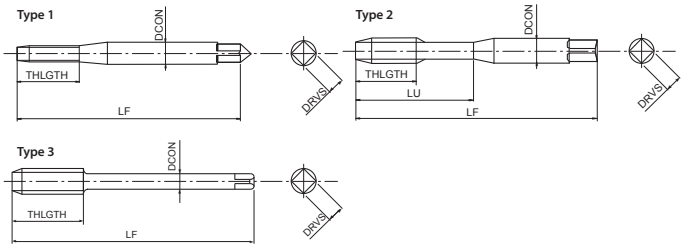
## Threading | Forming taps | Metric




- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

| M | HSS-Co | V | ISO 2 6HX | M≤1,4 4HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48003111* | 1 | 0,25 | 40 | 5,5 | - | 2,5 | 2,1 | 0 | 0,89 ~ 0,90 | 1 | 2174 |
| 48003113* | 1,2 | 0,25 | 40 | 5,5 | - | 2,5 | 2,1 | 0 | 1,09 ~ 1,10 | 1 | 2174 |
| 66711568* | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 0 | 1,26 ~ 1,28 | 1 | 2174 |
| 66711868 | 1,6 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 0 | 1,45 ~ 1,48 | 1 | 2174 |
| 66712568 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 0 | 1,82 ~ 1,85 | 1 | 2174 |
| 66712868 | 2,2 | 0,45 | 45 | 9 | - | 2,8 | 2,1 | 0 | 2,00 ~ 2,04 | 1 | 2174 |
| 66713368 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 0 | 2,30 ~ 2,34 | 1 | 2174 |
| 66713868 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 2,77 ~ 2,82 | 2 | 2174 |
| 66714068 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2 | 3,23 ~ 3,28 | 2 | 2174 |
| 66714468 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 2 | 3,67 ~ 3,72 | 2 | 2174 |
| 66714968 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 2 | 4,62 ~ 4,68 | 2 | 2174 |
| 66715568 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 2 | 5,51 ~ 5,59 | 2 | 2174 |
| 66716168 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 7,37 ~ 7,45 | 2 | 2174 |
| 66716968 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 4 | 9,24 ~ 9,33 | 2 | 2174 |
| 69117968 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 4 | 11,10 ~ 11,20 | 3 | 2174 |

# V-NRT 6GX

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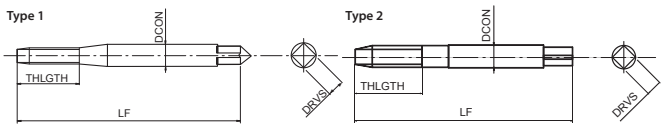
**Threading | Forming taps | Metric**




- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

M | HSS-Co | V | ISO 3 6GX | C/2,5 | DIN 2174

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48003125 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 0 | 1,85 ~ 1,88 | 1 | 2174 |
| 48003128 | 2,2 | 0,45 | 0.02 | 45 | 9 | - | 2,8 | 2,1 | 0 | 2,02 ~ 2,05 | 1 | 2174 |
| 48003133 | 2,5 | 0,45 | 0.02 | 50 | 9 | - | 2,8 | 2,1 | 0 | 2,32 ~ 2,35 | 1 | 2174 |
| 48003138 | 3 | 0,5 | 0.02 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 2,79 ~ 2,83 | 2 | 2174 |
| 48003140 | 3,5 | 0,6 | 0.021 | 56 | 12 | 20 | 4 | 3 | 2 | 3,24 ~ 3,29 | 2 | 2174 |
| 48003144 | 4 | 0,7 | 0.022 | 63 | 13 | 21 | 4,5 | 3,4 | 2 | 3,69 ~ 3,75 | 2 | 2174 |
| 48003149 | 5 | 0,8 | 0.024 | 70 | 16 | 25 | 6 | 4,9 | 2 | 4,64 ~ 4,71 | 2 | 2174 |
| 48003155 | 6 | 1 | 0.026 | 80 | 19 | 30 | 6 | 4,9 | 2 | 5,55 ~ 5,63 | 2 | 2174 |
| 48003161 | 8 | 1,25 | 0.028 | 90 | 22 | 35 | 8 | 6,2 | 3 | 7,40 ~ 7,47 | 2 | 2174 |
| 48003169 | 10 | 1,5 | 0.032 | 100 | 24 | 39 | 10 | 8 | 4 | 9,26 ~ 9,35 | 2 | 2174 |

# V-NRT FORM D

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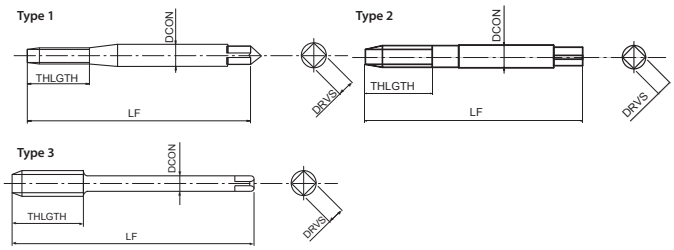
**Threading | Forming taps | Metric**




- HSSE forming tap for through holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

M | HSS-Co | V | ISO 2 6HX | D/4 | DIN 2174

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 66612568 | 2 | 0,4 | 45 | 8 | - | 2,8 | 2,1 | 0 | 1,82 ~ 1,85 | 1 | 2174 |
| 66612868 | 2,2 | 0,45 | 45 | 9 | - | 2,8 | 2,1 | 0 | 2,00 ~ 2,04 | 1 | 2174 |
| 66613368 | 2,5 | 0,45 | 50 | 9 | - | 2,8 | 2,1 | 0 | 2,30 ~ 2,34 | 1 | 2174 |
| 66613868 | 3 | 0,5 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 2,77 ~ 2,82 | 2 | 2174 |
| 66614068 | 3,5 | 0,6 | 56 | 12 | 20 | 4 | 3 | 2 | 3,23 ~ 3,28 | 2 | 2174 |
| 66614468 | 4 | 0,7 | 63 | 13 | 21 | 4,5 | 3,4 | 2 | 3,66 ~ 3,72 | 2 | 2174 |
| 66614968 | 5 | 0,8 | 70 | 16 | 25 | 6 | 4,9 | 2 | 4,62 ~ 4,68 | 2 | 2174 |
| 66615568 | 6 | 1 | 80 | 19 | 30 | 6 | 4,9 | 2 | 5,51 ~ 5,59 | 2 | 2174 |
| 66616168 | 8 | 1,25 | 90 | 22 | 35 | 8 | 6,2 | 3 | 7,37 ~ 7,45 | 2 | 2174 |
| 66616968 | 10 | 1,5 | 100 | 24 | 39 | 10 | 8 | 4 | 9,24 ~ 9,33 | 2 | 2174 |
| 69017968 | 12 | 1,75 | 110 | 28 | - | 9 | 7 | 4 | 11,10 ~ 11,20 | 3 | 2174 |

# V-NRT 6GX FORM D

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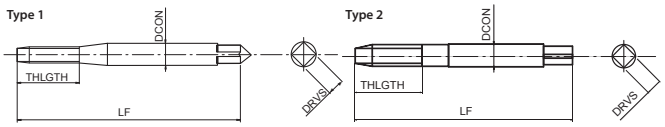
**Threading | Forming taps | Metric**




- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance, chamfer Form D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

| M | HSS-Co | V | ISO 3 6GX | D/4 | | DIN 2174 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48004125 | 2 | 0,4 | 0.019 | 45 | 8 | - | 2,8 | 2,1 | 0 | 1,85 ~ 1,88 | 1 | 2174 |
| 48004128 | 2,2 | 0,45 | 0.02 | 45 | 9 | - | 2,8 | 2,1 | 0 | 2,02 ~ 2,05 | 1 | 2174 |
| 48004133 | 2,5 | 0,45 | 0.02 | 50 | 9 | - | 2,8 | 2,1 | 0 | 2,32 ~ 2,35 | 1 | 2174 |
| 48004138 | 3 | 0,5 | 0.02 | 56 | 11 | 18 | 3,5 | 2,7 | 0 | 2,79 ~ 2,83 | 2 | 2174 |
| 48004140 | 3,5 | 0,6 | 0.021 | 56 | 12 | 20 | 4 | 3 | 2 | 3,24 ~ 3,29 | 2 | 2174 |
| 48004144 | 4 | 0,7 | 0.022 | 63 | 13 | 21 | 4,5 | 3,4 | 2 | 3,69 ~ 3,75 | 2 | 2174 |
| 48004149 | 5 | 0,8 | 0.024 | 70 | 16 | 25 | 6 | 4,9 | 2 | 4,64 ~ 4,71 | 2 | 2174 |
| 48004155 | 6 | 1 | 0.026 | 80 | 19 | 30 | 6 | 4,9 | 2 | 5,55 ~ 5,63 | 2 | 2174 |
| 48004161 | 8 | 1,25 | 0.028 | 90 | 22 | 35 | 8 | 6,2 | 3 | 7,40 ~ 7,47 | 2 | 2174 |
| 48004169 | 10 | 1,5 | 0.032 | 100 | 24 | 39 | 10 | 8 | 4 | 9,26 ~ 9,35 | 2 | 2174 |

# VA-XPF

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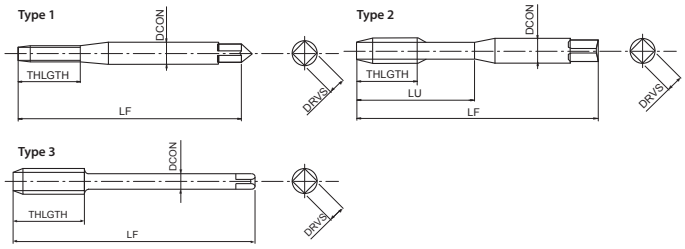
**Threading | Forming taps | Metric**

**NEW**




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | | |
|---|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min | |
| S Ti | | | | | | | | |
| 1-3 | | | | | | | | |

| M | PM | AlCrN | ISO 2 6HX | M≤1,4 4HX | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48442111* | 1 | 0,25 | 40 | 5,5 | - | 2,5 | 2,1 | 3 | 0,89 | 1 | 2174 |
| 48442115* | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 3 | 1,27 | 1 | 2174 |
| 48442118 | 1,6 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 3 | 1,44 | 1 | 2174 |
| 48442125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| 48442133 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| 48442138 | 3 | 0,5 | 56 | 7 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| 48442142 | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| 48442144 | 4 | 0,7 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| 48442147 | 4,5 | 0,75 | 70 | 8 | 25 | 6 | 4,9 | 4 | 4,15 | 2 | 2174 |
| 48442149 | 5 | 0,8 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| 48442152 | 5,5 | 0,9 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,1 | 2 | 2174 |
| 48442155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| 48442158 | 7 | 1 | 80 | 10 | 30 | 7 | 5,5 | 5 | 6,55 | 2 | 2174 |
| 48442161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| 48442165 | 9 | 1,25 | 90 | 13 | 35 | 9 | 7 | 5 | 8,45 | 2 | 2174 |
| 48442169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| 48442175 | 11 | 1,5 | 100 | 15 | - | 8 | 6,2 | 5 | 10,35 | 3 | 2174 |
| 48442179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| 48442191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| 48442202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |
| 48442214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 7 | 16,8 | 3 | 2174 |
| 48442228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 7 | 18,8 | 3 | 2174 |
| 48442238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 7 | 20,8 | 3 | 2174 |
| 48442247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 7 | 22,6 | 3 | 2174 |

# VA-OIL-XPF

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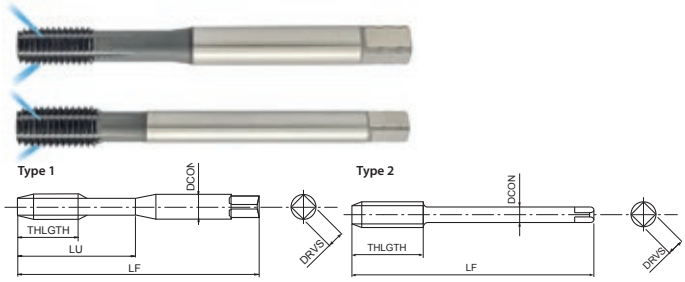
**Threading | Forming taps | Metric** **NEW**




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| S Ti |
|---|
| 1-3 |

| M | PM | AlCrN | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48444149 | 5 | 0,8 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,65 | 1 | 2174 |
| 48444155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 | 1 | 2174 |
| 48444161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,45 | 1 | 2174 |
| 48444169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 5 | 9,35 | 1 | 2174 |
| 48444179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 5 | 11,2 | 2 | 2174 |
| 48444191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 6 | 13,1 | 2 | 2174 |
| 48444202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 6 | 15,1 | 2 | 2174 |
| 48444214 | 18 | 2,5 | 125 | 25 | - | 14 | 11 | 7 | 16,8 | 2 | 2174 |
| 48444228 | 20 | 2,5 | 140 | 25 | - | 16 | 12 | 7 | 18,8 | 2 | 2174 |
| 48444238 | 22 | 2,5 | 140 | 25 | - | 18 | 14,5 | 7 | 20,8 | 2 | 2174 |
| 48444247 | 24 | 3 | 160 | 30 | - | 18 | 14,5 | 7 | 22,6 | 2 | 2174 |

# VA-XPF 6GX

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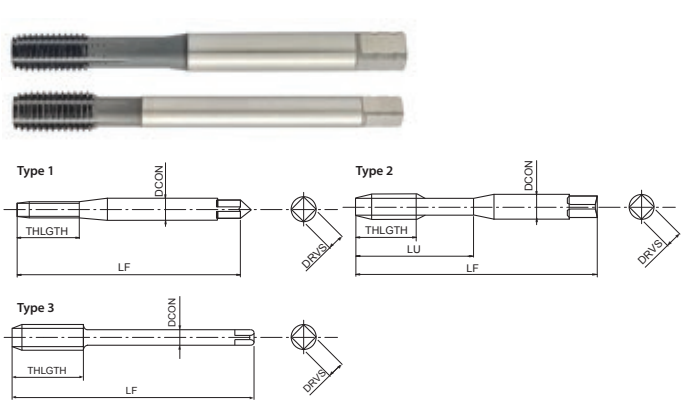
**Threading | Forming taps | Metric** **NEW**




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| S Ti |
|---|
| 1-3 |

| M | PM | AlCrN | ISO 3 6GX | C/2,5 | | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48447125 | 2 | 0,4 | 0.019 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| 48447133 | 2,5 | 0,45 | 0.02 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| 48447138 | 3 | 0,5 | 0.02 | 56 | 7 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| 48447142 | 3,5 | 0,6 | 0.021 | 56 | 7 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| 48447144 | 4 | 0,7 | 0.022 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| 48447149 | 5 | 0,8 | 0.024 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| 48447155 | 6 | 1 | 0.026 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| 48447161 | 8 | 1,25 | 0.028 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| 48447169 | 10 | 1,5 | 0.032 | 100 | 15 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| 48447179 | 12 | 1,75 | 0.034 | 110 | 18 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| 48447191 | 14 | 2 | 0.038 | 110 | 20 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| 48447202 | 16 | 2 | 0.038 | 110 | 20 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |

# VA-XPF FORM E

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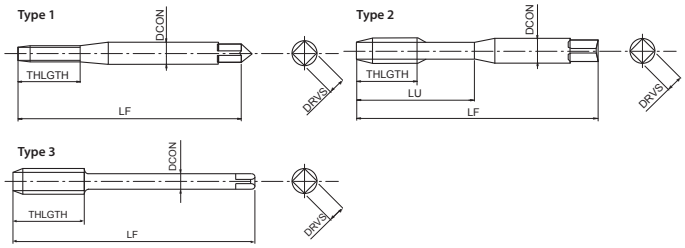
**Threading | Forming taps | Metric** **NEW**




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium
- Chamfer Form E

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| S Ti |
|---|
| 1-3 |

| M | PM | AlCrN | ISO 2 6HX | E/1,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48445125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| 48445133 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| 48445138 | 3 | 0,5 | 56 | 7 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| 48445142 | 3,5 | 0,6 | 56 | 7 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| 48445144 | 4 | 0,7 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| 48445149 | 5 | 0,8 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| 48445155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| 48445161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| 48445169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| 48445179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| 48445191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| 48445202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |

# VA-OIL-XPF FORM E

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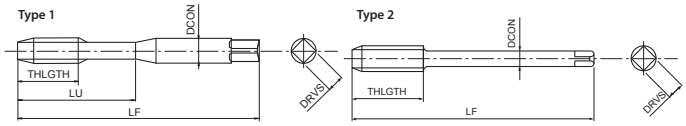
**Threading | Forming taps | Metric** **NEW**




- Powder metal forming tap for blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium
- Chamfer Form E, centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| S Ti |
|---|
| 1-3 |

| M | PM | AlCrN | ISO 2 6HX | E/1,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48446149 | 5 | 0,8 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,65 | 1 | 2174 |
| 48446155 | 6 | 1 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,55 | 1 | 2174 |
| 48446161 | 8 | 1,25 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,45 | 1 | 2174 |
| 48446169 | 10 | 1,5 | 100 | 15 | 39 | 10 | 8 | 5 | 9,35 | 1 | 2174 |
| 48446179 | 12 | 1,75 | 110 | 18 | - | 9 | 7 | 5 | 11,2 | 2 | 2174 |
| 48446191 | 14 | 2 | 110 | 20 | - | 11 | 9 | 6 | 13,1 | 2 | 2174 |
| 48446202 | 16 | 2 | 110 | 20 | - | 12 | 9 | 6 | 15,1 | 2 | 2174 |

# M-NRT

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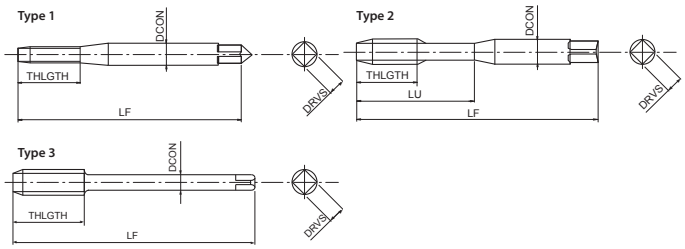
## Threading | Forming taps | Metric




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium

| P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | M ◉ INOX | N ◉ Al | N ◉ AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| M | PM | TiN | ISO 2 6HX | M≤1,4 4HX | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | | |

* Tolerance 4HX

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0203111* | 1 | 0,25 | 40 | 5,5 | - | 2,5 | 2,1 | 3 | 0,89 | 1 | 2174 |
| EP0203115* | 1,4 | 0,3 | 40 | 7 | - | 2,5 | 2,1 | 3 | 1,27 | 1 | 2174 |
| EP0203118 | 1,6 | 0,35 | 40 | 8 | - | 2,5 | 2,1 | 3 | 1,44 | 1 | 2174 |
| EP0203125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| EP0203133 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| EP0203138 | 3 | 0,5 | 56 | 10 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| EP0203142 | 3,5 | 0,6 | 56 | 11 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| EP0203144 | 4 | 0,7 | 63 | 12 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| EP0203147 | 4,5 | 0,75 | 70 | 14 | 25 | 6 | 4,9 | 4 | 4,15 | 2 | 2174 |
| EP0203149 | 5 | 0,8 | 70 | 14 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| EP0203152 | 5,5 | 0,9 | 80 | 14 | 30 | 6 | 4,9 | 5 | 5,1 | 2 | 2174 |
| EP0203155 | 6 | 1 | 80 | 16 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| EP0203158 | 7 | 1 | 80 | 16 | 30 | 7 | 5,5 | 5 | 6,55 | 2 | 2174 |
| EP0203161 | 8 | 1,25 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| EP0203165 | 9 | 1,25 | 90 | 18 | 35 | 9 | 7 | 5 | 8,45 | 2 | 2174 |
| EP0203169 | 10 | 1,5 | 100 | 20 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| EP0203175 | 11 | 1,5 | 100 | 22 | - | 8 | 6,2 | 5 | 10,35 | 3 | 2174 |
| EP0203179 | 12 | 1,75 | 110 | 24 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| EP0203191 | 14 | 2 | 110 | 25 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| EP0203202 | 16 | 2 | 110 | 27 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |
| EP0203214 | 18 | 2,5 | 125 | 32 | - | 14 | 11 | 7 | 16,8 | 3 | 2174 |
| EP0203228 | 20 | 2,5 | 140 | 32 | - | 16 | 12 | 7 | 18,8 | 3 | 2174 |
| EP0203238 | 22 | 2,5 | 140 | 32 | - | 18 | 14,5 | 7 | 20,8 | 3 | 2174 |
| EP0203247 | 24 | 3 | 160 | 36 | - | 18 | 14,5 | 7 | 22,6 | 3 | 2174 |

# M-OIL-NRT

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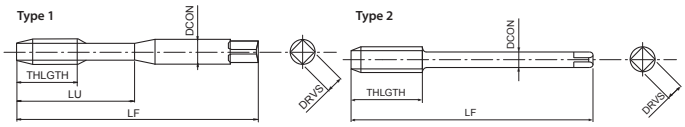
## Threading | Forming taps | Metric




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- Side through coolant

| P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | M ◉ INOX | N ◉ Al | N ◉ AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| M | PM | TiN | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0206149 | 5 | 0,8 | 70 | 14 | 25 | 6 | 4,9 | 5 | 4,65 | 1 | 2174 |
| EP0206155 | 6 | 1 | 80 | 16 | 30 | 6 | 4,9 | 5 | 5,55 | 1 | 2174 |
| EP0206161 | 8 | 1,25 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,45 | 1 | 2174 |
| EP0206169 | 10 | 1,5 | 100 | 20 | 39 | 10 | 8 | 5 | 9,35 | 1 | 2174 |
| EP0206179 | 12 | 1,75 | 110 | 24 | - | 9 | 7 | 5 | 11,2 | 2 | 2174 |
| EP0206191 | 14 | 2 | 110 | 25 | - | 11 | 9 | 6 | 13,1 | 2 | 2174 |
| EP0206202 | 16 | 2 | 110 | 27 | - | 12 | 9 | 6 | 15,1 | 2 | 2174 |
| EP0206214 | 18 | 2,5 | 125 | 32 | - | 14 | 11 | 7 | 16,8 | 2 | 2174 |
| EP0206228 | 20 | 2,5 | 140 | 32 | - | 16 | 12 | 7 | 18,8 | 2 | 2174 |
| EP0206238 | 22 | 2,5 | 140 | 32 | - | 18 | 14,5 | 7 | 20,8 | 2 | 2174 |
| EP0206247 | 24 | 3 | 160 | 36 | - | 18 | 14,5 | 7 | 22,6 | 2 | 2174 |

# M-NRT 6GX

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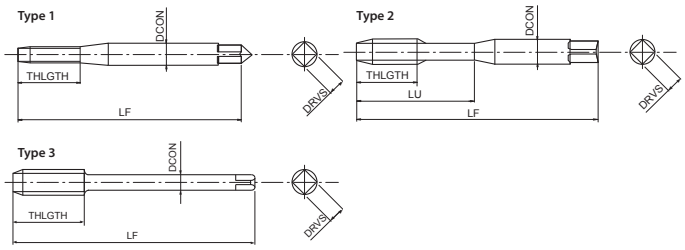
**Threading | Forming taps | Metric**




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| M | PM | TiN | ISO 3 6GX | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0204125 | 2 | 0,4 | 0.019 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| EP0204133 | 2,5 | 0,45 | 0.02 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| EP0204138 | 3 | 0,5 | 0.02 | 56 | 10 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| EP0204142 | 3,5 | 0,6 | 0.021 | 56 | 11 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| EP0204144 | 4 | 0,7 | 0.022 | 63 | 12 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| EP0204149 | 5 | 0,8 | 0.024 | 70 | 14 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| EP0204155 | 6 | 1 | 0.026 | 80 | 16 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| EP0204161 | 8 | 1,25 | 0.028 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| EP0204169 | 10 | 1,5 | 0.032 | 100 | 20 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| EP0204179 | 12 | 1,75 | 0.034 | 110 | 24 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| EP0204191 | 14 | 2 | 0.038 | 110 | 25 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| EP0204202 | 16 | 2 | 0.038 | 110 | 27 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |

# M-NRT FORM E

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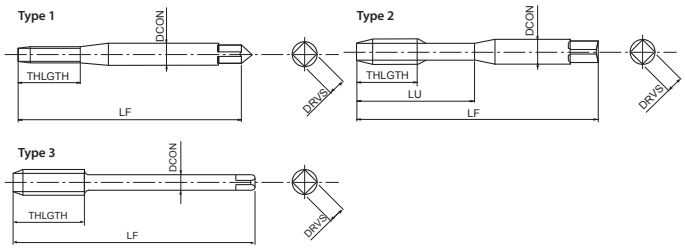
**Threading | Forming taps | Metric**




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- Chamfer Form E

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| M | PM | TiN | ISO 2 6HX | E/1,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0205125 | 2 | 0,4 | 45 | 9 | - | 2,8 | 2,1 | 3 | 1,82 | 1 | 2174 |
| EP0205133 | 2,5 | 0,45 | 50 | 9 | 14 | 2,8 | 2,1 | 4 | 2,3 | 2 | 2174 |
| EP0205138 | 3 | 0,5 | 56 | 10 | 18 | 3,5 | 2,7 | 4 | 2,8 | 2 | 2174 |
| EP0205142 | 3,5 | 0,6 | 56 | 11 | 20 | 4 | 3 | 4 | 3,25 | 2 | 2174 |
| EP0205144 | 4 | 0,7 | 63 | 12 | 21 | 4,5 | 3,4 | 4 | 3,7 | 2 | 2174 |
| EP0205149 | 5 | 0,8 | 70 | 14 | 25 | 6 | 4,9 | 5 | 4,65 | 2 | 2174 |
| EP0205155 | 6 | 1 | 80 | 16 | 30 | 6 | 4,9 | 5 | 5,55 | 2 | 2174 |
| EP0205161 | 8 | 1,25 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,45 | 2 | 2174 |
| EP0205169 | 10 | 1,5 | 100 | 20 | 39 | 10 | 8 | 5 | 9,35 | 2 | 2174 |
| EP0205179 | 12 | 1,75 | 110 | 24 | - | 9 | 7 | 5 | 11,2 | 3 | 2174 |
| EP0205191 | 14 | 2 | 110 | 25 | - | 11 | 9 | 6 | 13,1 | 3 | 2174 |
| EP0205202 | 16 | 2 | 110 | 27 | - | 12 | 9 | 6 | 15,1 | 3 | 2174 |

# M-OIL-NRT FORM E

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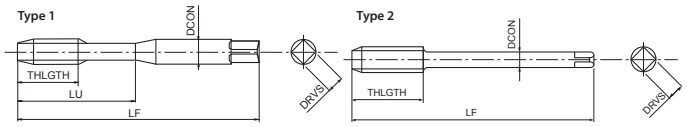
## Threading | Forming taps | Metric




- Powder metal forming tap for blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- Chamfer Form E, centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| M | PM | TiN | ISO 2 6HX | E/1,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0207149 | 5 | 0,8 | 70 | 14 | 25 | 6 | 4,9 | 5 | 4,65 | 1 | 2174 |
| EP0207155 | 6 | 1 | 80 | 16 | 30 | 6 | 4,9 | 5 | 5,55 | 1 | 2174 |
| EP0207161 | 8 | 1,25 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,45 | 1 | 2174 |
| EP0207169 | 10 | 1,5 | 100 | 20 | 39 | 10 | 8 | 5 | 9,35 | 1 | 2174 |
| EP0207179 | 12 | 1,75 | 110 | 24 | - | 9 | 7 | 5 | 11,2 | 2 | 2174 |
| EP0207191 | 14 | 2 | 110 | 25 | - | 11 | 9 | 6 | 13,1 | 2 | 2174 |
| EP0207202 | 16 | 2 | 110 | 27 | - | 12 | 9 | 6 | 15,1 | 2 | 2174 |

# A-POT

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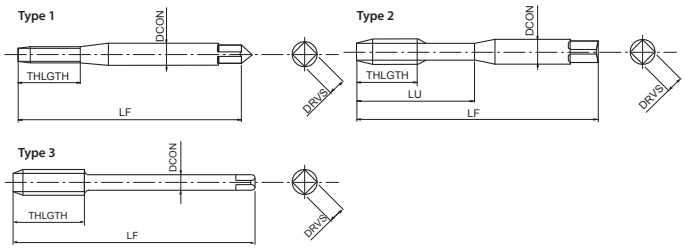
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | | |
|---|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min | |

| S Ti | H 25-35 HRC | | | | | |
|---|---|---|---|---|---|---|
| 5-10 | 8-20 | | | | | |

| A | MF | PM | V | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 374 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48145135 | 2,5 | 0,35 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145137 | 2,6 | 0,35 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48145141 | 3 | 0,35 | 56 | 8 | 18 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48145143 | 3,5 | 0,35 | 56 | 9 | 20 | 4 | 3 | 3 | 2 | 371 |
| 48145146 | 4 | 0,35 | 63 | 10 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48145145 | 4 | 0,5 | 63 | 10 | 21 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48145148 | 4,5 | 0,5 | 70 | 12 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48145151 | 5 | 0,5 | 70 | 12 | 25 | 6 | 4,9 | 3 | 2 | 371 |
| 48145602 | 6 | 0,5 | 80 | 14 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48145601 | 6 | 0,75 | 80 | 14 | 30 | 6 | 4,9 | 3 | 2 | 371 |
| 48145160 | 7 | 0,75 | 80 | 14 | 30 | 7 | 5,5 | 3 | 2 | 371 |
| 48145604 | 8 | 0,75 | 80 | 18 | 30 | 8 | 6,2 | 3 | 2 | 371 |
| 48145603 | 8 | 1 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48145605 | 9 | 1 | 90 | 22 | 35 | 9 | 7 | 3 | 2 | 371 |
| 48145608 | 10 | 0,75 | 90 | 20 | 35 | 10 | 8 | 3 | 2 | 371 |
| 48145607 | 10 | 1 | 90 | 20 | 35 | 10 | 8 | 3 | 2 | 371 |
| 48145606 | 10 | 1,25 | 100 | 24 | 39 | 10 | 8 | 3 | 2 | 371 |
| 48145157 | 6 | 0,5 | 80 | 14 | - | 4,5 | 3,4 | 3 | 3 | 374 |
| 48145156 | 6 | 0,75 | 80 | 14 | - | 4,5 | 3,4 | 3 | 3 | 374 |
| 48145163 | 8 | 0,75 | 80 | 18 | - | 6 | 4,9 | 3 | 3 | 374 |
| 48145162 | 8 | 1 | 90 | 22 | - | 6 | 4,9 | 3 | 3 | 374 |
| 48145167 | 9 | 1 | 90 | 22 | - | 7 | 5,5 | 3 | 3 | 374 |
| 48145172 | 10 | 0,75 | 90 | 20 | - | 7 | 5,5 | 3 | 3 | 374 |
| 48145171 | 10 | 1 | 90 | 20 | - | 7 | 5,5 | 3 | 3 | 374 |
| 48145170 | 10 | 1,25 | 100 | 24 | - | 7 | 5,5 | 3 | 3 | 374 |
| 48145176 | 11 | 1 | 90 | 20 | - | 8 | 6,2 | 3 | 3 | 374 |
| 48145182 | 12 | 1 | 100 | 22 | - | 9 | 7 | 3 | 3 | 374 |
| 48145181 | 12 | 1,25 | 100 | 22 | - | 9 | 7 | 3 | 3 | 374 |
| 48145180 | 12 | 1,5 | 100 | 22 | - | 9 | 7 | 3 | 3 | 374 |
| 48145194 | 14 | 1 | 100 | 22 | - | 11 | 9 | 4 | 3 | 374 |
| 48145193 | 14 | 1,25 | 100 | 22 | - | 11 | 9 | 4 | 3 | 374 |
| 48145192 | 14 | 1,5 | 100 | 22 | - | 11 | 9 | 4 | 3 | 374 |
| 48145204 | 16 | 1 | 100 | 22 | - | 12 | 9 | 4 | 3 | 374 |
| 48145203 | 16 | 1,5 | 100 | 22 | - | 12 | 9 | 4 | 3 | 374 |
| 48145218 | 18 | 1 | 110 | 25 | - | 14 | 11 | 4 | 3 | 374 |
| 48145216 | 18 | 1,5 | 110 | 25 | - | 14 | 11 | 4 | 3 | 374 |
| 48145232 | 20 | 1 | 125 | 25 | - | 16 | 12 | 4 | 3 | 374 |
| 48145230 | 20 | 1,5 | 125 | 25 | - | 16 | 12 | 4 | 3 | 374 |
| 48145220 | 20 | 2 | 140 | 34 | - | 16 | 12 | 4 | 3 | 374 |
| 48145241 | 22 | 1 | 125 | 25 | - | 18 | 14,5 | 4 | 3 | 374 |
| 48145240 | 22 | 1,5 | 125 | 25 | - | 18 | 14,5 | 4 | 3 | 374 |
| 48145239 | 22 | 2 | 140 | 34 | - | 18 | 14,5 | 4 | 3 | 374 |
| 48145251 | 24 | 1 | 140 | 28 | - | 18 | 14,5 | 4 | 3 | 374 |
| 48145250 | 24 | 1,5 | 140 | 28 | - | 18 | 14,5 | 4 | 3 | 374 |
| 48145249 | 24 | 2 | 140 | 28 | - | 18 | 14,5 | 4 | 3 | 374 |

# A-OIL-POT

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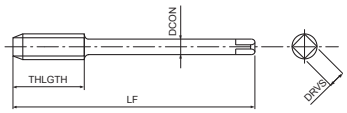
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | MF | PM | V | ISO 2 6HX | B/4 | |
|---|---|---|---|---|---|---|
| | DIN 374 | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48214162 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 48214171 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48214170 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 48214180 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48214192 | 14 | 1,5 | 100 | 22 | 11 | 9 | 4 | 374 |
| 48214203 | 16 | 1,5 | 100 | 22 | 12 | 9 | 4 | 374 |
| 48214216 | 18 | 1,5 | 110 | 25 | 14 | 11 | 4 | 374 |
| 48214230 | 20 | 1,5 | 125 | 25 | 16 | 12 | 4 | 374 |

# A-POT 6GX

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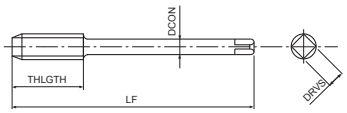
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | MF | PM | V | ISO 3 6GX | B/4 | |
|---|---|---|---|---|---|---|
| | DIN 374 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48205156 | 6 | 0,75 | 0.022 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48205163 | 8 | 0,75 | 0.022 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 48205162 | 8 | 1 | 0.026 | 80 | 22 | 6 | 4,9 | 3 | 374 |
| 48205171 | 10 | 1 | 0.026 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48205170 | 10 | 1,25 | 0.028 | 90 | 24 | 7 | 5,5 | 3 | 374 |
| 48205182 | 12 | 1 | 0.026 | 90 | 22 | 9 | 7 | 3 | 374 |
| 48205181 | 12 | 1,25 | 0.028 | 90 | 22 | 9 | 7 | 3 | 374 |
| 48205180 | 12 | 1,5 | 0.032 | 90 | 22 | 9 | 7 | 3 | 374 |
| 48205192 | 14 | 1,5 | 0.032 | 90 | 22 | 11 | 9 | 4 | 374 |
| 48205203 | 16 | 1,5 | 0.032 | 100 | 22 | 12 | 9 | 4 | 374 |
| 48205216 | 18 | 1,5 | 0.032 | 100 | 25 | 14 | 11 | 4 | 374 |
| 48205230 | 20 | 1,5 | 0.032 | 125 | 25 | 16 | 12 | 4 | 374 |
| 48205240 | 22 | 1,5 | 0.032 | 125 | 25 | 18 | 14,5 | 4 | 374 |
| 48205250 | 24 | 1,5 | 0.032 | 140 | 28 | 18 | 14,5 | 4 | 374 |

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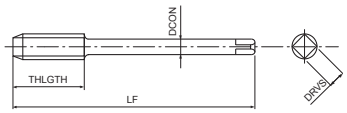
## Threading | Cutting taps | Metric Fine




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| MF | HSSE | 0X | ISO 2 6H | B/4 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48224139 | 3 | 0,35 | 56 | 9 | 2,2 | - | 3 | 374 |
| 48224145 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 48224151 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 48224157 | 6 | 0,5 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48224156 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48224163 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 48224162 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 48224167 | 9 | 1 | 90 | 22 | 7 | 5,5 | 3 | 374 |
| 48224172 | 10 | 0,75 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48224171 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48224170 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 48224176 | 11 | 1 | 90 | 20 | 8 | 6,2 | 3 | 374 |
| 48224182 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48224181 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48224180 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48224194 | 14 | 1 | 100 | 22 | 11 | 9 | 3 | 374 |
| 48224193 | 14 | 1,25 | 100 | 22 | 11 | 9 | 3 | 374 |
| 48224192 | 14 | 1,5 | 100 | 22 | 11 | 9 | 3 | 374 |
| 48224204 | 16 | 1 | 100 | 22 | 12 | 9 | 3 | 374 |
| 48224203 | 16 | 1,5 | 100 | 22 | 12 | 9 | 3 | 374 |
| 48224218 | 18 | 1 | 110 | 25 | 14 | 11 | 3 | 374 |
| 48224216 | 18 | 1,5 | 110 | 25 | 14 | 11 | 3 | 374 |
| 48224232 | 20 | 1 | 125 | 25 | 16 | 12 | 3 | 374 |
| 48224230 | 20 | 1,5 | 125 | 25 | 16 | 12 | 3 | 374 |
| 48224220 | 20 | 2 | 140 | 34 | 16 | 12 | 3 | 374 |
| 48224241 | 22 | 1 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 48224240 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 48224239 | 22 | 2 | 140 | 34 | 18 | 14,5 | 3 | 374 |
| 48224251 | 24 | 1 | 140 | 28 | 18 | 14,5 | 3 | 374 |
| 48224250 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 3 | 374 |
| 48224249 | 24 | 2 | 140 | 28 | 18 | 14,5 | 3 | 374 |

# S-POT 6G

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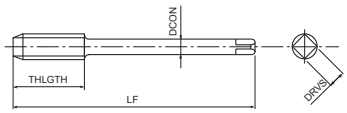
## Threading | Cutting taps | Metric Fine




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| MF | HSSE | 0X | ISO 2 6G | B/4 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48272156 | 6 | 0,75 | 0.022 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48272163 | 8 | 0,75 | 0.022 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 48272162 | 8 | 1 | 0.026 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 48272171 | 10 | 1 | 0.026 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48272170 | 10 | 1,25 | 0.028 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 48272182 | 12 | 1 | 0.026 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48272181 | 12 | 1,25 | 0.028 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48272180 | 12 | 1,5 | 0.032 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48272192 | 14 | 1,5 | 0.032 | 100 | 22 | 11 | 9 | 3 | 374 |
| 48272203 | 16 | 1,5 | 0.032 | 100 | 22 | 12 | 9 | 3 | 374 |
| 48272216 | 18 | 1,5 | 0.032 | 110 | 25 | 14 | 11 | 3 | 374 |
| 48272230 | 20 | 1,5 | 0.032 | 125 | 25 | 16 | 12 | 3 | 374 |
| 48272240 | 22 | 1,5 | 0.032 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 48272250 | 24 | 1,5 | 0.032 | 140 | 28 | 18 | 14,5 | 3 | 374 |

# VA-POT

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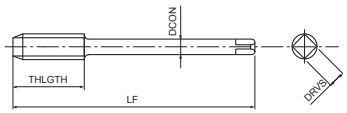
## Threading | Cutting taps | Metric Fine




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| MF | HSSE | 0X | ISO 2 6H | B/4 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 63713960 | 3 | 0,35 | 56 | 9 | 2,2 | - | 3 | 374 |
| 63714560 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 63715160 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 63715760 | 6 | 0,5 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 63715660 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 63716360 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 63716260 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 63717160 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 63717060 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 63718260 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 63718160 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 63718060 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 63719260 | 14 | 1,5 | 100 | 22 | 11 | 9 | 3 | 374 |
| 63720360 | 16 | 1,5 | 100 | 22 | 12 | 9 | 3 | 374 |
| 63721660 | 18 | 1,5 | 110 | 25 | 14 | 11 | 3 | 374 |
| 63723060 | 20 | 1,5 | 125 | 25 | 16 | 12 | 3 | 374 |
| 63724060 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 63725060 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 3 | 374 |

# Z-POT

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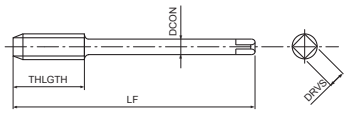
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-24 | 15-24 | 15-24 | 8-20 | 8-20 | 20-40 | 20-40 | m/min |

| S Ti | H 25-35 HRC | | | | | | |
|---|---|---|---|---|---|---|---|
| 10-15 | 8-15 | | | | | | |

| MF | PM | V | ISO 2 6HX | B/4 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48028139 | 3 | 0,35 | 56 | 9 | 2,2 | - | 3 | 374 |
| 48028145 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 48028151 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 48028157 | 6 | 0,5 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48028156 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48028163 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 48028162 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 48028171 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48028170 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 48028182 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48028180 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48028176 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48028193 | 14 | 1,5 | 100 | 22 | 11 | 9 | 4 | 374 |
| 48028204 | 16 | 1,5 | 100 | 22 | 12 | 9 | 4 | 374 |
| 48028217 | 18 | 1,5 | 110 | 25 | 14 | 11 | 4 | 374 |
| 48028231 | 20 | 1,5 | 125 | 25 | 16 | 12 | 4 | 374 |
| 48028241 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 4 | 374 |
| 48028251 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 4 | 374 |

# POT

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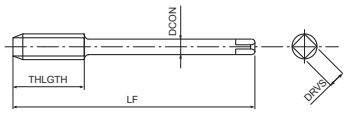
## Threading | Cutting taps | Metric Fine




- HSSE spiral-point cutting tap for through holes
- Bright finish
- For general purpose applications

| P ○ | P ○ | P ○ | P ○ | K ○ | N ○ | N ◉ | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | GGG | Al | AC, ADC | |
| 12-20 | 8-12 | 8-12 | 8-12 | 8-12 | 15-25 | 15-20 | m/min |

MF | HSSE | ISO 2 6H | B/4 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 60614560 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 60615160 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 60615660 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 60616360 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 60616260 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 60617260 | 10 | 0,75 | 90 | 18 | 7 | 5,5 | 3 | 374 |
| 60617160 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 60617060 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 60618260 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 60618160 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 60618060 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 60619460 | 14 | 1 | 100 | 18 | 11 | 9 | 3 | 374 |
| 60619360 | 14 | 1,25 | 100 | 22 | 11 | 9 | 3 | 374 |
| 60619260 | 14 | 1,5 | 100 | 22 | 11 | 9 | 3 | 374 |
| 60620460 | 16 | 1 | 100 | 18 | 12 | 9 | 3 | 374 |
| 60620360 | 16 | 1,5 | 100 | 22 | 12 | 9 | 3 | 374 |
| 60621860 | 18 | 1 | 110 | 20 | 14 | 11 | 3 | 374 |
| 60621660 | 18 | 1,5 | 110 | 25 | 14 | 11 | 3 | 374 |
| 60621560 | 18 | 2 | 125 | 26 | 14 | 11 | 3 | 374 |
| 60623260 | 20 | 1 | 125 | 20 | 16 | 12 | 3 | 374 |
| 60623060 | 20 | 1,5 | 125 | 25 | 16 | 12 | 3 | 374 |
| 60622960 | 20 | 2 | 140 | 27 | 16 | 12 | 3 | 374 |
| 60624060 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 60623960 | 22 | 2 | 140 | 27 | 18 | 14,5 | 3 | 374 |
| 60625060 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 3 | 374 |
| 60624960 | 24 | 2 | 140 | 27 | 18 | 14,5 | 3 | 374 |
| 60627360 | 30 | 2 | 150 | 30 | 22 | 18 | 4 | 374 |

# CC-POT

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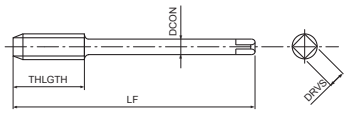
## Threading | Cutting taps | Metric Fine




- HSSE spiral-point cutting tap for through holes
- CrN coating
- For general steels and stainless steels
- Developed for rigid tapping on CNC machines

| P ◉ | P ◉ | P ◉ | P ○ | M ◉ | N ◉ | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Al | |
| 15-25 | 15-25 | 10-25 | 10-25 | 6-15 | 20-40 | m/min |

MF | HSSE | CrN | ISO 2 6HX | B/4 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48061156 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 48061163 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 48061162 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 48061171 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 48061170 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 48061182 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48061181 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48061180 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 48061192 | 14 | 1,5 | 100 | 22 | 11 | 9 | 3 | 374 |
| 48061203 | 16 | 1,5 | 100 | 22 | 12 | 9 | 3 | 374 |
| 48061216 | 18 | 1,5 | 110 | 25 | 14 | 11 | 3 | 374 |
| 48061230 | 20 | 1,5 | 125 | 25 | 16 | 12 | 3 | 374 |
| 48061240 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 3 | 374 |
| 48061250 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 3 | 374 |

# H-POT

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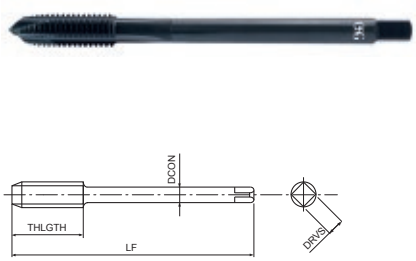
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 | m/min |

| MF | PM | 0X | ISO 2 6H | B/5 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 88414060 | 3 | 0,35 | 56 | 8 | 2,2 | - | 3 | 374 |
| 88414560 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 88415160 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 88415760 | 6 | 0,5 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 88415660 | 6 | 0,75 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 88416360 | 8 | 0,75 | 80 | 18 | 6 | 4,9 | 3 | 374 |
| 88416260 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 374 |
| 88417160 | 10 | 1 | 90 | 20 | 7 | 5,5 | 3 | 374 |
| 88417060 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 3 | 374 |
| 88418260 | 12 | 1 | 100 | 22 | 9 | 7 | 3 | 374 |
| 88418160 | 12 | 1,25 | 100 | 22 | 9 | 7 | 3 | 374 |
| 88418060 | 12 | 1,5 | 100 | 22 | 9 | 7 | 3 | 374 |
| 88419260 | 14 | 1,5 | 100 | 22 | 11 | 9 | 3 | 374 |
| 88420360 | 16 | 1,5 | 100 | 22 | 12 | 9 | 4 | 374 |
| 88421660 | 18 | 1,5 | 110 | 25 | 14 | 11 | 4 | 374 |
| 88423060 | 20 | 1,5 | 125 | 25 | 16 | 12 | 4 | 374 |
| 88424060 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 4 | 374 |
| 88425060 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 4 | 374 |

# A-SFT

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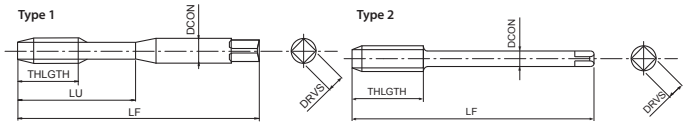
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC | |
|---|---|---|
| 5-10 | 8-20 | |

| A | MF | PM | V | 45° | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 374 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48139135 | 2,5 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48139137 | 2,6 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48139141 | 3 | 0,35 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48139143 | 3,5 | 0,35 | 56 | 4,8 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48139146 | 4 | 0,35 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48139145 | 4 | 0,5 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48139148 | 4,5 | 0,5 | 70 | 6 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48139151 | 5 | 0,5 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48139602 | 6 | 0,5 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48139601 | 6 | 0,75 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48139160 | 7 | 0,75 | 80 | 8 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48139604 | 8 | 0,75 | 80 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48139603 | 8 | 1 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48139605 | 9 | 1 | 90 | 10 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48139608 | 10 | 0,75 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48139607 | 10 | 1 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48139606 | 10 | 1,25 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48139157 | 6 | 0,5 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48139156 | 6 | 0,75 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48139163 | 8 | 0,75 | 80 | 8 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48139162 | 8 | 1 | 90 | 10 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48139167 | 9 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48139172 | 10 | 0,75 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48139171 | 10 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48139170 | 10 | 1,25 | 100 | 12 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48139176 | 11 | 1 | 90 | 12 | - | 8 | 6,2 | 3 | 2 | 374 |
| 48139182 | 12 | 1 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48139181 | 12 | 1,25 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48139180 | 12 | 1,5 | 100 | 14 | - | 9 | 7 | 3 | 2 | 374 |
| 48139194 | 14 | 1 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48139193 | 14 | 1,25 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48139192 | 14 | 1,5 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48139204 | 16 | 1 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48139203 | 16 | 1,5 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48139218 | 18 | 1 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48139216 | 18 | 1,5 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48139232 | 20 | 1 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48139230 | 20 | 1,5 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48139220 | 20 | 2 | 140 | 25 | - | 16 | 12 | 4 | 2 | 374 |
| 48139241 | 22 | 1 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48139240 | 22 | 1,5 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48139251 | 24 | 1 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48139250 | 24 | 1,5 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48139249 | 24 | 2 | 140 | 30 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48139249 | 24 | 2 | 140 | 30 | - | 18 | 14,5 | 4 | 2 | 374 |

# A-OIL-SFT

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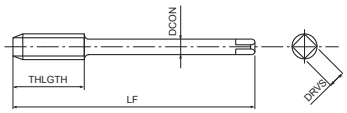
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | MF | PM | V | 45° | ISO 2 6HX | C/2,5 |
|---|---|---|---|---|---|---|

| DIN 374 |
|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48140162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48140171 | 10 | 1 | 90 | 10 | 7 | 5,5 | 3 | 374 |
| 48140170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48140180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 3 | 374 |
| 48140192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 3 | 374 |
| 48140203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 3 | 374 |
| 48140216 | 18 | 1,5 | 110 | 16 | 14 | 11 | 4 | 374 |
| 48140230 | 20 | 1,5 | 125 | 16 | 16 | 12 | 4 | 374 |

# A-SFT 6GX

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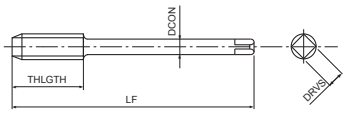
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | MF | PM | V | 45° | ISO 3 6GX | C/2,5 |
|---|---|---|---|---|---|---|

| DIN 374 |
|---|

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48201156 | 6 | 0,75 | 0.022 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48201163 | 8 | 0,75 | 0.022 | 80 | 8 | 6 | 4,9 | 3 | 374 |
| 48201162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48201171 | 10 | 1 | 0.026 | 90 | 10 | 7 | 5,5 | 3 | 374 |
| 48201170 | 10 | 1,25 | 0.028 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48201182 | 12 | 1 | 0.026 | 100 | 12 | 9 | 7 | 3 | 374 |
| 48201181 | 12 | 1,25 | 0.028 | 100 | 12 | 9 | 7 | 3 | 374 |
| 48201180 | 12 | 1,5 | 0.032 | 100 | 14 | 9 | 7 | 3 | 374 |
| 48201192 | 14 | 1,5 | 0.032 | 100 | 16 | 11 | 9 | 3 | 374 |
| 48201203 | 16 | 1,5 | 0.032 | 100 | 16 | 12 | 9 | 3 | 374 |
| 48201216 | 18 | 1,5 | 0.032 | 110 | 16 | 14 | 11 | 4 | 374 |
| 48201230 | 20 | 1,5 | 0.032 | 125 | 16 | 16 | 12 | 4 | 374 |
| 48201240 | 22 | 1,5 | 0.032 | 125 | 16 | 18 | 14,5 | 4 | 374 |
| 48201250 | 24 | 1,5 | 0.032 | 140 | 16 | 18 | 14,5 | 4 | 374 |

# A-SFT FORM E

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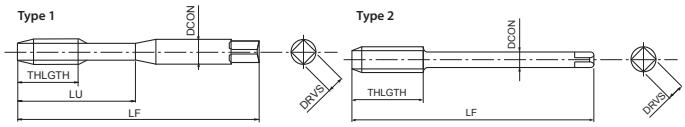
## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | MF | PM | V | 45° | ISO 2 6HX | E/1,5 |
|---|---|---|---|---|---|---|
| | DIN 371 | DIN 374 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48203135 | 2,5 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203137 | 2,6 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48203141 | 3 | 0,35 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48203143 | 3,5 | 0,35 | 56 | 4,8 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48203146 | 4 | 0,35 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48203145 | 4 | 0,5 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48203148 | 4,5 | 0,5 | 70 | 6 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48203151 | 5 | 0,5 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48203602 | 6 | 0,5 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48203601 | 6 | 0,75 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48203160 | 7 | 0,75 | 80 | 8 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48203604 | 8 | 0,75 | 80 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48203603 | 8 | 1 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48203605 | 9 | 1 | 90 | 10 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48203608 | 10 | 0,75 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48203607 | 10 | 1 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48203606 | 10 | 1,25 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48203157 | 6 | 0,5 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48203156 | 6 | 0,75 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48203163 | 8 | 0,75 | 80 | 8 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48203162 | 8 | 1 | 90 | 10 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48203167 | 9 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48203172 | 10 | 0,75 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48203171 | 10 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48203170 | 10 | 1,25 | 100 | 12 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48203176 | 11 | 1 | 90 | 12 | - | 8 | 6,2 | 3 | 2 | 374 |
| 48203182 | 12 | 1 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48203181 | 12 | 1,25 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48203180 | 12 | 1,5 | 100 | 14 | - | 9 | 7 | 3 | 2 | 374 |
| 48203194 | 14 | 1 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48203193 | 14 | 1,25 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48203192 | 14 | 1,5 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48203204 | 16 | 1 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48203203 | 16 | 1,5 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48203218 | 18 | 1 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48203216 | 18 | 1,5 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48203232 | 20 | 1 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48203230 | 20 | 1,5 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48203220 | 20 | 2 | 140 | 25 | - | 16 | 12 | 4 | 2 | 374 |
| 48203241 | 22 | 1 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48203240 | 22 | 1,5 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48203239 | 22 | 2 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48203251 | 24 | 1 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48203250 | 24 | 1,5 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48203249 | 24 | 2 | 140 | 30 | - | 18 | 14,5 | 4 | 2 | 374 |

# A-SFT-INOX

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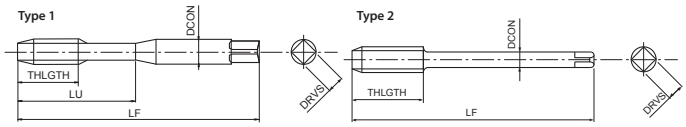
NEW

## Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer VI coating
- Eliminates chip entanglement issues in stainless steel

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-20 | 5-50 | 5-50 | 5-30 | 5-15 | 5-50 | m/min |

| A | MF | PM | VI | 45° | ISO 2 6HX |
|---|---|---|---|---|---|
| C/2,5 | | DIN 371 | DIN 374 | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48455135 | 2,5 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455137 | 2,6 | 0,35 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48455141 | 3 | 0,35 | 56 | 4 | 18 | 3,5 | 2,7 | 3 | 1 | 371 |
| 48455143 | 3,5 | 0,35 | 56 | 4,8 | 20 | 4 | 3 | 3 | 1 | 371 |
| 48455146 | 4 | 0,35 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48455145 | 4 | 0,5 | 63 | 5,6 | 21 | 4,5 | 3,4 | 3 | 1 | 371 |
| 48455148 | 4,5 | 0,5 | 70 | 6 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48455151 | 5 | 0,5 | 70 | 6,4 | 25 | 6 | 4,9 | 3 | 1 | 371 |
| 48455602 | 6 | 0,5 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48455601 | 6 | 0,75 | 80 | 8 | 30 | 6 | 4,9 | 3 | 1 | 371 |
| 48455160 | 7 | 0,75 | 80 | 8 | 30 | 7 | 5,5 | 3 | 1 | 371 |
| 48455604 | 8 | 0,75 | 80 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48455603 | 8 | 1 | 90 | 10 | 35 | 8 | 6,2 | 3 | 1 | 371 |
| 48455605 | 9 | 1 | 90 | 10 | 35 | 9 | 7 | 3 | 1 | 371 |
| 48455608 | 10 | 0,75 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48455607 | 10 | 1 | 90 | 12 | 35 | 10 | 8 | 3 | 1 | 371 |
| 48455606 | 10 | 1,25 | 100 | 12 | 39 | 10 | 8 | 3 | 1 | 371 |
| 48455157 | 6 | 0,5 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48455156 | 6 | 0,75 | 80 | 8 | - | 4,5 | 3,4 | 3 | 2 | 374 |
| 48455163 | 8 | 0,75 | 80 | 8 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48455162 | 8 | 1 | 90 | 10 | - | 6 | 4,9 | 3 | 2 | 374 |
| 48455167 | 9 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48455172 | 10 | 0,75 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48455171 | 10 | 1 | 90 | 10 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48455170 | 10 | 1,25 | 100 | 12 | - | 7 | 5,5 | 3 | 2 | 374 |
| 48455176 | 11 | 1 | 90 | 12 | - | 8 | 6,2 | 3 | 2 | 374 |
| 48455182 | 12 | 1 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48455181 | 12 | 1,25 | 100 | 12 | - | 9 | 7 | 3 | 2 | 374 |
| 48455180 | 12 | 1,5 | 100 | 14 | - | 9 | 7 | 3 | 2 | 374 |
| 48455194 | 14 | 1 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48455193 | 14 | 1,25 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48455192 | 14 | 1,5 | 100 | 16 | - | 11 | 9 | 3 | 2 | 374 |
| 48455204 | 16 | 1 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48455203 | 16 | 1,5 | 100 | 16 | - | 12 | 9 | 3 | 2 | 374 |
| 48455218 | 18 | 1 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48455216 | 18 | 1,5 | 110 | 16 | - | 14 | 11 | 4 | 2 | 374 |
| 48455232 | 20 | 1 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48455230 | 20 | 1,5 | 125 | 16 | - | 16 | 12 | 4 | 2 | 374 |
| 48455220 | 20 | 2 | 140 | 25 | - | 16 | 12 | 4 | 2 | 374 |
| 48455241 | 22 | 1 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48455240 | 22 | 1,5 | 125 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48455239 | 22 | 2 | 140 | 25 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48455251 | 24 | 1 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48455250 | 24 | 1,5 | 140 | 16 | - | 18 | 14,5 | 4 | 2 | 374 |
| 48455249 | 24 | 2 | 140 | 30 | - | 18 | 14,5 | 4 | 2 | 374 |

# A-SFT-AL

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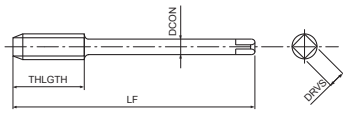
**NEW**

Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in aluminium cast and aluminium die cast

N
AC, ADC
5-50
m/min

A | MF | PM | V | 45° | ISO 2 6HX | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48456162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 2 | 374 |
| 48456171 | 10 | 1 | 90 | 10 | 7 | 5,5 | 2 | 374 |
| 48456170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 2 | 374 |
| 48456182 | 12 | 1 | 100 | 12 | 9 | 7 | 2 | 374 |
| 48456181 | 12 | 1,25 | 100 | 12 | 9 | 7 | 2 | 374 |
| 48456180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 2 | 374 |

# A-SFT-AL FORM E

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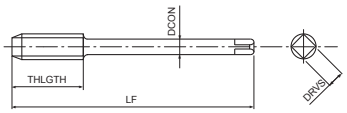
**NEW**

Threading | Cutting taps | Metric Fine




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in aluminium cast and aluminium die cast
- Form E chamfer

N
AC, ADC
5-30
m/min

A | MF | PM | V | 45° | ISO 2 6HX | E/1,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48457162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 2 | 374 |
| 48457171 | 10 | 1 | 90 | 10 | 7 | 5,5 | 2 | 374 |
| 48457170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 2 | 374 |
| 48457182 | 12 | 1 | 100 | 12 | 9 | 7 | 2 | 374 |
| 48457181 | 12 | 1,25 | 100 | 12 | 9 | 7 | 2 | 374 |
| 48457180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 2 | 374 |

# A-CSF OIL

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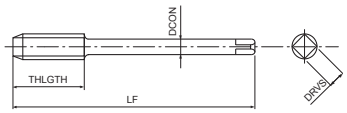
**Threading | Cutting taps | Metric Fine**




- First choice in quality and performance
- Carbide spiral-fluted cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | MF | CARBIDE | FX | h6 | 15° | ISO 2 6HX |
|---|---|---|---|---|---|---|
| C/2,5 | | | DIN 374 | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48267162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 3 | 374 |
| 48267171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 3 | 374 |
| 48267182 | 12 | 1 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48267180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48267192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 374 |
| 48267203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 374 |
| 48267230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 374 |

# A-CSF OIL FORM E

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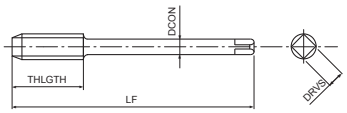
**Threading | Cutting taps | Metric Fine**




- First choice in quality and performance
- Carbide spiral-fluted cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant, Form E chamfer

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

| A | MF | CARBIDE | FX | h6 | 15° | ISO 2 6HX |
|---|---|---|---|---|---|---|
| E/1,5 | | | DIN 374 | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48266162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 3 | 374 |
| 48266171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 3 | 374 |
| 48266182 | 12 | 1 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48266180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48266192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 374 |
| 48266203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 374 |

# S-SFT

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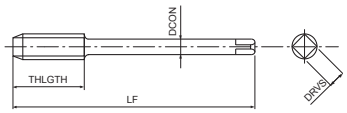
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

MF | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48223139 | 3 | 0,35 | 56 | 4 | 2,2 | - | 3 | 374 |
| 48223145 | 4 | 0,5 | 63 | 5,6 | 2,8 | 2,1 | 3 | 374 |
| 48223151 | 5 | 0,5 | 70 | 6,4 | 3,5 | 2,7 | 3 | 374 |
| 48223157 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48223156 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48223163 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 48223162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48223167 | 9 | 1 | 90 | 10 | 7 | 5,5 | 3 | 374 |
| 48223172 | 10 | 0,75 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 48223171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 48223170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48223176 | 11 | 1 | 90 | 12 | 8 | 6,2 | 3 | 374 |
| 48223182 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48223181 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48223180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48223194 | 14 | 1 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48223193 | 14 | 1,25 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48223192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48223204 | 16 | 1 | 100 | 16 | 12 | 9 | 4 | 374 |
| 48223203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 4 | 374 |
| 48223218 | 18 | 1 | 110 | 20 | 14 | 11 | 4 | 374 |
| 48223216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 374 |
| 48223232 | 20 | 1 | 125 | 20 | 16 | 12 | 4 | 374 |
| 48223230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 374 |
| 48223220 | 20 | 2 | 140 | 20 | 16 | 12 | 4 | 374 |
| 48223241 | 22 | 1 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 48223240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 48223239 | 22 | 2 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 48223251 | 24 | 1 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 48223250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 4 | 374 |
| 48223249 | 24 | 2 | 140 | 24 | 18 | 14,5 | 4 | 374 |

# S-SFT 6G

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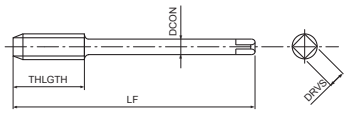
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

MF | HSSE | 0X | 40° | ISO 2 6G | C/2,5 | DIN 374

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48269156 | 6 | 0,75 | 0.022 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48269163 | 8 | 0,75 | 0.022 | 80 | 8 | 6 | 4,9 | 3 | 374 |
| 48269162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48269171 | 10 | 1 | 0.026 | 90 | 10 | 7 | 5,5 | 3 | 374 |
| 48269170 | 10 | 1,25 | 0.028 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48269182 | 12 | 1 | 0.026 | 100 | 12 | 9 | 7 | 4 | 374 |
| 48269181 | 12 | 1,25 | 0.028 | 100 | 12 | 9 | 7 | 4 | 374 |
| 48269180 | 12 | 1,5 | 0.032 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48269192 | 14 | 1,5 | 0.032 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48269203 | 16 | 1,5 | 0.032 | 100 | 16 | 12 | 9 | 4 | 374 |
| 48269216 | 18 | 1,5 | 0.032 | 110 | 16 | 14 | 11 | 4 | 374 |
| 48269230 | 20 | 1,5 | 0.032 | 125 | 16 | 16 | 12 | 4 | 374 |
| 48269240 | 22 | 1,5 | 0.032 | 125 | 16 | 18 | 14,5 | 4 | 374 |
| 48269250 | 24 | 1,5 | 0.032 | 140 | 16 | 18 | 14,5 | 4 | 374 |

# S-SFT FORM E

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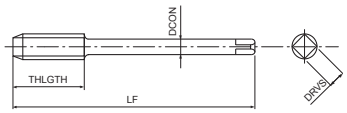
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

MF | HSSE | 0X | 40° | ISO 2 6H | E/1,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48268139 | 3 | 0,35 | 56 | 4 | 2,2 | - | 3 | 374 |
| 48268145 | 4 | 0,5 | 63 | 5,6 | 2,8 | 2,1 | 3 | 374 |
| 48268151 | 5 | 0,5 | 70 | 6,4 | 3,5 | 2,7 | 3 | 374 |
| 48268157 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48268156 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48268163 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 48268162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48268167 | 9 | 1 | 90 | 10 | 7 | 5,5 | 3 | 374 |
| 48268172 | 10 | 0,75 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 48268171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 48268170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48268176 | 11 | 1 | 90 | 12 | 8 | 6,2 | 3 | 374 |
| 48268182 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48268181 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48268180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48268194 | 14 | 1 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48268193 | 14 | 1,25 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48268192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48268204 | 16 | 1 | 100 | 16 | 12 | 9 | 4 | 374 |
| 48268203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 4 | 374 |
| 48268218 | 18 | 1 | 110 | 20 | 14 | 11 | 4 | 374 |
| 48268216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 374 |
| 48268232 | 20 | 1 | 125 | 20 | 16 | 12 | 4 | 374 |
| 48268230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 374 |
| 48268220 | 20 | 2 | 140 | 20 | 16 | 12 | 4 | 374 |
| 48268241 | 22 | 1 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 48268240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 48268239 | 22 | 2 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 48268251 | 24 | 1 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 48268250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 4 | 374 |
| 48268249 | 24 | 2 | 140 | 24 | 18 | 14,5 | 4 | 374 |

# VA-SFT

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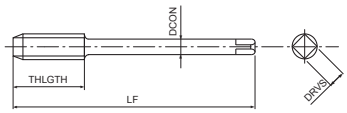
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

MF | HSSE | 0X | 40° | ISO 2 6H | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 65513960 | 3 | 0,35 | 56 | 4 | 2,2 | - | 3 | 374 |
| 65514560 | 4 | 0,5 | 63 | 6 | 2,8 | 2,1 | 3 | 374 |
| 65515160 | 5 | 0,5 | 70 | 7 | 3,5 | 2,7 | 3 | 374 |
| 65515760 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 65515660 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 65516360 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 65516260 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 65517160 | 10 | 1 | 90 | 12 | 7 | 5,5 | 4 | 374 |
| 65517060 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 4 | 374 |
| 65518260 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 374 |
| 65518160 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 374 |
| 65518060 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 374 |
| 65519260 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 374 |
| 65520360 | 16 | 1,5 | 100 | 16 | 12 | 9 | 5 | 374 |
| 65521660 | 18 | 1,5 | 110 | 20 | 14 | 11 | 5 | 374 |
| 65523060 | 20 | 1,5 | 125 | 20 | 16 | 12 | 5 | 374 |
| 65524060 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 5 | 374 |
| 65525060 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 5 | 374 |

# Z-SFT

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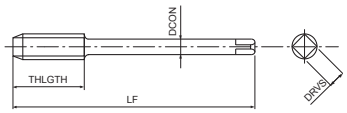
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-25 | 10-25 | 10-25 | 8-20 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-15 |

| MF | PM | V | 50° | ISO 2 6H | C/2,5 | | DIN 374 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48029139 | 3 | 0,35 | 56 | 4 | 2,2 | - | 3 | 374 |
| 48029145 | 4 | 0,5 | 63 | 6 | 2,8 | 2,1 | 3 | 374 |
| 48029151 | 5 | 0,5 | 70 | 7 | 3,5 | 2,7 | 3 | 374 |
| 48029157 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48029156 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 48029163 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 48029162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48029171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 4 | 374 |
| 48029170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 4 | 374 |
| 48029182 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48029180 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48029176 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 374 |
| 48029192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 374 |
| 48029203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 5 | 374 |
| 48029216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 5 | 374 |
| 48029230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 5 | 374 |
| 48029240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 5 | 374 |
| 48029250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 5 | 374 |

# SFT

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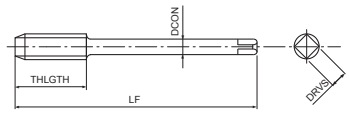
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For general purpose applications

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GGG | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 6-8 | 10-20 | 10-15 | m/min |

| MF | HSSE | 40° | ISO 2 6H | C/2,5 | | DIN 374 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 61214560 | 4 | 0,5 | 63 | 6 | 2,8 | 2,1 | 3 | 374 |
| 61215160 | 5 | 0,5 | 70 | 7 | 3,5 | 2,7 | 3 | 374 |
| 61215660 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 61216360 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 61216260 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 61217260 | 10 | 0,75 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 61217160 | 10 | 1 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 61217060 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 61218260 | 12 | 1 | 100 | 14 | 9 | 7 | 3 | 374 |
| 61218160 | 12 | 1,25 | 100 | 14 | 9 | 7 | 3 | 374 |
| 61218060 | 12 | 1,5 | 100 | 14 | 9 | 7 | 3 | 374 |
| 61219460 | 14 | 1 | 100 | 11 | 11 | 9 | 3 | 374 |
| 61219360 | 14 | 1,25 | 100 | 15 | 11 | 9 | 3 | 374 |
| 61219260 | 14 | 1,5 | 100 | 16 | 11 | 9 | 3 | 374 |
| 61220460 | 16 | 1 | 100 | 12 | 12 | 9 | 3 | 374 |
| 61220360 | 16 | 1,5 | 100 | 16 | 12 | 9 | 3 | 374 |
| 61221860 | 18 | 1 | 110 | 13 | 14 | 11 | 4 | 374 |
| 61221660 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 374 |
| 61221560 | 18 | 2 | 125 | 20 | 14 | 11 | 4 | 374 |
| 61223260 | 20 | 1 | 125 | 20 | 16 | 12 | 4 | 374 |
| 61223060 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 374 |
| 61222960 | 20 | 2 | 140 | 20 | 16 | 12 | 4 | 374 |
| 61224060 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 61223960 | 22 | 2 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 61225060 | 24 | 1,5 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 61224960 | 24 | 2 | 140 | 20 | 18 | 14,5 | 4 | 374 |
| 61227360 | 30 | 2 | 150 | 22 | 22 | 18 | 4 | 374 |

# M-SFT-DUPLEX

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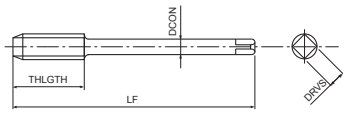
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX 3-15 Super Duplex | S Inconel 625 2-3 15-5 PH | S Ti Gr.2 3-6 17-4 PH | m/min |
|---|---|---|---|---|---|---|---|

| MF | PM | TiN | 50° | ISO 2 6HX | C/2,5 | | DIN 374 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48336157 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 2 | 374 |
| 48336156 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 2 | 374 |
| 48336163 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 2 | 374 |
| 48336162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 2 | 374 |
| 48336171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 4 | 2 | 374 |
| 48336170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 4 | 2 | 374 |
| 48336182 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 2 | 374 |
| 48336181 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 2 | 374 |
| 48336180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 2 | 374 |
| 48336192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 2 | 374 |
| 48336203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 4 | 2 | 374 |
| 48336216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 2 | 374 |
| 48336230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 2 | 374 |
| 48336240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 4 | 2 | 374 |
| 48336250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 4 | 2 | 374 |

# M-OIL-SFT-DUPLEX

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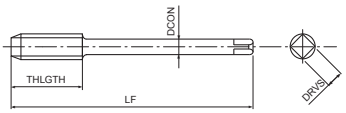
## Threading | Cutting taps | Metric Fine




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX 3-15 Super Duplex | S Inconel 625 2-3 15-5 PH | S Ti Gr.2 3-6 17-4 PH | m/min |
|---|---|---|---|---|---|---|---|

| MF | PM | TiN | 50° | ISO 2 6HX | C/2,5 | | DIN 374 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48380162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 2 | 374 |
| 48380171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 4 | 2 | 374 |
| 48380170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 4 | 2 | 374 |
| 48380180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 2 | 374 |
| 48380192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 4 | 2 | 374 |
| 48380203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 4 | 2 | 374 |
| 48380216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 2 | 374 |
| 48380230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 2 | 374 |

# CC-SFT

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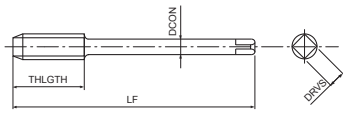
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

MF | HSSE | CrN | 45° | ISO 2 6HX | C/2,5 | ≥2D | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48032157 | 6 | 0,5 | 80 | 7,2 | 4,5 | 3,4 | 3 | 374 |
| 48032156 | 6 | 0,75 | 80 | 7,2 | 4,5 | 3,4 | 3 | 374 |
| 48032163 | 8 | 0,75 | 80 | 9 | 6 | 4,9 | 3 | 374 |
| 48032162 | 8 | 1 | 90 | 9 | 6 | 4,9 | 3 | 374 |
| 48032171 | 10 | 1 | 90 | 11 | 7 | 5,5 | 4 | 374 |
| 48032170 | 10 | 1,25 | 100 | 11 | 7 | 5,5 | 4 | 374 |
| 48032182 | 12 | 1 | 100 | 13 | 9 | 7 | 4 | 374 |
| 48032181 | 12 | 1,25 | 100 | 13 | 9 | 7 | 4 | 374 |
| 48032180 | 12 | 1,5 | 100 | 13 | 9 | 7 | 4 | 374 |
| 48032192 | 14 | 1,5 | 100 | 14 | 11 | 9 | 4 | 374 |
| 48032203 | 16 | 1,5 | 100 | 14 | 12 | 9 | 4 | 374 |
| 48032216 | 18 | 1,5 | 110 | 18 | 14 | 11 | 4 | 374 |
| 48032230 | 20 | 1,5 | 125 | 18 | 16 | 12 | 4 | 374 |
| 48032240 | 22 | 1,5 | 125 | 18 | 18 | 14,5 | 4 | 374 |
| 48032250 | 24 | 1,5 | 140 | 22 | 18 | 14,5 | 4 | 374 |

# SUS-SFT

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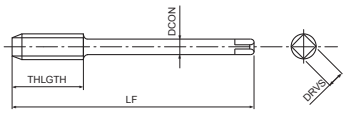
## Threading | Cutting taps | Metric Fine




- HSSE high spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For stainless steels

| M INOX | |
|---|---|
| 6-10 | m/min |

MF | HSSE | 0X | 50° | ISO 2 6HX | C/2,5 | <1,5D | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48027163 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 48027162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 48027171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 3 | 374 |
| 48027170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 3 | 374 |
| 48027182 | 12 | 1 | 100 | 9 | 9 | 7 | 3 | 374 |
| 48027181 | 12 | 1,25 | 100 | 14 | 9 | 7 | 3 | 374 |
| 48027180 | 12 | 1,5 | 100 | 14 | 9 | 7 | 3 | 374 |
| 48027192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 3 | 374 |
| 48027203 | 16 | 1,5 | 100 | 16 | 12 | 9 | 3 | 374 |
| 48027216 | 18 | 1,5 | 110 | 20 | 14 | 11 | 4 | 374 |
| 48027230 | 20 | 1,5 | 125 | 20 | 16 | 12 | 4 | 374 |
| 48027240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 4 | 374 |
| 48027250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 4 | 374 |

# AL-SFT

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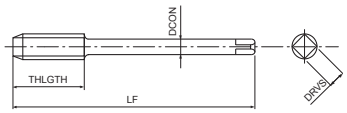
## Threading | Cutting taps | Metric Fine




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For aluminium and cast aluminium

| N Al | N AC, ADC | |
|---|---|---|
| 10-20 | 10-15 | m/min |

MF | HSSE | 50° | ISO 2 6H | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 70416260 | 8 | 1 | 90 | 10 | 6 | 4,9 | 2 | 374 |
| 70417160 | 10 | 1 | 90 | 12 | 7 | 5,5 | 2 | 374 |
| 70417060 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 2 | 374 |
| 70418260 | 12 | 1 | 100 | 14 | 9 | 7 | 2 | 374 |
| 70418160 | 12 | 1,25 | 100 | 14 | 9 | 7 | 2 | 374 |
| 70418060 | 12 | 1,5 | 100 | 14 | 9 | 7 | 2 | 374 |

# H-SFT

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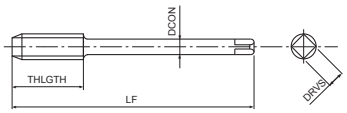
## Threading | Cutting taps | Metric Fine




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

MF | PM | 0X | 15° | ISO 2 6H | C/3 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 83214060 | 3 | 0,35 | 56 | 4 | 2,2 | - | 3 | 374 |
| 83214560 | 4 | 0,5 | 63 | 6 | 2,8 | 2,1 | 3 | 374 |
| 83215160 | 5 | 0,5 | 70 | 7 | 3,5 | 2,7 | 3 | 374 |
| 83215760 | 6 | 0,5 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 83215660 | 6 | 0,75 | 80 | 8 | 4,5 | 3,4 | 3 | 374 |
| 83216360 | 8 | 0,75 | 80 | 10 | 6 | 4,9 | 3 | 374 |
| 83216260 | 8 | 1 | 90 | 10 | 6 | 4,9 | 3 | 374 |
| 83217160 | 10 | 1 | 90 | 12 | 7 | 5,5 | 4 | 374 |
| 83217060 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 4 | 374 |
| 83218260 | 12 | 1 | 100 | 14 | 9 | 7 | 4 | 374 |
| 83218160 | 12 | 1,25 | 100 | 14 | 9 | 7 | 4 | 374 |
| 83218060 | 12 | 1,5 | 100 | 14 | 9 | 7 | 4 | 374 |
| 83219260 | 14 | 1,5 | 100 | 16 | 11 | 9 | 5 | 374 |
| 83220360 | 16 | 1,5 | 100 | 16 | 12 | 9 | 5 | 374 |
| 83221660 | 18 | 1,5 | 110 | 20 | 14 | 11 | 5 | 374 |
| 83223060 | 20 | 1,5 | 125 | 20 | 16 | 12 | 5 | 374 |
| 83224060 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 5 | 374 |
| 83225060 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 5 | 374 |

# VP-DC-MT

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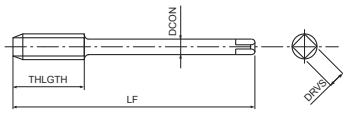
**Threading | Cutting taps | Metric Fine**




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min

| P ○ | P ○ | K ◉ | K ◉ | N ◉ | H ○ | H ○ | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

MF | PM | V | ISO 2 6HX | C/2,5 | | | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | LH | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48023140 | 3 | 0,35 | 56 | 6 | 2,2 | - | 3 | - | 374 |
| 48023145 | 4 | 0,5 | 63 | 9 | 2,8 | 2,1 | 3 | 25 | 374 |
| 48023151 | 5 | 0,5 | 70 | 10 | 3,5 | 2,7 | 3 | 28 | 374 |
| 48023157 | 6 | 0,5 | 80 | 12 | 4,5 | 3,4 | 3 | 32 | 374 |
| 48023156 | 6 | 0,75 | 80 | 12 | 4,5 | 3,4 | 3 | 32 | 374 |
| 48023163 | 8 | 0,75 | 80 | 15 | 6 | 4,9 | 4 | 32 | 374 |
| 48023162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 4 | 36 | 374 |
| 48023171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 4 | 36 | 374 |
| 48023170 | 10 | 1,25 | 100 | 18 | 7 | 5,5 | 4 | 40 | 374 |
| 48023182 | 12 | 1 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48023181 | 12 | 1,25 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48023180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48023192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 40 | 374 |
| 48023203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 40 | 374 |
| 48023216 | 18 | 1,5 | 110 | 30 | 14 | 11 | 4 | 44 | 374 |
| 48023230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 50 | 374 |
| 48023240 | 22 | 1,5 | 125 | 20 | 18 | 14,5 | 5 | 50 | 374 |
| 48023250 | 24 | 1,5 | 140 | 24 | 18 | 14,5 | 5 | 56 | 374 |

# VPO-DC-MT Center

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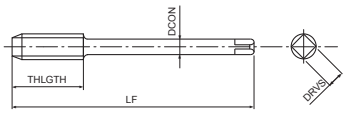
**Threading | Cutting taps | Metric Fine**




- Powder metal straight flute cutting tap for blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with Centre through coolant

| P ○ | P ○ | K ◉ | K ◉ | N ◉ | H ○ | H ○ | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

MF | PM | V | ISO 2 6HX | C/2,5 | ≥2D | | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | LH | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48024162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 4 | 36 | 374 |
| 48024171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 4 | 36 | 374 |
| 48024170 | 10 | 1,25 | 100 | 18 | 7 | 5,5 | 4 | 40 | 374 |
| 48300181 | 12 | 1,25 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48300180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48300192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 40 | 374 |
| 48300203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 40 | 374 |
| 48300216 | 18 | 1,5 | 110 | 30 | 14 | 11 | 4 | 44 | 374 |
| 48300230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 50 | 374 |

# VPO-DC-MT Side

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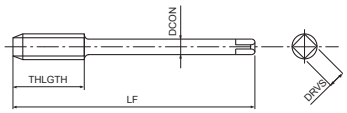
**Threading | Cutting taps | Metric Fine**




- Powder metal straight flute cutting tap for through holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with side through coolant

| P C ≥ 0,45% | P SCM | K GG | K GGG | N AC, ADC | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

MF | PM | V | ISO 2 6HX | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | LH | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48299162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 4 | 36 | 374 |
| 48299171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 4 | 36 | 374 |
| 48299170 | 10 | 1,25 | 100 | 18 | 7 | 5,5 | 4 | 40 | 374 |
| 48024181 | 12 | 1,25 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48024180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 4 | 40 | 374 |
| 48024192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 40 | 374 |
| 48024203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 40 | 374 |
| 48024216 | 18 | 1,5 | 110 | 30 | 14 | 11 | 4 | 44 | 374 |
| 48024230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 50 | 374 |

# A-CHT OIL Center

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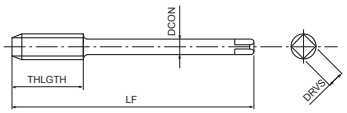
**Threading | Cutting taps | Metric Fine**




- First choice in quality and performance
- Carbide straight flute cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

A | MF | CARBIDE | FX | h6 | ISO 2 6HX | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48264162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 4 | 374 |
| 48264171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 4 | 374 |
| 48264182 | 12 | 1 | 100 | 21 | 9 | 7 | 4 | 374 |
| 48264180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 4 | 374 |
| 48264192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 374 |
| 48264203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 374 |
| 48264230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 374 |

# A-CHT OIL Side

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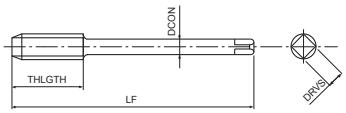
**Threading | Cutting taps | Metric Fine**




- First choice in quality and performance
- Carbide straight flute cutting tap for through holes
- TiAlN coating
- For cast iron and cast aluminium
- Side through coolant

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

A | MF | CARBIDE | FX | h6 | ISO 2 6HX | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48265162 | 8 | 1 | 90 | 15 | 6 | 4,9 | 4 | 374 |
| 48265171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 4 | 374 |
| 48265182 | 12 | 1 | 100 | 21 | 9 | 7 | 4 | 374 |
| 48265180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 4 | 374 |
| 48265192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 374 |
| 48265203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 374 |
| 48265230 | 20 | 1,5 | 125 | 30 | 16 | 12 | 4 | 374 |

# A-CHT OIL FORM E

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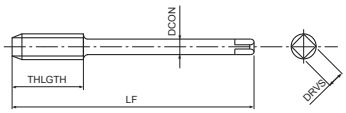
**Threading | Cutting taps | Metric Fine**




- First choice in quality and performance
- Carbide straight flute cutting tap for blind holes
- TiAlN coating
- For cast iron and cast aluminium
- Centre through coolant, Form E chamfer

| K GG | K GGG | N AC, ADC | |
|---|---|---|---|
| 10-100 | 10-100 | 10-100 | m/min |

A | MF | CARBIDE | FX | h6 | ISO 2 6HX | E/1,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48263171 | 10 | 1 | 90 | 18 | 7 | 5,5 | 3 | 374 |
| 48263182 | 12 | 1 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48263180 | 12 | 1,5 | 100 | 21 | 9 | 7 | 3 | 374 |
| 48263192 | 14 | 1,5 | 100 | 24 | 11 | 9 | 4 | 374 |
| 48263203 | 16 | 1,5 | 100 | 24 | 12 | 9 | 4 | 374 |

# GG-MT

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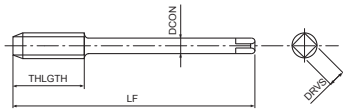
## Threading | Cutting taps | Metric Fine




- HSSE straight flute cutting tap for blind and through holes
- NiOx coating
- For cast iron

| K GG | K GGG | |
|---|---|---|
| 10-15 | 7-12 | m/min |

MF | HSSE | NI-OX | ISO 2 6HX | C/2,5 | DIN 374

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 62113960 | 3 | 0,35 | 56 | 9 | 2,2 | - | 3 | 374 |
| 62114260 | 3,5 | 0,35 | 56 | 10 | 2,5 | - | 3 | 374 |
| 62114560 | 4 | 0,5 | 63 | 10 | 2,8 | 2,1 | 3 | 374 |
| 62115160 | 5 | 0,5 | 70 | 12 | 3,5 | 2,7 | 3 | 374 |
| 62115760 | 6 | 0,5 | 80 | 14 | 4,5 | 3,4 | 3 | 374 |
| 62115660 | 6 | 0,75 | 80 | 12 | 4,5 | 3,4 | 3 | 374 |
| 62116360 | 8 | 0,75 | 80 | 19 | 6 | 4,9 | 4 | 374 |
| 62116260 | 8 | 1 | 90 | 22 | 6 | 4,9 | 4 | 374 |
| 62117160 | 10 | 1 | 90 | 20 | 7 | 5,5 | 4 | 374 |
| 62117060 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 4 | 374 |
| 62118260 | 12 | 1 | 100 | 20 | 7 | 7 | 4 | 374 |
| 62118160 | 12 | 1,25 | 100 | 22 | 9 | 5 | 4 | 374 |
| 62118060 | 12 | 1,5 | 100 | 22 | 9 | 7 | 4 | 374 |
| 62119460 | 14 | 1 | 100 | 22 | 11 | 9 | 4 | 374 |
| 62119260 | 14 | 1,5 | 100 | 22 | 11 | 9 | 4 | 374 |
| 62120460 | 16 | 1 | 100 | 22 | 12 | 9 | 4 | 374 |
| 62120360 | 16 | 1,5 | 100 | 22 | 12 | 9 | 4 | 374 |
| 62121660 | 18 | 1,5 | 110 | 25 | 14 | 11 | 4 | 374 |
| 62121560 | 18 | 2 | 125 | 34 | 14 | 11 | 4 | 374 |
| 62123060 | 20 | 1,5 | 125 | 25 | 16 | 12 | 4 | 374 |
| 62124060 | 22 | 1,5 | 125 | 25 | 18 | 14,5 | 4 | 374 |
| 62125060 | 24 | 1,5 | 140 | 28 | 18 | 14,5 | 4 | 374 |

# A-XPF

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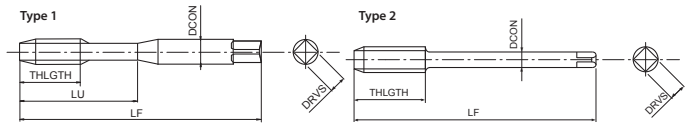
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- Powder metal for long tool life

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | MF | PM | VI | ISO 2 6HX | C/2,5 | DIN 2174 | DIN 2174

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48133145 | 4 | 0,5 | 63 | 8 | 21 | 4,5 | 3,4 | 5 | 3,77 ~ 3,82 | 1 | 2174 |
| 48133151 | 5 | 0,5 | 70 | 8 | 25 | 6 | 4,9 | 6 | 4,77 ~ 4,82 | 1 | 2174 |
| 48133157 | 6 | 0,5 | 80 | 8 | 30 | 6 | 4,9 | 6 | 5,79 ~ 5,83 | 1 | 2174 |
| 48133156 | 6 | 0,75 | 80 | 8 | 30 | 6 | 4,9 | 6 | 5,65 ~ 5,71 | 1 | 2174 |
| 48133160 | 7 | 0,75 | 80 | 8 | 30 | 7 | 5,5 | 6 | 6,65 ~ 6,71 | 1 | 2174 |
| 48133164 | 8 | 0,5 | 80 | 10 | - | 6 | 4,9 | 6 | 7,79 ~ 7,83 | 2 | 2174 |
| 48133163 | 8 | 0,75 | 80 | 10 | - | 6 | 4,9 | 6 | 7,65 ~ 7,71 | 2 | 2174 |
| 48133162 | 8 | 1 | 90 | 10 | - | 6 | 4,9 | 6 | 7,51 ~ 7,59 | 2 | 2174 |
| 48133171 | 10 | 1 | 90 | 12 | - | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2 | 2174 |
| 48133170 | 10 | 1,25 | 100 | 12 | - | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2 | 2174 |
| 48133182 | 12 | 1 | 100 | 15 | - | 9 | 7 | 9 | 11,52 ~ 11,60 | 2 | 2174 |
| 48133181 | 12 | 1,25 | 100 | 15 | - | 9 | 7 | 9 | 11,39 ~ 11,46 | 2 | 2174 |
| 48133180 | 12 | 1,5 | 100 | 15 | - | 9 | 7 | 9 | 11,25 ~ 11,34 | 2 | 2174 |
| 48133194 | 14 | 1 | 100 | 15 | - | 11 | 9 | 9 | 13,52 ~ 13,60 | 2 | 2174 |
| 48133193 | 14 | 1,25 | 100 | 12 | - | 11 | 9 | 9 | 13,39 ~ 13,46 | 2 | 2174 |
| 48133192 | 14 | 1,5 | 100 | 15 | - | 11 | 9 | 9 | 13,25 ~ 13,34 | 2 | 2174 |
| 48133204 | 16 | 1 | 100 | 15 | - | 12 | 9 | 9 | 15,52 ~ 15,60 | 2 | 2174 |
| 48133203 | 16 | 1,5 | 100 | 15 | - | 12 | 9 | 9 | 15,25 ~ 15,34 | 2 | 2174 |
| 48133218 | 18 | 1 | 110 | 15 | - | 14 | 11 | 8 | 17,52 ~ 17,60 | 2 | 2174 |
| 48133216 | 18 | 1,5 | 110 | 15 | - | 14 | 11 | 8 | 17,25 ~ 17,34 | 2 | 2174 |
| 48133232 | 20 | 1 | 125 | 15 | - | 16 | 12 | 8 | 19,52 ~ 19,60 | 2 | 2174 |
| 48133230 | 20 | 1,5 | 125 | 15 | - | 16 | 12 | 8 | 19,25 ~ 19,34 | 2 | 2174 |
| 48133240 | 22 | 1,5 | 125 | 15 | - | 18 | 14,5 | 8 | 21,25 ~ 21,34 | 2 | 2174 |
| 48133250 | 24 | 1,5 | 140 | 15 | - | 18 | 14,5 | 8 | 23,25 ~ 23,34 | 2 | 2174 |

# A-OIL-XPF

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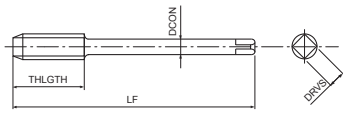
**Threading | Forming taps | Metric Fine** **NEW SIZES**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | MF | PM | V | ISO 2 6HX | C/2,5 | DIN 2174

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48225162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2174 |
| 48225171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48225170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2174 |
| 48225182 | 12 | 1 | 100 | 15 | 9 | 7 | 8 | 11,52 ~ 11,60 | 2174 |
| 48225181 | 12 | 1,25 | 100 | 15 | 9 | 7 | 8 | 11,39 ~ 11,46 | 2174 |
| 48225180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48225194 NEW | 14 | 1 | 100 | 15 | 11 | 9 | 9 | 13,52 ~ 13,60 | 2174 |
| 48225193 | 14 | 1,25 | 100 | 12 | 11 | 9 | 8 | 13,39 ~ 13,46 | 2174 |
| 48225192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48225204 NEW | 16 | 1 | 100 | 15 | 12 | 9 | 9 | 15,52 ~ 15,60 | 2174 |
| 48225203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |
| 48225218 NEW | 18 | 1 | 110 | 15 | 14 | 11 | 9 | 17,52 ~17,60 | 2174 |
| 48225216 | 18 | 1,5 | 110 | 15 | 14 | 11 | 8 | 17,25 ~ 17,34 | 2174 |
| 48225232 NEW | 20 | 1 | 125 | 15 | 16 | 12 | 9 | 19,52 ~ 19,60 | 2174 |
| 48225230 | 20 | 1,5 | 125 | 15 | 16 | 12 | 8 | 19,25 ~ 19,34 | 2174 |
| 48225240 | 22 | 1,5 | 125 | 15 | 18 | 14,5 | 8 | 21,25 ~ 21,34 | 2174 |
| 48225250 | 24 | 1,5 | 140 | 15 | 18 | 14,5 | 8 | 23,25 ~ 23,34 | 2174 |

# A-XPF 6GX

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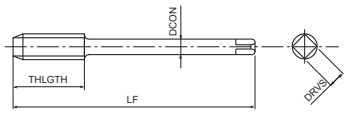
**Threading | Forming taps | Metric Fine** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | MF | PM | VI | ISO 3 6GX | C/2,5 | DIN 2174 | DIN 374

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48434162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 6 | 7,55 ~ 7,62 | 2174 |
| 48434171 | 10 | 1 | 0.026 | 90 | 12 | 7 | 5,5 | 8 | 9,54 ~ 9,62 | 2174 |
| 48434182 | 12 | 1 | 0.026 | 100 | 15 | 9 | 7 | 9 | 11,55 ~ 11,63 | 2174 |
| 48434181 | 12 | 1,25 | 0.028 | 100 | 15 | 9 | 7 | 9 | 11,41 ~ 11,49 | 2174 |
| 48434180 | 12 | 1,5 | 0.032 | 100 | 15 | 9 | 7 | 9 | 11,27 ~ 11,36 | 2174 |
| 48434192 | 14 | 1,5 | 0.032 | 100 | 15 | 11 | 9 | 9 | 13,27 ~ 13,36 | 2174 |
| 48434203 | 16 | 1,5 | 0.032 | 100 | 15 | 12 | 9 | 9 | 15,27 ~ 15,36 | 2174 |
| 48434216 | 18 | 1,5 | 0.032 | 110 | 15 | 14 | 11 | 9 | 17,27 ~ 17,36 | 2174 |
| 48434230 | 20 | 1,5 | 0.032 | 125 | 15 | 16 | 12 | 9 | 19,27 ~ 19,36 | 2174 |

# A-XPF FORM E

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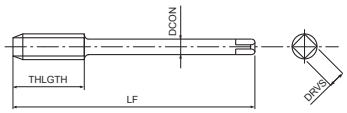
**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

| A | MF | PM | VI | ISO 2 6HX | E/1,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 374 | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48436171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48436180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 9 | 11,25 ~ 11,34 | 2174 |
| 48436192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 9 | 13,25 ~ 13,34 | 2174 |
| 48436203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 9 | 15,25 ~ 15,34 | 2174 |

# S-XPF

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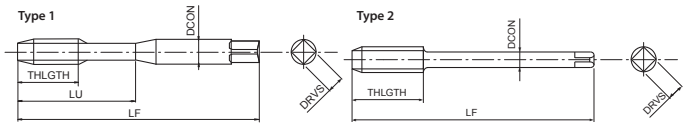
**NEW**

**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48030145 | 4 | 0,5 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,77 ~ 3,82 | 1 | 2174 |
| 48030151 | 5 | 0,5 | 70 | 8 | 25 | 6 | 4,9 | 5 | 4,77 ~ 4,82 | 1 | 2174 |
| 48030157 | 6 | 0,5 | 80 | 8 | 30 | 6 | 4,9 | 5 | 5,79 ~ 5,83 | 1 | 2174 |
| 48030156 | 6 | 0,75 | 80 | 8 | 30 | 6 | 4,9 | 5 | 5,65 ~ 5,71 | 1 | 2174 |
| 48030160 | 7 | 0,75 | 80 | 8 | 30 | 7 | 5,5 | 5 | 6,65 ~ 6,71 | 1 | 2174 |
| 48030164 | 8 | 0,5 | 80 | 10 | - | 6 | 4,9 | 5 | 7,79 ~ 7,83 | 2 | 2174 |
| 48030163 | 8 | 0,75 | 80 | 10 | - | 6 | 4,9 | 5 | 7,65 ~ 7,71 | 2 | 2174 |
| 48030162 | 8 | 1 | 90 | 10 | - | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2 | 2174 |
| 48030171 | 10 | 1 | 90 | 12 | - | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2 | 2174 |
| 48030170 | 10 | 1,25 | 100 | 12 | - | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2 | 2174 |
| 48030182 | 12 | 1 | 100 | 15 | - | 9 | 7 | 8 | 11,52 ~ 11,60 | 2 | 2174 |
| 48030181 | 12 | 1,25 | 100 | 15 | - | 9 | 7 | 8 | 11,39 ~ 11,46 | 2 | 2174 |
| 48030180 | 12 | 1,5 | 100 | 15 | - | 9 | 7 | 8 | 11,25 ~ 11,34 | 2 | 2174 |
| 48030194 | 14 | 1 | 100 | 15 | - | 11 | 9 | 8 | 13,52 ~ 13,60 | 2 | 2174 |
| 48030193 | 14 | 1,25 | 100 | 15 | - | 11 | 9 | 8 | 13,39 ~ 13,46 | 2 | 2174 |
| 48030192 | 14 | 1,5 | 100 | 15 | - | 11 | 9 | 8 | 13,25 ~ 13,34 | 2 | 2174 |
| 48030204 | 16 | 1 | 100 | 15 | - | 12 | 9 | 8 | 15,52 ~ 15,60 | 2 | 2174 |
| 48030203 | 16 | 1,5 | 100 | 15 | - | 12 | 9 | 8 | 15,25 ~ 15,34 | 2 | 2174 |
| 48030218 | 18 | 1 | 110 | 15 | - | 14 | 11 | 8 | 17,52 ~ 17,60 | 2 | 2174 |
| 48030216 | 18 | 1,5 | 110 | 15 | - | 14 | 11 | 8 | 17,25 ~ 17,34 | 2 | 2174 |
| 48030232 | 20 | 1 | 125 | 15 | - | 16 | 12 | 8 | 19,52 ~ 19,60 | 2 | 2174 |
| 48030230 | 20 | 1,5 | 125 | 15 | - | 16 | 12 | 8 | 19,25 ~ 19,34 | 2 | 2174 |
| 48030240 | 22 | 1,5 | 125 | 15 | - | 18 | 14,5 | 8 | 21,25 ~ 21,34 | 2 | 2174 |
| 48030250 | 24 | 1,5 | 140 | 15 | - | 18 | 14,5 | 8 | 23,25 ~ 23,34 | 2 | 2174 |

# S-OIL-XPF

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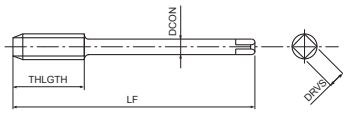
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 2174 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48042162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2174 |
| 48042171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48042170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2174 |
| 48042182 | 12 | 1 | 100 | 15 | 9 | 7 | 8 | 11,52 ~ 11,60 | 2174 |
| 48042181 | 12 | 1,25 | 100 | 15 | 9 | 7 | 8 | 11,39 ~ 11,46 | 2174 |
| 48042180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48042194 | 14 | 1 | 100 | 15 | 11 | 9 | 8 | 13,52 ~ 13,60 | 2174 |
| 48042193 | 14 | 1,25 | 100 | 12 | 11 | 9 | 8 | 13,39 ~ 13,46 | 2174 |
| 48042192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48042204 | 16 | 1 | 100 | 15 | 12 | 9 | 8 | 15,52 ~ 15,60 | 2174 |
| 48042203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |
| 48042218 | 18 | 1 | 110 | 15 | 14 | 11 | 8 | 17,52 ~ 17,60 | 2174 |
| 48042216 | 18 | 1,5 | 110 | 15 | 14 | 11 | 8 | 17,25 ~ 17,34 | 2174 |
| 48042232 | 20 | 1 | 125 | 15 | 16 | 12 | 8 | 19,52 ~ 19,60 | 2174 |
| 48071230 | 20 | 1,5 | 125 | 15 | 16 | 12 | 8 | 19,25 ~ 19,34 | 2174 |
| 48071240 | 22 | 1,5 | 125 | 15 | 18 | 14,5 | 8 | 21,25 ~ 21,34 | 2174 |
| 48071250 | 24 | 1,5 | 140 | 15 | 18 | 14,5 | 8 | 23,25 ~ 23,34 | 2174 |

# S-XPF 6GX

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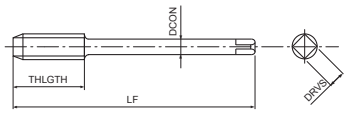
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 3 6GX | C/2,5 | DIN 2174 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48086162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 5 | 7,55 ~ 7,62 | 2174 |
| 48086171 | 10 | 1 | 0.026 | 90 | 12 | 7 | 5,5 | 8 | 9,54 ~ 9,62 | 2174 |
| 48086170 | 10 | 1,25 | 0.028 | 100 | 12 | 7 | 5,5 | 8 | 9,40 ~ 9,47 | 2174 |
| 48086182 | 12 | 1 | 0.026 | 100 | 15 | 9 | 7 | 8 | 11,55 ~ 11,63 | 2174 |
| 48086181 | 12 | 1,25 | 0.028 | 100 | 15 | 9 | 7 | 8 | 11,41 ~ 11,49 | 2174 |
| 48086180 | 12 | 1,5 | 0.032 | 100 | 15 | 9 | 7 | 8 | 11,27 ~ 11,36 | 2174 |
| 48086193 | 14 | 1,25 | 0.028 | 100 | 15 | 11 | 9 | 8 | 13,41 ~ 13,49 | 2174 |
| 48086192 | 14 | 1,5 | 0.032 | 100 | 15 | 11 | 9 | 8 | 13,27 ~ 13,36 | 2174 |
| 48086203 | 16 | 1,5 | 0.032 | 100 | 15 | 12 | 9 | 8 | 15,27 ~ 15,36 | 2174 |
| 48086216 | 18 | 1,5 | 0.032 | 110 | 15 | 14 | 11 | 8 | 17,27 ~ 17,36 | 2174 |
| 48086230 | 20 | 1,5 | 0.032 | 125 | 15 | 16 | 12 | 8 | 19,27 ~ 19,36 | 2174 |
| 48086240 | 22 | 1,5 | 0.032 | 125 | 15 | 18 | 14,5 | 8 | 21,27 ~ 21,36 | 2174 |
| 48086250 | 24 | 1,5 | 0.032 | 140 | 15 | 18 | 14,5 | 8 | 23,29 ~ 23,38 | 2174 |

# S-OIL-XPF 6GX

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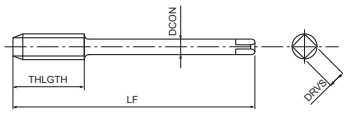
**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- For 6G internal thread tolerance, side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 3 6GX | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | | DIN 2174 | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48293162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 5 | 7,54 ~ 7,62 | 2174 |
| 48293171 | 10 | 1 | 0.026 | 90 | 12 | 7 | 5,5 | 8 | 9,54 ~ 9,62 | 2174 |
| 48293170 | 10 | 1,25 | 0.028 | 100 | 12 | 7 | 5,5 | 8 | 9,40 ~ 9,47 | 2174 |
| 48293182 | 12 | 1 | 0.026 | 100 | 15 | 9 | 7 | 8 | 11,55 ~ 11,63 | 2174 |
| 48293181 | 12 | 1,25 | 0.028 | 100 | 15 | 9 | 7 | 8 | 11,41 ~ 11,49 | 2174 |
| 48293180 | 12 | 1,5 | 0.032 | 100 | 15 | 9 | 7 | 8 | 11,27 ~ 11,36 | 2174 |
| 48293193 | 14 | 1,25 | 0.028 | 100 | 15 | 11 | 9 | 8 | 13,41 ~ 13,49 | 2174 |
| 48293192 | 14 | 1,5 | 0.032 | 100 | 15 | 11 | 9 | 8 | 13,27 ~ 13,36 | 2174 |
| 48293203 | 16 | 1,5 | 0.032 | 100 | 15 | 12 | 9 | 8 | 15,27 ~ 15,36 | 2174 |
| 48293216 | 18 | 1,5 | 0.032 | 110 | 15 | 14 | 11 | 8 | 17,27 ~ 17,36 | 2174 |
| 48293230 | 20 | 1,5 | 0.032 | 125 | 15 | 16 | 12 | 8 | 19,27 ~ 19,36 | 2174 |
| 48293240 | 22 | 1,5 | 0.032 | 125 | 15 | 18 | 14,5 | 8 | 21,27 ~ 21,36 | 2174 |
| 48293250 | 24 | 1,5 | 0.032 | 140 | 15 | 18 | 14,5 | 8 | 23,29 ~ 23,38 | 2174 |

# S-XPF FORM D

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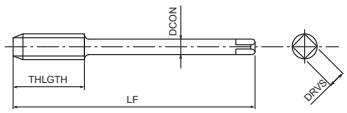
**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- HSSE forming tap for through holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 2 6HX | D/4 | | |
|---|---|---|---|---|---|---|---|
| | | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48088162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2174 |
| 48088171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48088170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2174 |
| 48088182 | 12 | 1 | 100 | 15 | 9 | 7 | 8 | 11,52 ~ 11,60 | 2174 |
| 48088181 | 12 | 1,25 | 100 | 15 | 9 | 7 | 8 | 11,39 ~ 11,46 | 2174 |
| 48088180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48088192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48088203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |
| 48088216 | 18 | 1,5 | 110 | 15 | 14 | 11 | 8 | 17,25 ~ 17,34 | 2174 |
| 48088230 | 20 | 1,5 | 125 | 15 | 16 | 12 | 8 | 19,25 ~ 19,34 | 2174 |

# S-XPF FORM E

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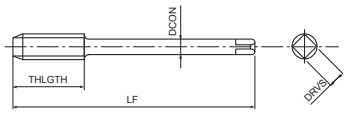
**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form E

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

A | MF | HSS-Co | V | ISO 2 6HX | E/1,5 | DIN 2174

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48089171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48089180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48089192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48089203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |

# S-OIL-XPF FORM E

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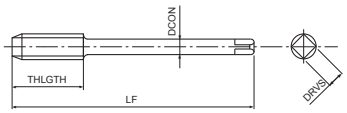
**Threading | Forming taps | Metric Fine**




- First choice in quality and performance
- HSSE forming tap for blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Centre through coolant, chamfer Form E

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

A | MF | HSS-Co | V | ISO 2 6HX | E/1,5 | DIN 2174

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48294162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2174 |
| 48294171 | 10 | 1 | 90 | 10 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48294170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 8 | 9,37 ~ 9,45 | 2174 |
| 48294182 | 12 | 1 | 100 | 15 | 9 | 7 | 8 | 11,52 ~ 11,60 | 2174 |
| 48294181 | 12 | 1,25 | 100 | 15 | 9 | 7 | 8 | 11,39 ~ 11,46 | 2174 |
| 48294180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48294193 | 14 | 1,25 | 100 | 15 | 11 | 9 | 8 | 13,39 ~ 13,46 | 2174 |
| 48294192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48294203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |
| 48294216 | 18 | 1,5 | 110 | 15 | 14 | 11 | 8 | 17,25 ~ 17,34 | 2174 |
| 48294230 | 20 | 1,5 | 125 | 15 | 16 | 12 | 8 | 19,25 ~ 19,34 | 2174 |
| 48294240 | 22 | 1,5 | 125 | 15 | 18 | 14,5 | 8 | 21,25 ~ 21,34 | 2174 |
| 48294250 | 24 | 1,5 | 140 | 15 | 18 | 14,5 | 8 | 23,25 ~ 23,34 | 2174 |

# S-OIL-LT-XPF

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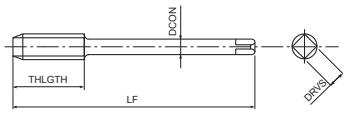
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- With long shank for long reach threading, side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | MF | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2174 | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD |
|---|---|---|---|---|---|---|---|---|
| 48295162 | 8 | 1 | 180 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 |
| 48295171 | 10 | 1 | 200 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 |
| 48295170 | 10 | 1,25 | 200 | 12 | 7 | 5,5 | 8 | 9,37 ~ 9,45 |
| 48295182 | 12 | 1 | 200 | 15 | 9 | 7 | 8 | 11,52 ~ 11,60 |
| 48295181 | 12 | 1,25 | 200 | 15 | 9 | 7 | 8 | 11,39 ~ 11,46 |
| 48295180 | 12 | 1,5 | 200 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 |
| 48295193 | 14 | 1,25 | 220 | 15 | 11 | 9 | 8 | 13,39 ~ 13,46 |
| 48295192 | 14 | 1,5 | 220 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 |

# S-XPF-GL

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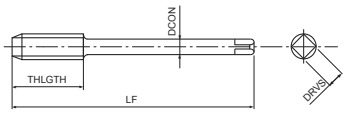
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Without oil grooves for higher rigidity

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

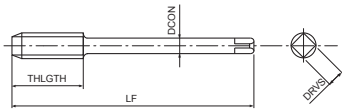
| A | MF | HSS-Co | V | ISO 2 6HX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | PHD | DIN |
|---|---|---|---|---|---|---|---|---|
| 48296162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 7,51 ~ 7,59 | 2174 |
| 48296171 | 10 | 1 | 90 | 10 | 7 | 5,5 | 9,51 ~ 9,59 | 2174 |
| 48296170 | 10 | 1,25 | 100 | 12 | 7 | 5,5 | 9,37 ~ 9,45 | 2174 |
| 48296182 | 12 | 1 | 100 | 12 | 9 | 7 | 11,52 ~ 11,60 | 2174 |
| 48296181 | 12 | 1,25 | 100 | 12 | 9 | 7 | 11,39 ~ 11,46 | 2174 |
| 48296180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 11,25 ~ 11,34 | 2174 |
| 48296193 | 14 | 1,25 | 100 | 16 | 11 | 9 | 13,39 ~ 13,46 | 2174 |
| 48296192 | 14 | 1,5 | 100 | 16 | 11 | 9 | 13,25 ~ 13,34 | 2174 |
| 48296203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 15,25 ~ 15,34 | 2174 |
| 48296216 | 18 | 1,5 | 110 | 15 | 14 | 11 | 17,25 ~ 17,34 | 2174 |
| 48296230 | 20 | 1,5 | 125 | 15 | 16 | 12 | 19,25 ~ 19,34 | 2174 |
| 48296240 | 22 | 1,5 | 125 | 15 | 18 | 14,5 | 21,25 ~ 21,34 | 2174 |
| 48296250 | 24 | 1,5 | 140 | 15 | 18 | 14,5 | 23,25 ~ 23,34 | 2174 |

# S-XPF-GL 6GX

INDEX

## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Without oil grooves for higher rigidity, for 6G internal thread tolerance

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

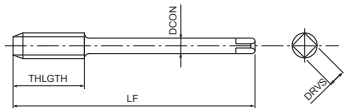
| A | MF | HSS-Co | V | ISO 3 6GX | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | DIN 2174 | | | | | | |

| EDP | TD | TP | oversize | LF | THLGTH | DCON | DRVS | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48297162 | 8 | 1 | 0.026 | 90 | 10 | 6 | 4,9 | 7,54 ~ 7,62 | 2174 |
| 48297171 | 10 | 1 | 0.026 | 90 | 10 | 7 | 5,5 | 9,54 ~ 9,62 | 2174 |
| 48297170 | 10 | 1,25 | 0.028 | 100 | 12 | 7 | 5,5 | 9,40 ~ 9,47 | 2174 |
| 48297182 | 12 | 1 | 0.026 | 100 | 12 | 9 | 7 | 11,55 ~ 11,63 | 2174 |
| 48297181 | 12 | 1,25 | 0.028 | 100 | 12 | 9 | 7 | 11,41 ~ 11,49 | 2174 |
| 48297180 | 12 | 1,5 | 0.032 | 100 | 15 | 9 | 7 | 11,27 ~ 11,36 | 2174 |
| 48297193 | 14 | 1,25 | 0.028 | 100 | 16 | 11 | 9 | 13,41 ~ 13,49 | 2174 |
| 48297192 | 14 | 1,5 | 0.032 | 100 | 16 | 11 | 9 | 13,27 ~ 13,36 | 2174 |
| 48297203 | 16 | 1,5 | 0.032 | 100 | 15 | 12 | 9 | 15,27 ~ 15,36 | 2174 |
| 48297216 | 18 | 1,5 | 0.032 | 110 | 15 | 14 | 11 | 17,27 ~ 17,36 | 2174 |
| 48297230 | 20 | 1,5 | 0.032 | 125 | 15 | 16 | 12 | 19,27 ~ 19,36 | 2174 |
| 48297240 | 22 | 1,5 | 0.032 | 125 | 15 | 18 | 14,5 | 21,27 ~ 21,36 | 2174 |
| 48297250 | 24 | 1,5 | 0.032 | 140 | 15 | 18 | 14,5 | 23,29 ~ 23,38 | 2174 |

# P-OIL-CXPF

INDEX

## Threading | Forming taps | Metric Fine




- Carbide forming tap for blind holes
- EgiAs coating
- For general steels and hardened steels
- With centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Cu | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 15-30 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | H ~40 HRC | H ~45 HRC |
|---|---|---|
| 5-20 | 5-20 | 5-20 |

| MF | CARBIDE | EgiAs | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48362162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 6 | 7,51 ~ 7,59 | 2174 |
| 48362171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 9 | 9,51 ~ 9,59 | 2174 |
| 48362180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 9 | 11,25 ~ 11,34 | 2174 |
| 48362192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 9 | 13,25 ~ 13,34 | 2174 |
| 48362203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 9 | 15,25 ~ 15,34 | 2174 |

# C-OIL-XPF

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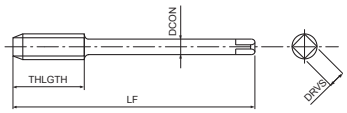
## Threading | Forming taps | Metric Fine




- First choice in quality and performance
- Carbide forming tap for through & blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | |
|---|---|
| 5-20 | |

| A | MF | CARBIDE | V | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| | | DIN 2174 | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48226162 | 8 | 1 | 90 | 10 | 6 | 4,9 | 5 | 7,51 ~ 7,59 | 2174 |
| 48226171 | 10 | 1 | 90 | 12 | 7 | 5,5 | 8 | 9,51 ~ 9,59 | 2174 |
| 48226180 | 12 | 1,5 | 100 | 15 | 9 | 7 | 8 | 11,25 ~ 11,34 | 2174 |
| 48226192 | 14 | 1,5 | 100 | 15 | 11 | 9 | 8 | 13,25 ~ 13,34 | 2174 |
| 48226203 | 16 | 1,5 | 100 | 15 | 12 | 9 | 8 | 15,25 ~ 15,34 | 2174 |

# V-NRT

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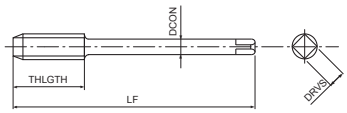
## Threading | Forming taps | Metric Fine




- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

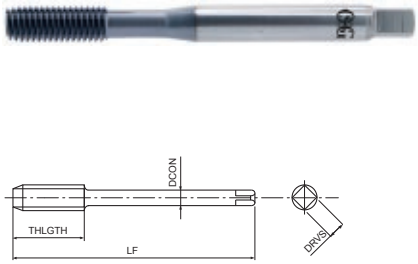
| MF | HSS-Co | V | ISO 2 6HX | C/2,5 | | |
|---|---|---|---|---|---|---|
| DIN 2174 | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 69716268 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 7,51 ~ 7,59 | 2174 |
| 69717168 | 10 | 1 | 90 | 22 | 7 | 5,5 | 4 | 9,51 ~ 9,59 | 2174 |
| 69717068 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 4 | 9,37 ~ 9,45 | 2174 |
| 69718268 | 12 | 1 | 100 | 22 | 9 | 7 | 4 | 11,52 ~ 11,60 | 2174 |
| 69718168 | 12 | 1,25 | 100 | 22 | 9 | 7 | 4 | 11,39 ~ 11,46 | 2174 |
| 69718068 | 12 | 1,5 | 100 | 22 | 9 | 7 | 4 | 11,25 ~ 11,34 | 2174 |

# V-NRT FORM D

INDEX

## Threading | Forming taps | Metric Fine




- HSSE forming tap for through holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Chamfer Form D

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 10-15 | 10-15 | 10-15 | 8-12 | 5-10 | 10-20 | 10-20 | m/min |

| MF | HSS-Co | V | ISO 2 6HX | D/4 | | DIN 2174 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 69816268 | 8 | 1 | 90 | 22 | 6 | 4,9 | 3 | 7,51 ~ 7,59 | 2174 |
| 69817168 | 10 | 1 | 90 | 22 | 7 | 5,5 | 4 | 9,51 ~ 9,59 | 2174 |
| 69817068 | 10 | 1,25 | 100 | 24 | 7 | 5,5 | 4 | 9,37 ~ 9,45 | 2174 |
| 69818268 | 12 | 1 | 100 | 22 | 9 | 7 | 4 | 11,52 ~ 11,60 | 2174 |
| 69818168 | 12 | 1,25 | 100 | 22 | 9 | 7 | 4 | 11,39 ~ 11,46 | 2174 |
| 69818068 | 12 | 1,5 | 100 | 22 | 9 | 7 | 4 | 11,25 ~ 11,34 | 2174 |

# VA-XPF

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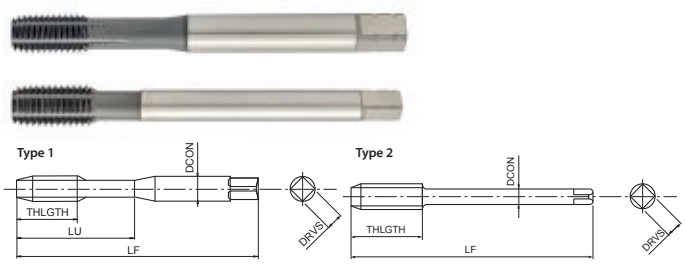
## Threading | Forming taps | Metric Fine

**NEW**




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | | S Ti | |
|---|---|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min | 1-3 | |

| MF | PM | AlCrN | ISO 2 6HX | C/2,5 | | | DIN 2174 | DIN 2174 |
|---|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48442145 | 4 | 0,5 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,8 | 1 | 2174 |
| 48442151 | 5 | 0,5 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,8 | 1 | 2174 |
| 48442157 | 6 | 0,5 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,8 | 1 | 2174 |
| 48442156 | 6 | 0,75 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,65 | 1 | 2174 |
| 48442160 | 7 | 0,75 | 80 | 10 | 30 | 7 | 5,5 | 5 | 6,65 | 1 | 2174 |
| 48442164 | 8 | 0,5 | 80 | 13 | 35 | 8 | 6,2 | 5 | 7,775 | 1 | 2174 |
| 48442163 | 8 | 0,75 | 80 | 13 | 35 | 8 | 6,2 | 5 | 7,65 | 1 | 2174 |
| 48442162 | 8 | 1 | 90 | 13 | 35 | 8 | 6,2 | 5 | 7,55 | 1 | 2174 |
| 48442171 | 10 | 1 | 90 | 12 | 39 | 10 | 8 | 5 | 9,55 | 1 | 2174 |
| 48442170 | 10 | 1,25 | 100 | 15 | 39 | 10 | 8 | 5 | 9,45 | 1 | 2174 |
| 48442182 | 12 | 1 | 100 | 15 | - | 9 | 7 | 5 | 11,55 | 2 | 2174 |
| 48442181 | 12 | 1,25 | 100 | 15 | - | 9 | 7 | 5 | 11,45 | 2 | 2174 |
| 48442180 | 12 | 1,5 | 100 | 15 | - | 9 | 7 | 5 | 11,35 | 2 | 2174 |
| 48442194 | 14 | 1 | 100 | 15 | - | 11 | 9 | 6 | 13,55 | 2 | 2174 |
| 48442193 | 14 | 1,25 | 100 | 15 | - | 11 | 9 | 6 | 13,45 | 2 | 2174 |
| 48442192 | 14 | 1,5 | 100 | 15 | - | 11 | 9 | 6 | 13,35 | 2 | 2174 |
| 48442204 | 16 | 1 | 100 | 15 | - | 12 | 9 | 6 | 15,55 | 2 | 2174 |
| 48442203 | 16 | 1,5 | 100 | 15 | - | 12 | 9 | 6 | 15,35 | 2 | 2174 |
| 48442218 | 18 | 1 | 110 | 18 | - | 14 | 11 | 7 | 17,55 | 2 | 2174 |
| 48442216 | 18 | 1,5 | 110 | 18 | - | 14 | 11 | 7 | 17,35 | 2 | 2174 |
| 48442232 | 20 | 1 | 125 | 18 | - | 16 | 12 | 7 | 19,55 | 2 | 2174 |
| 48442230 | 20 | 1,5 | 125 | 18 | - | 16 | 12 | 7 | 19,35 | 2 | 2174 |
| 48442240 | 22 | 1,5 | 125 | 18 | - | 18 | 14,5 | 7 | 21,35 | 2 | 2174 |
| 48442250 | 24 | 1,5 | 140 | 20 | - | 18 | 14,5 | 7 | 23,35 | 2 | 2174 |

# M-NRT

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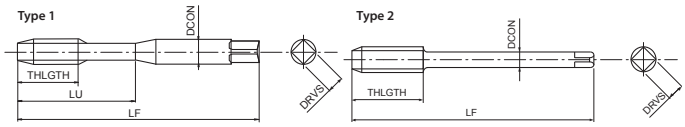
## Threading | Forming taps | Metric Fine




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium

| P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | M ◉ INOX | N ◉ Al | N ◉ AC, ADC | |
|---|---|---|---|---|---|---|---|
| 20-30 | 20-30 | 15-30 | 10-20 | 6-12 | 10-25 | 15-40 | m/min |

| MF | PM | TiN | ISO 2 6HX | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2174 | DIN 2174 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EP0203145 | 4 | 0,5 | 63 | 8 | 21 | 4,5 | 3,4 | 4 | 3,8 | 1 | 2174 |
| EP0203151 | 5 | 0,5 | 70 | 9 | 25 | 6 | 4,9 | 5 | 4,8 | 1 | 2174 |
| EP0203157 | 6 | 0,5 | 80 | 10 | 30 | 6 | 4,9 | 5 | 5,8 | 1 | 2174 |
| EP0203156 | 6 | 0,75 | 80 | 14 | 30 | 6 | 4,9 | 5 | 5,65 | 1 | 2174 |
| EP0203160 | 7 | 0,75 | 80 | 14 | 30 | 7 | 5,5 | 5 | 6,65 | 1 | 2174 |
| EP0203164 | 8 | 0,5 | 80 | 10 | 35 | 8 | 6,2 | 5 | 7,775 | 1 | 2174 |
| EP0203163 | 8 | 0,75 | 80 | 14 | 35 | 8 | 6,2 | 5 | 7,65 | 1 | 2174 |
| EP0203162 | 8 | 1 | 90 | 18 | 35 | 8 | 6,2 | 5 | 7,55 | 1 | 2174 |
| EP0203171 | 10 | 1 | 90 | 18 | 39 | 10 | 8 | 5 | 9,55 | 1 | 2174 |
| EP0203170 | 10 | 1,25 | 100 | 20 | 39 | 10 | 8 | 5 | 9,45 | 1 | 2174 |
| EP0203182 | 12 | 1 | 100 | 22 | - | 9 | 7 | 5 | 11,55 | 2 | 2174 |
| EP0203181 | 12 | 1,25 | 100 | 22 | - | 9 | 7 | 5 | 11,45 | 2 | 2174 |
| EP0203180 | 12 | 1,5 | 100 | 22 | - | 9 | 7 | 5 | 11,35 | 2 | 2174 |
| EP0203194 | 14 | 1 | 100 | 22 | - | 11 | 9 | 6 | 13,55 | 2 | 2174 |
| EP0203193 | 14 | 1,25 | 100 | 22 | - | 11 | 9 | 6 | 13,45 | 2 | 2174 |
| EP0203192 | 14 | 1,5 | 100 | 22 | - | 11 | 9 | 6 | 13,35 | 2 | 2174 |
| EP0203204 | 16 | 1 | 100 | 20 | - | 12 | 9 | 6 | 15,55 | 2 | 2174 |
| EP0203203 | 16 | 1,5 | 100 | 20 | - | 12 | 9 | 6 | 15,35 | 2 | 2174 |
| EP0203218 | 18 | 1 | 110 | 25 | - | 14 | 11 | 7 | 17,55 | 2 | 2174 |
| EP0203216 | 18 | 1,5 | 110 | 25 | - | 14 | 11 | 7 | 17,35 | 2 | 2174 |
| EP0203232 | 20 | 1 | 125 | 25 | - | 16 | 12 | 7 | 19,55 | 2 | 2174 |
| EP0203230 | 20 | 1,5 | 125 | 25 | - | 16 | 12 | 7 | 19,35 | 2 | 2174 |
| EP0203240 | 22 | 1,5 | 125 | 25 | - | 18 | 14,5 | 7 | 21,35 | 2 | 2174 |
| EP0203250 | 24 | 1,5 | 140 | 28 | - | 18 | 14,5 | 7 | 23,35 | 2 | 2174 |

# A-POT

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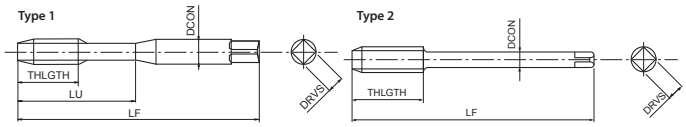
## Threading | Cutting taps | UNC




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ◉ INOX | N ○ Al | N ○ AC, ADC | | |
|---|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min | |

| S ○ Ti | H ○ 25-35 HRC | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5-10 | 8-20 | | | | | | | |

| A | UNC | PM | V | ANSI 2BX | B/4 | | | |
|---|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48145453 | 2 | 56 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48145455 | 3 | 48 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48145457 | 4 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48145459 | 5 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 2184-1 |
| 48145461 | 6 | 32 | 56 | 12 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48145464 | 8 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48145466 | 10 | 24 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48145468 | 12 | 24 | 80 | 17 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48145471 | 1/4 | 20 | 80 | 19 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48145474 | 5/16 | 18 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48145479 | 3/8 | 16 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 2184-1 |
| 48145484 | 7/16 | 14 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48145489 | 1/2 | 13 | 110 | 28 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48145494 | 9/16 | 12 | 110 | 30 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48145501 | 5/8 | 11 | 110 | 32 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48145515 | 3/4 | 10 | 125 | 34 | - | 14 | 11 | 3 | 2 | 2184-1 |
| 48145526 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 2184-1 |
| 48145538 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 2184-1 |

# S-POT

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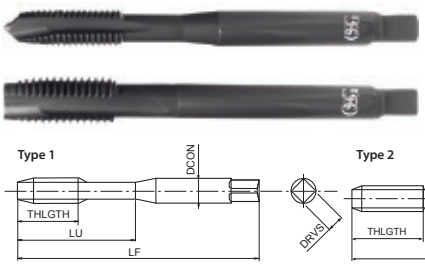
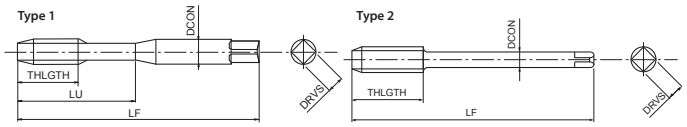
## Threading | Cutting taps | UNC






- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

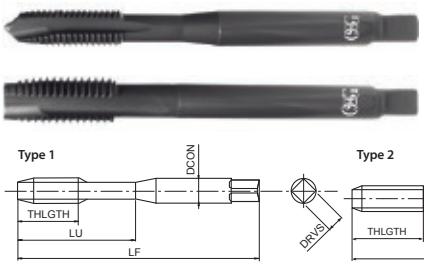
UNC | HSSE | 0X | ANSI 2B | B/4 | | DIN 2184-1 | DIN 2184-1

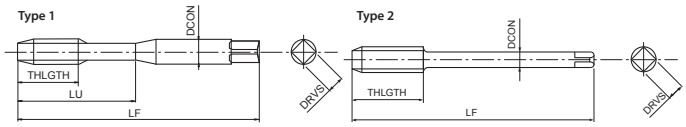
| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48224453 | 2 | 56 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48224455 | 3 | 48 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48224457 | 4 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48224459 | 5 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 2184-1 |
| 48224461 | 6 | 32 | 56 | 12 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48224464 | 8 | 32 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48224466 | 10 | 24 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48224468 | 12 | 24 | 80 | 17 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48224471 | 1/4 | 20 | 80 | 19 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48224474 | 5/16 | 18 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48224479 | 3/8 | 16 | 100 | 24 | 39 | 10 | 8 | 3 | 1 | 2184-1 |
| 48224484 | 7/16 | 14 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48224489 | 1/2 | 13 | 110 | 28 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48224494 | 9/16 | 12 | 110 | 30 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48224501 | 5/8 | 11 | 110 | 32 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48224515 | 3/4 | 10 | 125 | 34 | - | 14 | 11 | 3 | 2 | 2184-1 |
| 48224526 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 2184-1 |
| 48224538 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 2184-1 |

# VA-POT

INDEX

## Threading | Cutting taps | UNC






- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

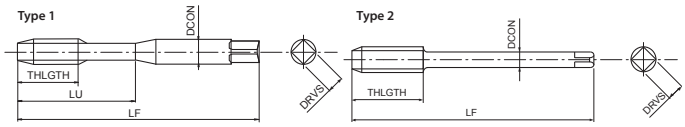
UNC | HSSE | 0X | ANSI 2B | B/4 | | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 74845720 | 4 | 40 | 56 | - | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 74845920 | 5 | 40 | 56 | - | 18 | 3,5 | 2,7 | 3 | 1 | 2184-1 |
| 74846130 | 6 | 32 | 56 | - | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 74846430 | 8 | 32 | 63 | - | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 74846630 | 10 | 24 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 74847150 | 1/4 | 20 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 74847450 | 5/16 | 18 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 74847950 | 3/8 | 16 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 75148450 | 7/16 | 14 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 75148950 | 1/2 | 13 | 110 | 29 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 75149450 | 9/16 | 12 | 110 | 30 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 75150150 | 5/8 | 11 | 110 | 32 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 75151550 | 3/4 | 10 | 125 | 34 | - | 14 | 11 | 3 | 2 | 2184-1 |
| 75152660 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 3 | 2 | 2184-1 |
| 75153860 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 3 | 2 | 2184-1 |

# A-SFT

INDEX

## Threading | Cutting taps | UNC




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

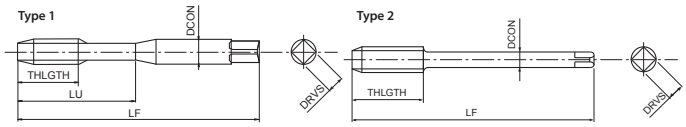
| A | UNC | PM | V | 45° | ANSI 2BX | C/2,5 | |
|---|---|---|---|---|---|---|---|
| | DIN 2184-1 | DIN 2184-1 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48139453 | 2 | 56 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48139455 | 3 | 48 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48139457 | 4 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48139459 | 5 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48139461 | 6 | 32 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48139464 | 8 | 32 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48139466 | 10 | 24 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48139468 | 12 | 24 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48139471 | 1/4 | 20 | 80 | 10,2 | 30 | 7 | 5,5 | 2 | 1 | 2184-1 |
| 48139474 | 5/16 | 18 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48139479 | 3/8 | 16 | 100 | 12,7 | 39 | 10 | 8 | 3 | 1 | 2184-1 |
| 48139484 | 7/16 | 14 | 100 | 14,5 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48139489 | 1/2 | 13 | 110 | 15,6 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48139494 | 9/16 | 12 | 110 | 16,9 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48139501 | 5/8 | 11 | 110 | 18,5 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48139515 | 3/4 | 10 | 125 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48139526 | 7/8 | 9 | 140 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48139538 | 1 | 8 | 160 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# S-SFT

INDEX

## Threading | Cutting taps | UNC




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| UNC | HSSE | 0X | 40° | ANSI 2B | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48223453 | 2 | 56 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48223455 | 3 | 48 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48223457 | 4 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48223459 | 5 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48223461 | 6 | 32 | 56 | 6,4 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48223464 | 8 | 32 | 63 | 6,4 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48223466 | 10 | 24 | 70 | 8,5 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48223468 | 12 | 24 | 80 | 8,5 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48223471 | 1/4 | 20 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48223474 | 5/16 | 18 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48223479 | 3/8 | 16 | 100 | 12,7 | 39 | 10 | 8 | 3 | 1 | 2184-1 |
| 48223484 | 7/16 | 14 | 100 | 14,5 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48223489 | 1/2 | 13 | 110 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48223494 | 9/16 | 12 | 110 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48223501 | 5/8 | 11 | 110 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48223515 | 3/4 | 10 | 125 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48223526 | 7/8 | 9 | 140 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48223538 | 1 | 8 | 160 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48223997 | 1 1/8 | 7 | 180 | 36 | - | 22 | 18 | 4 | 2 | 2184-1 |
| 48223998 | 1 1/4 | 7 | 180 | 36 | - | 22 | 18 | 4 | 2 | 2184-1 |
| 48223999 | 1 1/2 | 6 | 200 | 42 | - | 28 | 22 | 4 | 2 | 2184-1 |

# VA-SFT

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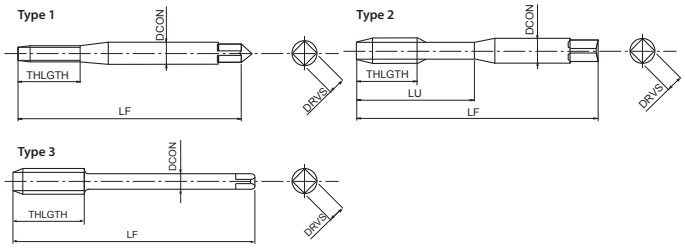
## Threading | Cutting taps | UNC




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| UNC | HSSE | 0X | 40° | ANSI 2B | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 74945730 | 4 | 40 | 56 | - | 11 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 74945930 | 5 | 40 | 56 | - | 18 | 3,5 | 2,7 | 3 | 2 | 2184-1 |
| 74946130 | 6 | 32 | 56 | - | 20 | 4 | 3 | 3 | 2 | 2184-1 |
| 74946430 | 8 | 32 | 63 | - | 21 | 4,5 | 3,4 | 3 | 2 | 2184-1 |
| 74946630 | 10 | 24 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 2184-1 |
| 74947150 | 1/4 | 20 | 80 | - | 30 | 7 | 5,5 | 3 | 2 | 2184-1 |
| 74947450 | 5/16 | 18 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 74947950 | 3/8 | 16 | 100 | - | 35 | 9 | 7 | 3 | 2 | 2184-1 |
| 75248450 | 7/16 | 14 | 100 | 19 | - | 8 | 6,2 | 4 | 3 | 2184-1 |
| 75248950 | 1/2 | 13 | 110 | 20 | - | 9 | 7 | 4 | 3 | 2184-1 |
| 75249450 | 9/16 | 12 | 110 | 22 | - | 11 | 9 | 4 | 3 | 2184-1 |
| 75250150 | 5/8 | 11 | 110 | 24 | - | 12 | 9 | 4 | 3 | 2184-1 |
| 75251550 | 3/4 | 10 | 125 | 26 | - | 14 | 11 | 4 | 3 | 2184-1 |
| 75252660 | 7/8 | 9 | 140 | 29 | - | 18 | 14,5 | 4 | 3 | 2184-1 |
| 75253860 | 1 | 8 | 160 | 32 | - | 18 | 14,5 | 5 | 3 | 2184-1 |

# HXL-SFT

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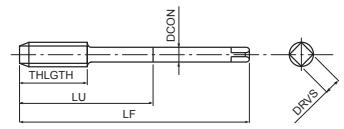
## Threading | Cutting taps | UNC




- HSSE low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For steels and cast iron
- For horizontal applications in oil and heavy industry

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | | |
|---|---|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 7-12 | 7-12 | m/min | |
| H 25-35 HRC | | | | | | | | |
| 3-5 | | | | | | | | |

| UN | UNC | HSSE | 0X | 15° | ANSI 2B | C/2,5 | |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48050515 | 3/4 | 10 | 125 | 20,3 | 61,8 | 14 | 11 | 4 |
| 48050526 | 7/8 | 9 | 140 | 22,6 | 75 | 18 | 14,5 | 4 |
| 48050538 | 1 | 8 | 160 | 25,4 | 90 | 18 | 14,5 | 5 |
| 48050551 | 1 1/8 | 7 | 180 | 29 | 100 | 22 | 18 | 5 |
| 48050552 | 1 1/8 | 8 | 180 | 25,4 | 100 | 22 | 18 | 5 |
| 48050564 | 1 1/4 | 7 | 180 | 29 | 100 | 22 | 18 | 5 |
| 48050565 | 1 1/4 | 8 | 180 | 25,4 | 100 | 22 | 18 | 5 |
| 48050577 | 1 3/8 | 6 | 200 | 33,9 | 115 | 28 | 22 | 5 |
| 48050578 | 1 3/8 | 8 | 200 | 25,4 | 115 | 28 | 22 | 5 |
| 48050591 | 1 1/2 | 6 | 200 | 33,9 | 115 | 32 | 24 | 5 |
| 48050592 | 1 1/2 | 8 | 200 | 25,4 | 115 | 32 | 24 | 5 |
| 48050605 | 1 5/8 | 8 | 200 | 25,4 | 110 | 32 | 24 | 6 |
| 48050618 | 1 3/4 | 8 | 200 | 25,4 | 110 | 36 | 29 | 6 |
| 48050628 | 1 7/8 | 8 | 225 | 25,4 | 125 | 36 | 29 | 6 |
| 48050639 | 2 | 8 | 225 | 25,4 | 125 | 40 | 32 | 6 |
| 48050661 | 2 1/2 | 8 | 275 | 25,4 | 150 | 50 | 39 | 6 |

# VXL-SFT

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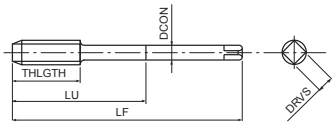
## Threading | Cutting taps | UNC




- HSSE high spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For general steels
- For vertical applications in oil and heavy industry

| P ○ | P ○ | P ◉ | P ◉ | M ○ | H ○ | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | 25-35 HRC | |
| 8-13 | 7-12 | 7-12 | 6-9 | 5-8 | 3-5 | m/min |

| UN | UNC | HSSE | 0X | 45° | ANSI 2B | C/2,5 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48051515 | 3/4 | 10 | 125 | 20,3 | 61,8 | 14 | 11 | 4 |
| 48051526 | 7/8 | 9 | 140 | 22,6 | 75 | 18 | 14,5 | 4 |
| 48051538 | 1 | 8 | 160 | 25,4 | 90 | 18 | 14,5 | 5 |
| 48051551 | 1 1/8 | 7 | 180 | 29 | 100 | 22 | 18 | 5 |
| 48051552 | 1 1/8 | 8 | 180 | 25,4 | 100 | 22 | 18 | 5 |
| 48051564 | 1 1/4 | 7 | 180 | 29 | 100 | 22 | 18 | 5 |
| 48051565 | 1 1/4 | 8 | 180 | 25,4 | 100 | 22 | 18 | 5 |
| 48051577 | 1 3/8 | 6 | 200 | 33,9 | 115 | 28 | 22 | 5 |
| 48051578 | 1 3/8 | 8 | 200 | 25,4 | 115 | 28 | 22 | 5 |
| 48051591 | 1 1/2 | 6 | 200 | 33,9 | 115 | 32 | 24 | 5 |
| 48051592 | 1 1/2 | 8 | 200 | 25,4 | 115 | 32 | 24 | 5 |
| 48051605 | 1 5/8 | 8 | 200 | 25,4 | 110 | 32 | 24 | 6 |
| 48051618 | 1 3/4 | 8 | 200 | 25,4 | 110 | 36 | 29 | 6 |
| 48051628 | 1 7/8 | 8 | 225 | 25,4 | 125 | 36 | 29 | 6 |
| 48051639 | 2 | 8 | 225 | 25,4 | 125 | 40 | 32 | 6 |
| 48051661 | 2 1/2 | 8 | 275 | 25,4 | 150 | 50 | 39 | 6 |

# M-SFT-DUPLEX

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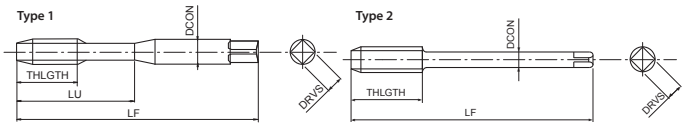
## Threading | Cutting taps | UNC,UN




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

| P ○ | P ○ | P ○ | P ○ | M ◉ | S ◉ | S ◉ | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Inconel 625 | Ti Gr.2 | |
| | | | | 3-15 | 2-3 | 3-6 | m/min |
| | | | | Super Duplex | 15-5 PH | 17-4 PH | |

| PM | TiN | 50° | C/2,5 | | UN | UNC | ANSI 2BX |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48336453 | 2 | 56 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48336455 | 3 | 48 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48336457 | 4 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48336459 | 5 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48336461 | 6 | 32 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48336464 | 8 | 32 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48336466 | 10 | 24 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48336468 | 12 | 24 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48336471 | 1/4 | 20 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48336474 | 5/16 | 18 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48336479 | 3/8 | 16 | 100 | 12,7 | 39 | 10 | 8 | 4 | 1 | 2184-1 |
| 48336484 | 7/16 | 14 | 100 | 14,5 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48336489 | 1/2 | 13 | 110 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48336494 | 9/16 | 12 | 110 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48336501 | 5/8 | 11 | 110 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48336515 | 3/4 | 10 | 125 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48336526 | 7/8 | 9 | 140 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48336538 | 1 | 8 | 160 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48336552 | 1 1/8 | 8 | 180 | 29 | - | 22 | 18 | 5 | 2 | 2184-1 |
| 48336565 | 1 1/4 | 8 | 180 | 29 | - | 22 | 18 | 5 | 2 | 2184-1 |
| 48336578 | 1 3/8 | 8 | 200 | 33,9 | - | 28 | 22 | 5 | 2 | 2184-1 |
| 48336592 | 1 1/2 | 8 | 200 | 34 | - | 28 | 22 | 5 | 2 | 2184-1 |
| 48336605 | 1 5/8 | 8 | 200 | 33,9 | - | 32 | 24 | 5 | 2 | 2184-1 |
| 48336618 | 1 3/4 | 8 | 200 | 40,6 | - | 36 | 29 | 5 | 2 | 2184-1 |
| 48336628 | 1 7/8 | 8 | 225 | 40,6 | - | 36 | 29 | 5 | 2 | 2184-1 |
| 48336639 | 2 | 8 | 225 | 45,2 | - | 40 | 32 | 5 | 2 | 2184-1 |

# VP-DC-MT

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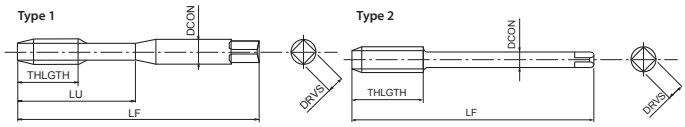
## Threading | Cutting taps | UNC




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

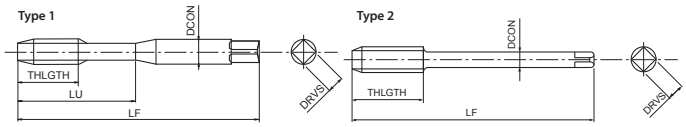
UNC | PM | V | ANSI 2BX | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48020453 | 2 | 56 | 45 | 9 | 14 | 2,8 | 2,1 | 3 | 14 | 1 | 2184-1 |
| 48020455 | 3 | 48 | 50 | 9 | 14 | 2,8 | 2,1 | 3 | 14 | 1 | 2184-1 |
| 48020457 | 4 | 40 | 56 | 8 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 2184-1 |
| 48020459 | 5 | 40 | 56 | 8 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 2184-1 |
| 48020461 | 6 | 32 | 56 | 10 | 20 | 4 | 3 | 3 | 24 | 1 | 2184-1 |
| 48020464 | 8 | 32 | 63 | 10 | 21 | 4,5 | 3,4 | 3 | 26 | 1 | 2184-1 |
| 48020466 | 10 | 24 | 70 | 13 | 25 | 6 | 4,9 | 3 | 30 | 1 | 2184-1 |
| 48020468 | 12 | 24 | 80 | 13 | 30 | 6 | 4,9 | 3 | 36 | 1 | 2184-1 |
| 48020471 | 1/4 | 20 | 80 | 16 | 30 | 7 | 5,5 | 3 | 37,7 | 1 | 2184-1 |
| 48020474 | 5/16 | 18 | 90 | 17 | 35 | 8 | 6,2 | 4 | 43 | 1 | 2184-1 |
| 48020479 | 3/8 | 16 | 100 | 20 | 39 | 10 | 8 | 4 | 49 | 1 | 2184-1 |
| 48020484 | 7/16 | 14 | 100 | 22 | - | 8 | 6,2 | 4 | 40 | 2 | 2184-1 |
| 48020489 | 1/2 | 13 | 110 | 24 | - | 9 | 7 | 4 | 44 | 2 | 2184-1 |
| 48020494 | 9/16 | 12 | 110 | 26 | - | 11 | 9 | 4 | 44 | 2 | 2184-1 |
| 48020501 | 5/8 | 11 | 110 | 28 | - | 12 | 9 | 4 | 44 | 2 | 2184-1 |
| 48020515 | 3/4 | 10 | 125 | 31 | - | 14 | 11 | 4 | 50 | 2 | 2184-1 |
| 48020526 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 5 | 56 | 2 | 2184-1 |
| 48020538 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 5 | 64 | 2 | 2184-1 |

# VPO-DC-MT FORM E

INDEX

## Threading | Cutting taps | UNC




- Powder metal straight flute cutting tap for blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with centre through coolant, chamfer Form E

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

UNC | PM | V | ANSI 2BX | E/1,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48379471 | 1/4 | 20 | 80 | 16 | 30 | 7 | 5,5 | 3 | 37,7 | 1 | 2184-1 |
| 48379474 | 5/16 | 18 | 90 | 17 | 35 | 8 | 6,2 | 4 | 43 | 1 | 2184-1 |
| 48379479 | 3/8 | 16 | 100 | 20 | 39 | 10 | 8 | 4 | 49 | 1 | 2184-1 |
| 48379484 | 7/16 | 14 | 100 | 22 | - | 8 | 6,2 | 4 | 40 | 2 | 2184-1 |
| 48379489 | 1/2 | 13 | 110 | 24 | - | 9 | 7 | 4 | 44 | 2 | 2184-1 |
| 48379494 | 9/16 | 12 | 110 | 26 | - | 11 | 9 | 4 | 44 | 2 | 2184-1 |
| 48379501 | 5/8 | 11 | 110 | 28 | - | 12 | 9 | 4 | 44 | 2 | 2184-1 |
| 48379515 | 3/4 | 10 | 125 | 31 | - | 14 | 11 | 4 | 50 | 2 | 2184-1 |
| 48379526 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 5 | 56 | 2 | 2184-1 |
| 48379538 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 5 | 64 | 2 | 2184-1 |

# S-XPF

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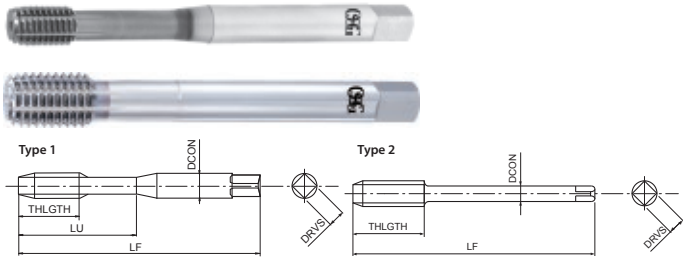
## Threading | Forming taps | UNC




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

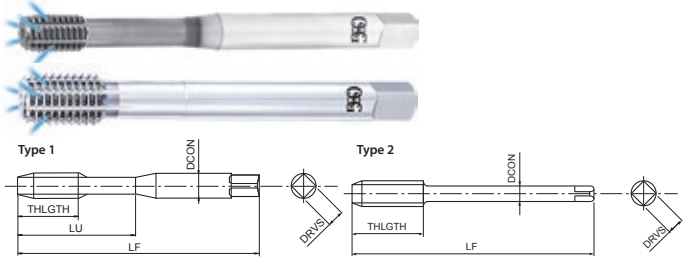
| A | UNC | HSS-Co | V | ANSI 2BX | C/2,5 | |
|---|---|---|---|---|---|---|
| | DIN 2184-1 | DIN 2184-1 | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48091459 | 5 | 40 | 56 | - | 18 | 3,5 | 2,7 | 4 | 2,86 ~ 2,93 | 1 | 2184-1 |
| 48091461 | 6 | 32 | 56 | - | 20 | 4 | 3 | 4 | 3,09 ~ 3,17 | 1 | 2184-1 |
| 48091464 | 8 | 32 | 63 | - | 21 | 4,5 | 3,4 | 4 | 3,76 ~ 3,84 | 1 | 2184-1 |
| 48091466 | 10 | 24 | 70 | - | 25 | 6 | 4,9 | 5 | 4,26 ~ 4,35 | 1 | 2184-1 |
| 48091471 | 1/4 | 20 | 80 | - | 30 | 7 | 5,5 | 5 | 5,66 ~ 5,76 | 1 | 2184-1 |
| 48091474 | 5/16 | 18 | 90 | - | 35 | 8 | 6,2 | 5 | 7,18 ~ 7,29 | 1 | 2184-1 |
| 48091479 | 3/8 | 16 | 100 | - | 35 | 9 | 7 | 8 | 8,66 ~ 8,78 | 1 | 2184-1 |
| 48091484 | 7/16 | 14 | 100 | 18,1 | - | 8 | 6,2 | 8 | 10,12 ~ 10,27 | 2 | 2184-1 |
| 48091489 | 1/2 | 13 | 110 | 19,5 | - | 9 | 7 | 8 | 11,62 ~ 11,78 | 2 | 2184-1 |
| 48091494 | 9/16 | 12 | 110 | 21,1 | - | 11 | 9 | 8 | 13,14 ~ 13,28 | 2 | 2184-1 |
| 48091501 | 5/8 | 11 | 110 | 23,1 | - | 12 | 9 | 8 | 14,61 ~ 14,76 | 2 | 2184-1 |
| 48091515 | 3/4 | 10 | 125 | 20,3 | - | 14 | 11 | 8 | 17,65 ~ 17,8 | 2 | 2184-1 |
| 48091526 | 7/8 | 9 | 140 | 22,6 | - | 18 | 14,5 | 8 | 20,66 ~ 20,84 | 2 | 2184-1 |
| 48091538 | 1 | 8 | 160 | 25,4 | - | 18 | 14,5 | 8 | 23,63 ~ 23,84 | 2 | 2184-1 |

# S-OIL-XPF

INDEX

## Threading | Forming taps | UNC




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | UNC | HSS-Co | V | ANSI 2BX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2184-1 | DIN 2184-1 | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48042471 | 1/4 | 20 | 80 | 13 | 30 | 7 | 5,5 | 5 | 5,66 ~ 5,76 | 1 | 2184-1 |
| 48042474 | 5/16 | 18 | 90 | 14 | 35 | 8 | 6,2 | 5 | 7,18 ~ 7,29 | 1 | 2184-1 |
| 48042479 | 3/8 | 16 | 100 | 11 | 39 | 10 | 8 | 8 | 8,66 ~ 8,78 | 1 | 2184-1 |
| 48042484 | 7/16 | 14 | 100 | 14 | - | 8 | 6,2 | 8 | 10,12 ~ 10,27 | 2 | 2184-1 |
| 48042489 | 1/2 | 13 | 110 | 20 | - | 9 | 7 | 8 | 11,62 ~ 11,78 | 2 | 2184-1 |
| 48042494 | 9/16 | 12 | 110 | 22 | - | 11 | 9 | 8 | 13,14 ~ 13,28 | 2 | 2184-1 |
| 48042501 | 5/8 | 11 | 110 | 14 | - | 12 | 9 | 8 | 14,61 ~ 14,76 | 2 | 2184-1 |
| 48042515 | 3/4 | 10 | 125 | 25,4 | - | 14 | 11 | 8 | 17,65 ~ 17,8 | 2 | 2184-1 |
| 48042526 | 7/8 | 9 | 140 | 24 | - | 18 | 14,5 | 8 | 20,66 ~ 20,84 | 2 | 2184-1 |
| 48042538 | 1 | 8 | 160 | 31,8 | - | 18 | 14,5 | 8 | 23,63 ~ 23,84 | 2 | 2184-1 |

# A-POT

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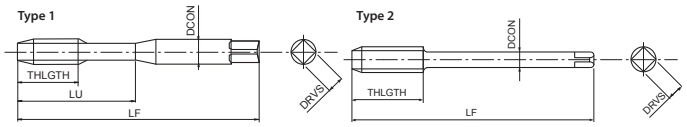
## Threading | Cutting taps | UNF




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | UNF | PM | V | ANSI 2BX | B/4 | | |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48145454 | 2 | 64 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48145456 | 3 | 56 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48145458 | 4 | 48 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48145460 | 5 | 44 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 2184-1 |
| 48145462 | 6 | 40 | 56 | 12 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48145465 | 8 | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48145467 | 10 | 32 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48145469 | 12 | 28 | 80 | 17 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48145472 | 1/4 | 28 | 80 | 19 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48145476 | 5/16 | 24 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48145481 | 3/8 | 24 | 90 | 20 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48145486 | 7/16 | 20 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48145491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48145496 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48145504 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48145517 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 3 | 2 | 2184-1 |
| 48145528 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 3 | 2 | 2184-1 |
| 48145539 | 1 | 12 | 140 | 28 | - | 18 | 14,5 | 3 | 2 | 2184-1 |

# S-POT

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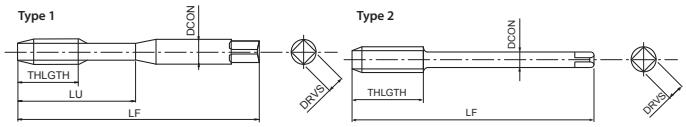
## Threading | Cutting taps | UNF




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| UNF | HSSE | OX | ANSI 2B | B/4 | | DIN 2184-1 |
|---|---|---|---|---|---|---|
| DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48224454 | 2 | 64 | 45 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48224456 | 3 | 56 | 50 | - | 9 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48224458 | 4 | 48 | 56 | 11 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48224460 | 5 | 44 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 1 | 2184-1 |
| 48224462 | 6 | 40 | 56 | 12 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48224465 | 8 | 36 | 63 | 13 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48224467 | 10 | 32 | 70 | 16 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48224469 | 12 | 28 | 80 | 17 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48224472 | 1/4 | 28 | 80 | 19 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48224476 | 5/16 | 24 | 90 | 22 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48224481 | 3/8 | 24 | 90 | 20 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48224486 | 7/16 | 20 | 100 | 24 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48224491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48224496 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48224504 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48224517 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 3 | 2 | 2184-1 |
| 48224528 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 3 | 2 | 2184-1 |
| 48224539 | 1 | 12 | 140 | 28 | - | 18 | 14,5 | 3 | 2 | 2184-1 |

# VA-POT

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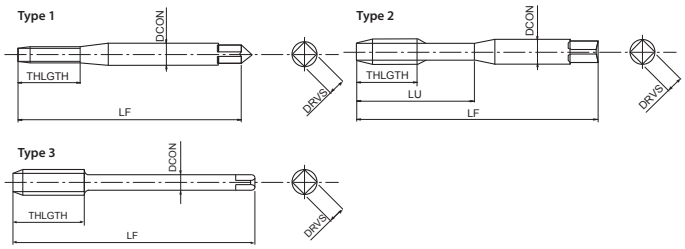
## Threading | Cutting taps | UNF




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

UNF | HSSE | 0X | ANSI 2B | B/4 | | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 75146220 | 6 | 40 | 56 | - | 13 | 4 | 3 | 3 | 1 | 2184-1 |
| 75146730 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 2 | 2184-1 |
| 75147240 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 2 | 2184-1 |
| 75147640 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 75148140 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 2 | 2184-1 |
| 75148650 | 7/16 | 20 | 100 | 20 | - | 8 | 6,2 | 3 | 3 | 2184-1 |
| 75149150 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 3 | 3 | 2184-1 |
| 75149650 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 3 | 3 | 2184-1 |
| 75150450 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 3 | 3 | 2184-1 |
| 75151750 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 3 | 3 | 2184-1 |
| 75152860 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 3 | 3 | 2184-1 |
| 75153960 | 1 | 12 | 125 | 25 | - | 18 | 14,5 | 3 | 3 | 2184-1 |

# A-SFT

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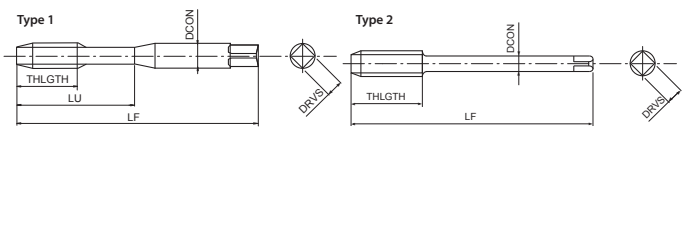
## Threading | Cutting taps | UNF




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC | |
|---|---|---|
| 5-10 | 8-20 | |

A | UNF | PM | V | 45° | ANSI 2BX | C/2,5 | | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48139454 | 2 | 64 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48139456 | 3 | 56 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48139458 | 4 | 48 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48139460 | 5 | 44 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48139462 | 6 | 40 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48139465 | 8 | 36 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48139467 | 10 | 32 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48139469 | 12 | 28 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48139472 | 1/4 | 28 | 80 | 10,2 | 30 | 7 | 5,5 | 2 | 1 | 2184-1 |
| 48139476 | 5/16 | 24 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48139481 | 3/8 | 24 | 90 | 12,7 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48139486 | 7/16 | 20 | 100 | 14,5 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48139491 | 1/2 | 20 | 100 | 15,6 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 48139496 | 9/16 | 18 | 100 | 16,9 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 48139504 | 5/8 | 18 | 100 | 18,5 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 48139517 | 3/4 | 16 | 110 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48139528 | 7/8 | 14 | 125 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48139539 | 1 | 12 | 140 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# S-SFT

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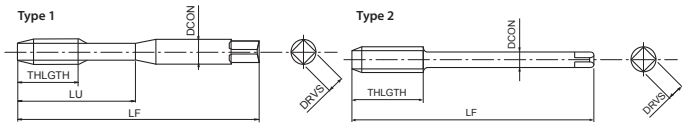
## Threading | Cutting taps | UNF




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

UNF | HSSE | 0X | 40° | ANSI 2B | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48223454 | 2 | 64 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48223456 | 3 | 56 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48223458 | 4 | 48 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48223460 | 5 | 44 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48223462 | 6 | 40 | 56 | 6,4 | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 48223465 | 8 | 36 | 63 | 6,4 | 21 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48223467 | 10 | 32 | 70 | 8,5 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48223469 | 12 | 28 | 80 | 8,5 | 30 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48223472 | 1/4 | 28 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48223476 | 5/16 | 24 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48223481 | 3/8 | 24 | 90 | 12,7 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48223486 | 7/16 | 20 | 100 | 14,5 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48223491 | 1/2 | 20 | 100 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48223496 | 9/16 | 18 | 100 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48223504 | 5/8 | 18 | 100 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48223517 | 3/4 | 16 | 110 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48223528 | 7/8 | 14 | 125 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48223539 | 1 | 12 | 140 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# VA-SFT

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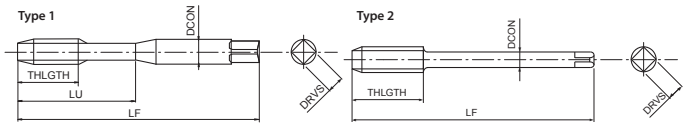
## Threading | Cutting taps | UNF




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

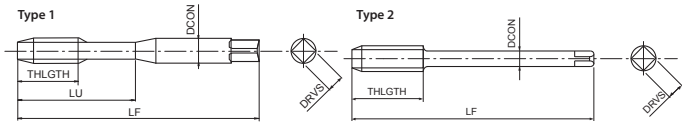
UNF | HSSE | 0X | 40° | ANSI 2B | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 75246220 | 6 | 40 | 56 | - | 20 | 4 | 3 | 3 | 1 | 2184-1 |
| 75246730 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 75247240 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 75247640 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 75248140 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 75248650 | 7/16 | 20 | 100 | 15 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 75249150 | 1/2 | 20 | 100 | 16 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 75249650 | 9/16 | 18 | 100 | 17 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 75250450 | 5/8 | 18 | 100 | 18 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 75251750 | 3/4 | 16 | 110 | 21 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 75252860 | 7/8 | 14 | 125 | 23 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 75253960 | 1 | 12 | 125 | 25 | - | 18 | 14,5 | 5 | 2 | 2184-1 |

# M-SFT-DUPLEX

INDEX

## Threading | Cutting taps | UNF




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

| P | P | P | P | M | S | S | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Inconel 625 | Ti Gr.2 | |
| | | | | 3-15 | 2-3 | 3-6 | m/min |
| | | | | Super Duplex | 15-5 PH | 17-4 PH | |

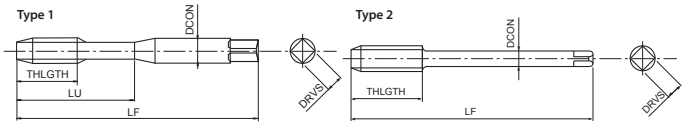
| UNF | PM | TiN | 50° | C/2,5 | | ANSI 2BX | |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48336454 | 2 | 64 | 45 | 3,6 | 11 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48336456 | 3 | 56 | 50 | 3,6 | 13 | 2,8 | 2,1 | 2 | 1 | 2184-1 |
| 48336458 | 4 | 48 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48336460 | 5 | 44 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48336462 | 6 | 40 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48336465 | 8 | 36 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48336467 | 10 | 32 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48336469 | 12 | 28 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48336472 | 1/4 | 28 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48336476 | 5/16 | 24 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48336481 | 3/8 | 24 | 90 | 12,7 | 35 | 10 | 8 | 4 | 1 | 2184-1 |
| 48336486 | 7/16 | 20 | 100 | 14,5 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48336491 | 1/2 | 20 | 100 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48336496 | 9/16 | 18 | 100 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48336504 | 5/8 | 18 | 100 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48336517 | 3/4 | 16 | 110 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48336528 | 7/8 | 14 | 125 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48336539 | 1 | 12 | 140 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# VP-DC-MT

INDEX

## Threading | Cutting taps | UNF




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

| UNF | PM | V | ANSI 2BX | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48020454 | 2 | 64 | 45 | 9 | 14 | 2,8 | 2,1 | 3 | 14 | 1 | 2184-1 |
| 48020456 | 3 | 56 | 50 | 9 | 14 | 2,8 | 2,1 | 3 | 14 | 1 | 2184-1 |
| 48020458 | 4 | 48 | 56 | 8 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 2184-1 |
| 48020460 | 5 | 44 | 56 | 8 | 18 | 3,5 | 2,7 | 3 | 22 | 1 | 2184-1 |
| 48020462 | 6 | 40 | 56 | 10 | 20 | 4 | 3 | 3 | 24 | 1 | 2184-1 |
| 48020465 | 8 | 36 | 63 | 10 | 21 | 4,5 | 3,4 | 3 | 26 | 1 | 2184-1 |
| 48020467 | 10 | 32 | 70 | 13 | 25 | 6 | 4,9 | 3 | 30 | 1 | 2184-1 |
| 48020469 | 12 | 28 | 80 | 13 | 30 | 6 | 4,9 | 3 | 36 | 1 | 2184-1 |
| 48020472 | 1/4 | 28 | 80 | 16 | 30 | 7 | 5,5 | 3 | 37,7 | 1 | 2184-1 |
| 48020476 | 5/16 | 24 | 90 | 17 | 35 | 8 | 6,2 | 4 | 43 | 1 | 2184-1 |
| 48020481 | 3/8 | 24 | 90 | 20 | 35 | 10 | 8 | 4 | 39 | 1 | 2184-1 |
| 48020486 | 7/16 | 20 | 100 | 22 | - | 8 | 6,2 | 4 | 40 | 2 | 2184-1 |
| 48020491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 4 | 40 | 2 | 2184-1 |
| 48020496 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 4 | 40 | 2 | 2184-1 |
| 48020504 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 4 | 40 | 2 | 2184-1 |
| 48020517 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 4 | 44 | 2 | 2184-1 |
| 48020528 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 5 | 50 | 2 | 2184-1 |
| 48020539 | 1 | 12 | 140 | 28 | - | 18 | 14,5 | 5 | 50 | 2 | 2184-1 |

# VPO-DC-MT FORM E

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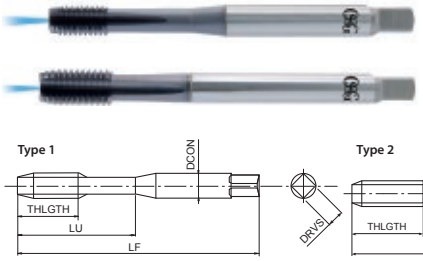
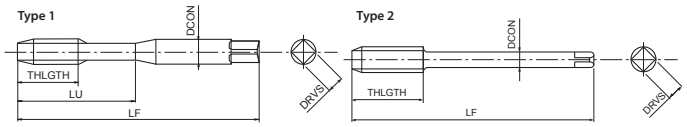
## Threading | Cutting taps | UNF






- Powder metal straight flute cutting tap for blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min, with centre through coolant, chamfer Form E

| P C ≥ 0,45% | P SCM | K GG | K GGG | N AC, ADC | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

UNF | PM | V | ANSI 2BX | E/1,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | LH | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48379472 | 1/4 | 28 | 80 | 16 | 30 | 7 | 5,5 | 3 | 37,7 | 1 | 2184-1 |
| 48379476 | 5/16 | 24 | 90 | 17 | 35 | 8 | 6,2 | 4 | 43 | 1 | 2184-1 |
| 48379481 | 3/8 | 24 | 90 | 20 | 35 | 10 | 8 | 4 | 39 | 1 | 2184-1 |
| 48379486 | 7/16 | 20 | 100 | 22 | - | 8 | 6,2 | 4 | 40 | 2 | 2184-1 |
| 48379491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 4 | 40 | 2 | 2184-1 |
| 48379496 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 4 | 40 | 2 | 2184-1 |
| 48379504 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 4 | 40 | 2 | 2184-1 |
| 48379517 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 4 | 44 | 2 | 2184-1 |
| 48379528 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 5 | 50 | 2 | 2184-1 |
| 48379539 | 1 | 12 | 140 | 28 | - | 18 | 14,5 | 5 | 50 | 2 | 2184-1 |

# S-XPF

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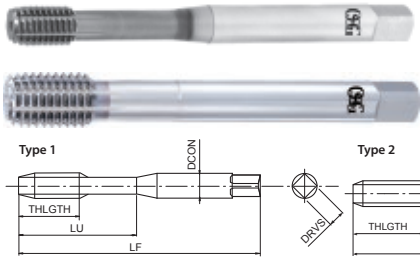
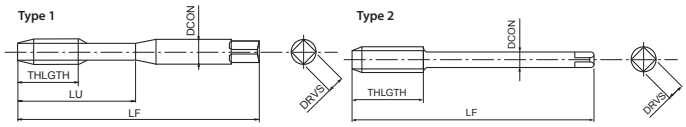
## Threading | Forming taps | UNF






- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

H 25-35 HRC: 5-20

A | UNF | HSS-Co | V | ANSI 2BX | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48091462 | 6 | 40 | 56 | - | 20 | 4 | 3 | 4 | 3,19 ~ 3,26 | 1 | 2184-1 |
| 48091467 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 5 | 4,41 ~ 4,47 | 1 | 2184-1 |
| 48091472 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 5 | 5,87 ~ 5,94 | 1 | 2184-1 |
| 48091476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 5 | 7,39 ~ 7,47 | 1 | 2184-1 |
| 48091481 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 8 | 8,98 ~ 9,06 | 1 | 2184-1 |
| 48091486 | 7/16 | 20 | 100 | 12,7 | - | 8 | 6,2 | 8 | 10,45 ~ 10,55 | 2 | 2184-1 |
| 48091491 | 1/2 | 20 | 100 | 12,7 | - | 9 | 7 | 8 | 12,04 ~ 12,14 | 2 | 2184-1 |
| 48091496 | 9/16 | 18 | 100 | 14,1 | - | 11 | 9 | 8 | 13,56 ~ 13,64 | 2 | 2184-1 |
| 48091504 | 5/8 | 18 | 100 | 14,1 | - | 12 | 9 | 8 | 15,15 ~ 15,23 | 2 | 2184-1 |
| 48091517 | 3/4 | 16 | 110 | 12,7 | - | 14 | 11 | 8 | 18,22 ~ 18,3 | 2 | 2184-1 |
| 48091528 | 7/8 | 14 | 125 | 14,5 | - | 18 | 14,5 | 8 | 21,27 ~ 21,38 | 2 | 2184-1 |
| 48091539 | 1 | 12 | 140 | 16,9 | - | 18 | 14,5 | 8 | 24,26 ~ 24,37 | 2 | 2184-1 |

# S-OIL-XPF

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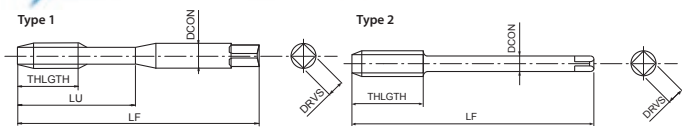
## Threading | Forming taps | UNF




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | UNF | HSS-Co | V | ANSI 2BX | C/2,5 | |
|---|---|---|---|---|---|---|
| | | DIN 2184-1 | DIN 2184-1 | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48042472 | 1/4 | 28 | 80 | 9,1 | 30 | 7 | 5,5 | 5 | 5,87 ~ 5,94 | 1 | 2184-1 |
| 48042476 | 5/16 | 24 | 90 | 10,6 | 35 | 8 | 6,2 | 5 | 7,39 ~ 7,47 | 1 | 2184-1 |
| 48042481 | 3/8 | 24 | 90 | 10,6 | 35 | 10 | 8 | 8 | 8,98 ~ 9,06 | 1 | 2184-1 |
| 48042486 | 7/16 | 20 | 100 | 12,7 | - | 8 | 6,2 | 8 | 10,45 ~ 10,55 | 2 | 2184-1 |
| 48042491 | 1/2 | 20 | 100 | 12,7 | - | 9 | 7 | 8 | 12,04 ~ 12,14 | 2 | 2184-1 |
| 48042496 | 9/16 | 18 | 100 | 14,1 | - | 11 | 9 | 8 | 13,56 ~ 13,64 | 2 | 2184-1 |
| 48042504 | 5/8 | 18 | 100 | 14,1 | - | 12 | 9 | 8 | 15,15 ~ 15,23 | 2 | 2184-1 |
| 48042517 | 3/4 | 16 | 110 | 12,7 | - | 14 | 11 | 8 | 18,22 ~ 18,3 | 2 | 2184-1 |
| 48042528 | 7/8 | 14 | 125 | 14,5 | - | 18 | 14,5 | 8 | 21,27 ~ 21,38 | 2 | 2184-1 |
| 48042539 | 1 | 12 | 140 | 16,9 | - | 18 | 14,5 | 8 | 24,26 ~ 24,37 | 2 | 2184-1 |

# CC-NEO-SFT

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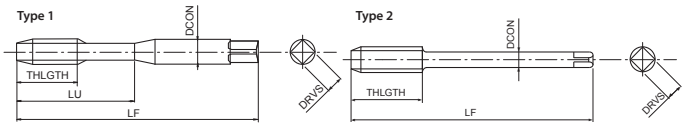
## Threading | Cutting taps | MJ




- HSSE spiral-fluted cutting tap for blind holes
- TiN coating
- For general steels, stainless steels and aluminium
- Variable helix for better chip evacuation

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

| MJ | HSSE | TiN | 45° | ISO 1 4H | C/2,5 | ≥2D |
|---|---|---|---|---|---|---|
| DIN 371 | DIN 376 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48242125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48242138 | 3 | 0,5 | 56 | - | 18 | 3,5 | 2,7 | 2 | 2 | 371 |
| 48242144 | 4 | 0,7 | 63 | - | 21 | 4,5 | 3,4 | 2 | 2 | 371 |
| 48242149 | 5 | 0,8 | 70 | - | 25 | 6 | 4,9 | 2 | 2 | 371 |
| 48242155 | 6 | 1 | 80 | - | 30 | 6 | 4,9 | 2 | 2 | 371 |
| 48242161 | 8 | 1,25 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 371 |
| 48242169 | 10 | 1,5 | 100 | - | 39 | 10 | 8 | 3 | 2 | 371 |
| 48242179 | 12 | 1,75 | 110 | 13 | - | 9 | 7 | 3 | 3 | 376 |

# V-TI-SFT

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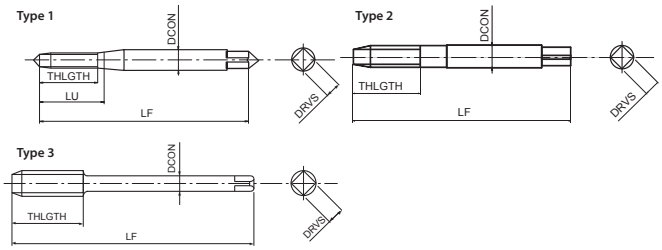
## Threading | Cutting taps | MJ




- Powder metal low spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For Titanium alloys

S Ti

3-5

m/min

MJ | PM | V | 10° | ISO 1 4H | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48241125 | 2 | 0,4 | 45 | - | 8 | 2,8 | 2,1 | 2 | 1 | 371 |
| 48241138 | 3 | 0,5 | 56 | - | 11 | 3,5 | 2,7 | 3 | 2 | 371 |
| 48241144 | 4 | 0,7 | 63 | - | 14 | 4,5 | 3,4 | 3 | 2 | 371 |
| 48241149 | 5 | 0,8 | 70 | - | 17 | 6 | 4,9 | 3 | 2 | 371 |
| 48241155 | 6 | 1 | 80 | - | 21 | 6 | 4,9 | 3 | 2 | 371 |
| 48241161 | 8 | 1,25 | 90 | - | 28 | 8 | 6,2 | 3 | 2 | 371 |
| 48241169 | 10 | 1,5 | 100 | - | 35 | 10 | 8 | 3 | 2 | 371 |
| 48241179 | 12 | 1,75 | 110 | 18 | - | 10 | 8 | 3 | 3 | 376 |

# VA-POT

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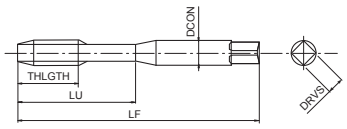
## Threading | Cutting taps | UNJC




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG

15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15

m/min

UNJC | HSSE | 0X | ANSI 3B | B/4 | DIN 2184-1

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48002457 | 4 | 40 | 56 | 18 | 3,5 | 2,7 | 2 | 2184-1 |
| 48002461 | 6 | 32 | 56 | 20 | 4 | 3 | 3 | 2184-1 |
| 48002464 | 8 | 32 | 63 | 21 | 4,5 | 3,4 | 3 | 2184-1 |

# V-TI-POT

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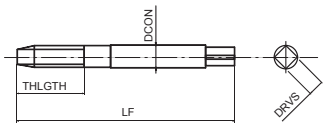
## Threading | Cutting taps | UNJC




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For Titanium alloys

S Ti 4-6

m/min

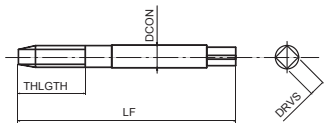
UNJC | PM | V | ANSI 3B | B/5 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48014457 | 4 | 40 | 56 | 12 | 3,5 | 2,7 | 3 | 2184-1 |
| 48014461 | 6 | 32 | 56 | 14 | 4 | 3 | 3 | 2184-1 |
| 48014464 | 8 | 32 | 63 | 16 | 4,5 | 3,4 | 3 | 2184-1 |

# E-POT

INDEX

## Threading | Cutting taps | UNJC




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni 2-4

m/min

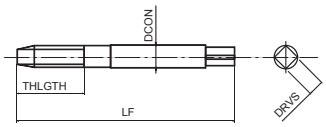
UNJC | PM | ANSI 3B | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 89345730 | 4 | 40 | 56 | 12 | 3,5 | 2,7 | 3 | 2184-1 |
| 89346130 | 6 | 32 | 56 | 14 | 4 | 3 | 3 | 2184-1 |
| 89346430 | 8 | 32 | 63 | 16 | 4,5 | 3,4 | 3 | 2184-1 |
| 89346630 | 10 | 24 | 70 | 20 | 6 | 4,9 | 3 | 2184-1 |
| 89347130 | 1/4 | 20 | 80 | 25 | 7 | 5,5 | 3 | 2184-1 |
| 89347430 | 5/16 | 18 | 90 | 31 | 8 | 6,2 | 3 | 2184-1 |
| 89347930 | 3/8 | 16 | 100 | 35 | 10 | 8 | 3 | 2184-1 |
| 89348430 | 7/16 | 14 | 100 | 24 | 8 | 6,2 | 3 | 2184-1 |
| 89348930 | 1/2 | 13 | 110 | 28 | 9 | 7 | 3 | 2184-1 |
| 89350130 | 5/8 | 11 | 110 | 32 | 12 | 9 | 3 | 2184-1 |
| 89351530 | 3/4 | 10 | 125 | 34 | 14 | 11 | 4 | 2184-1 |
| 89352630 | 7/8 | 9 | 140 | 34 | 18 | 14,5 | 4 | 2184-1 |
| 89353830 | 1 | 8 | 160 | 38 | 18 | 14,5 | 4 | 2184-1 |

# WHR-NI-POT

INDEX

## Threading | Cutting taps | UNJC




- Powder metal spiral-point cutting tap for through holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 2-4 — m/min

UNJC | PM | HR | ANSI 3BX | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48079457 | 4 | 40 | 56 | 12 | 3,5 | 2,7 | 3 | 2184-1 |
| 48079461 | 6 | 32 | 56 | 14 | 4 | 3 | 3 | 2184-1 |
| 48079464 | 8 | 32 | 63 | 16 | 4,5 | 3,4 | 3 | 2184-1 |
| 48079466 | 10 | 24 | 70 | 20 | 6 | 4,9 | 3 | 2184-1 |
| 48079471 | 1/4 | 20 | 80 | 25 | 7 | 5,5 | 3 | 2184-1 |
| 48079474 | 5/16 | 18 | 90 | 31 | 8 | 6,2 | 3 | 2184-1 |
| 48079479 | 3/8 | 16 | 100 | 35 | 10 | 8 | 3 | 2184-1 |
| 48079484 | 7/16 | 14 | 100 | 24 | 8 | 6,2 | 3 | 2184-1 |
| 48079489 | 1/2 | 13 | 110 | 28 | 9 | 7 | 3 | 2184-1 |
| 48079501 | 5/8 | 11 | 110 | 32 | 12 | 9 | 3 | 2184-1 |
| 48079515 | 3/4 | 10 | 125 | 34 | 14 | 11 | 4 | 2184-1 |
| 48079526 | 7/8 | 9 | 140 | 34 | 18 | 14,5 | 4 | 2184-1 |
| 48079538 | 1 | 8 | 160 | 38 | 18 | 14,5 | 4 | 2184-1 |

# H-POT

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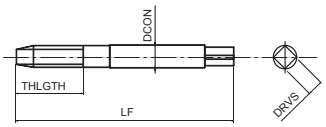
## Threading | Cutting taps | UNJC




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

P C ≥ 0,45% 8-13 | K GGG 10-15 | S Ti 4-6 | S Ni 2-4 | H 25-35 HRC 6-10 | H 35-45 HRC 6-10 — m/min

UNJC | PM | OX | ANSI 3B | B/5 | DIN 2184-1

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48010457 | 4 | 40 | 56 | 18 | 3,5 | 2,7 | 2 | 2184-1 |
| 48010461 | 6 | 32 | 56 | 20 | 4 | 3 | 3 | 2184-1 |
| 48010464 | 8 | 32 | 63 | 21 | 4,5 | 3,4 | 3 | 2184-1 |

# VA-SFT

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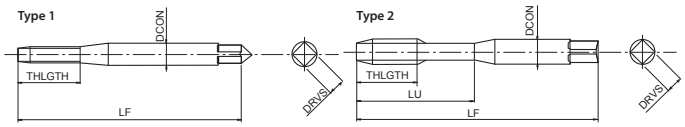
## Threading | Cutting taps | UNJC




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

UNJC | HSSE | 0X | 40° | ANSI 3B | C/2,5 | DIN 2184-1

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48001457 | 4 | 40 | 56 | 11 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48001461 | 6 | 32 | 56 | 20 | 4 | 3 | 3 | 2 | 2184-1 |
| 48001464 | 8 | 32 | 63 | 21 | 4,5 | 3,4 | 3 | 2 | 2184-1 |

# CC-SFT

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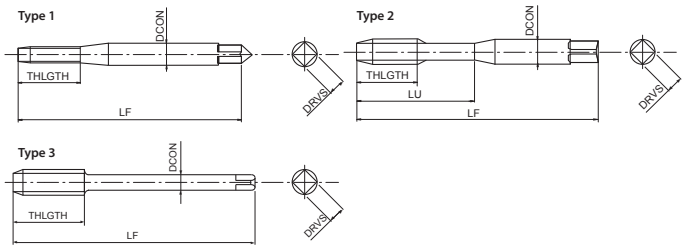
## Threading | Cutting taps | UNJC




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

UNJC | HSSE | CrN | 45° | ANSI 3B | C/2,5 | ≥2D | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48032457 | 4 | 40 | 56 | - | 11,4 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48032461 | 6 | 32 | 56 | - | 14 | 4 | 3 | 3 | 1 | 2184-1 |
| 48032464 | 8 | 32 | 63 | - | 16,7 | 4,5 | 3,4 | 3 | 1 | 2184-1 |
| 48032466 | 10 | 24 | 70 | - | 19,3 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48032471 | 1/4 | 20 | 80 | - | 25,4 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48032474 | 5/16 | 18 | 90 | - | 13 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48032479 | 3/8 | 16 | 100 | - | 15 | 9 | 7 | 3 | 2 | 2184-1 |
| 48032484 | 7/16 | 14 | 100 | 17 | - | 8 | 6,2 | 4 | 3 | 2184-1 |
| 48032489 | 1/2 | 13 | 110 | 18 | - | 9 | 7 | 4 | 3 | 2184-1 |
| 48032494 | 9/16 | 12 | 110 | 19 | - | 11 | 9 | 4 | 3 | 2184-1 |
| 48032501 | 5/8 | 11 | 110 | 21 | - | 12 | 9 | 4 | 3 | 2184-1 |
| 48032515 | 3/4 | 10 | 125 | 23 | - | 14 | 11 | 4 | 3 | 2184-1 |
| 48032526 | 7/8 | 9 | 140 | 26 | - | 18 | 14,5 | 4 | 3 | 2184-1 |
| 48032538 | 1 | 8 | 160 | 29 | - | 18 | 14,5 | 4 | 3 | 2184-1 |

# M-SFT-DUPLEX

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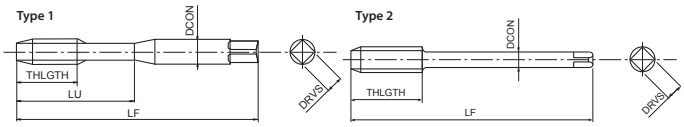
## Threading | Cutting taps | UNJC




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX 3-15 Super Duplex | S Inconel 625 2-3 15-5 PH | S Ti Gr.2 3-6 17-4 PH | m/min

UNJC | PM | TiN | 50° | ANSI 3BX | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48373457 | 4 | 40 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48373461 | 6 | 32 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48373464 | 8 | 32 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48373466 | 10 | 24 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48373468 | 12 | 24 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48373471 | 1/4 | 20 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48373474 | 5/16 | 18 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48373479 | 3/8 | 16 | 100 | 12,7 | 39 | 10 | 8 | 4 | 1 | 2184-1 |
| 48373484 | 7/16 | 14 | 100 | 14,5 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48373489 | 1/2 | 13 | 110 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48373494 | 9/16 | 12 | 110 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48373501 | 5/8 | 11 | 110 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48373515 | 3/4 | 10 | 125 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48373526 | 7/8 | 9 | 140 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48373538 | 1 | 8 | 160 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# V-TI-SFT

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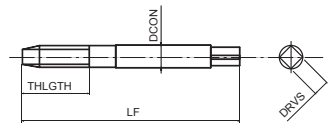
## Threading | Cutting taps | UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For Titanium alloys

S Ti 3-5 | m/min

UNJC | PM | V | 10° | ANSI 3B | C/2,5 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48013457 | 4 | 40 | 56 | 10 | 3,5 | 2,7 | 3 | 2184-1 |
| 48013461 | 6 | 32 | 56 | 13 | 4 | 3 | 3 | 2184-1 |
| 48013464 | 8 | 32 | 63 | 15 | 4,5 | 3,4 | 3 | 2184-1 |

# E-SFT

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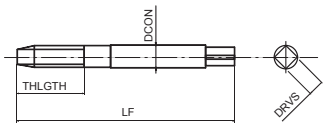
## Threading | Cutting taps | UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni 1-3

m/min

UNJC | PM | 10° | ANSI 3B | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 89545730 | 4 | 40 | 56 | 10 | 3,5 | 2,7 | 3 | 2184-1 |
| 89546130 | 6 | 32 | 56 | 13 | 4 | 3 | 3 | 2184-1 |
| 89546430 | 8 | 32 | 63 | 15 | 4,5 | 3,4 | 3 | 2184-1 |
| 89546630 | 10 | 24 | 70 | 18 | 6 | 4,9 | 3 | 2184-1 |
| 89547130 | 1/4 | 20 | 80 | 23 | 7 | 5,5 | 3 | 2184-1 |
| 89547430 | 5/16 | 18 | 90 | 28 | 8 | 6,2 | 3 | 2184-1 |
| 89547930 | 3/8 | 16 | 100 | 33 | 10 | 8 | 3 | 2184-1 |
| 89548430 | 7/16 | 14 | 100 | 19 | 8 | 6,2 | 3 | 2184-1 |
| 89548930 | 1/2 | 13 | 110 | 20 | 9 | 7 | 3 | 2184-1 |
| 89550130 | 5/8 | 11 | 110 | 24 | 12 | 9 | 4 | 2184-1 |
| 89551530 | 3/4 | 10 | 125 | 26 | 14 | 11 | 4 | 2184-1 |
| 89552630 | 7/8 | 9 | 140 | 29 | 18 | 14,5 | 4 | 2184-1 |
| 89553830 | 1 | 8 | 160 | 32 | 18 | 14,5 | 4 | 2184-1 |

# WHR-NI-SFT

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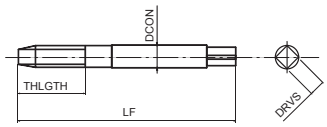
## Threading | Cutting taps | UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 1-3

m/min

UNJC | PM | HR | 11° | ANSI 3BX | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48078457 | 4 | 40 | 56 | 12 | 3,5 | 2,7 | 3 | 2184-1 |
| 48078461 | 6 | 32 | 56 | 14 | 4 | 3 | 3 | 2184-1 |
| 48078464 | 8 | 32 | 63 | 16 | 4,5 | 3,4 | 3 | 2184-1 |
| 48078466 | 10 | 24 | 70 | 18 | 6 | 4,9 | 3 | 2184-1 |
| 48078471 | 1/4 | 20 | 80 | 23 | 7 | 5,5 | 3 | 2184-1 |
| 48078474 | 5/16 | 18 | 90 | 15 | 8 | 6,2 | 3 | 2184-1 |
| 48078479 | 3/8 | 16 | 100 | 16 | 10 | 8 | 3 | 2184-1 |
| 48078484 | 7/16 | 14 | 100 | 19 | 8 | 6,2 | 3 | 2184-1 |
| 48078489 | 1/2 | 13 | 110 | 20 | 9 | 7 | 3 | 2184-1 |
| 48078501 | 5/8 | 11 | 110 | 24 | 12 | 9 | 4 | 2184-1 |
| 48078515 | 3/4 | 10 | 125 | 26 | 14 | 11 | 4 | 2184-1 |
| 48078526 | 7/8 | 9 | 140 | 29 | 18 | 14,5 | 4 | 2184-1 |
| 48078538 | 1 | 8 | 160 | 32 | 18 | 14,5 | 4 | 2184-1 |

# H-SFT

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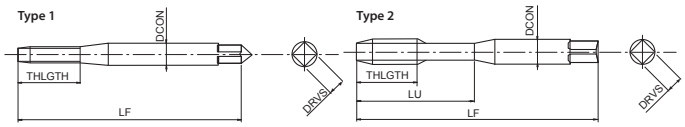
## Threading | Cutting taps | UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

UNJC | PM | 0X | 15° | ANSI 3B | C/2,5 | DIN 2184-1

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48009457 | 4 | 40 | 56 | 11 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48009461 | 6 | 32 | 56 | 18 | 4 | 3 | 2 | 2 | 2184-1 |
| 48009464 | 8 | 32 | 63 | 21 | 4,5 | 3,4 | 3 | 2 | 2184-1 |

# VA-POT

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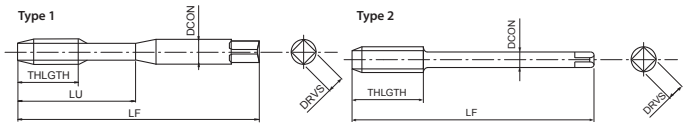
## Threading | Cutting taps | UNJF




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

UNJF | HSSE | 0X | ANSI 3B | B/4 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48002467 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48002472 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48002476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48002481 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 48002486 | 7/16 | 20 | 100 | 20 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48002491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 3 | 2 | 2184-1 |

# V-TI-POT

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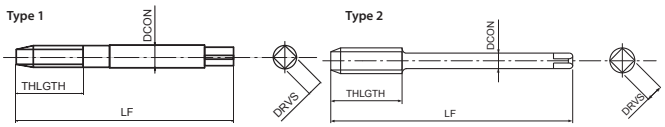
## Threading | Cutting taps | UNJF




- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- For Titanium alloys

S Ti

4-6

m/min

UNJF | PM | V | ANSI 3B | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48014467 | 10 | 32 | 70 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48014472 | 1/4 | 28 | 80 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48014476 | 5/16 | 24 | 90 | 31 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48014481 | 3/8 | 24 | 90 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48014486 | 7/16 | 20 | 100 | 20 | 9 | 7 | 3 | 2 | 2184-1 |
| 48014491 | 1/2 | 20 | 100 | 22 | 10 | 8 | 3 | 2 | 2184-1 |

# E-POT

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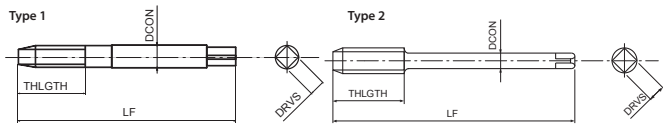
## Threading | Cutting taps | UNJF




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni

2-4

m/min

UNJF | PM | ANSI 3B | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 89346730 | 10 | 32 | 70 | - | 20 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 89347230 | 1/4 | 28 | 80 | - | 25 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 89347630 | 5/16 | 24 | 90 | - | 31 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 89348130 | 3/8 | 24 | 90 | - | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 89448630 | 7/16 | 20 | 100 | 20 | - | 9 | 7 | 3 | 2 | 2184-1 |
| 89449130 | 1/2 | 20 | 100 | 22 | - | 10 | 8 | 3 | 2 | 2184-1 |
| 89349630 | 9/16 | 18 | 100 | 22 | - | 11 | 9 | 3 | 2 | 2184-1 |
| 89350430 | 5/8 | 18 | 100 | 22 | - | 12 | 9 | 3 | 2 | 2184-1 |
| 89351730 | 3/4 | 16 | 110 | 25 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 89352830 | 7/8 | 14 | 125 | 25 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# WHR-NI-POT

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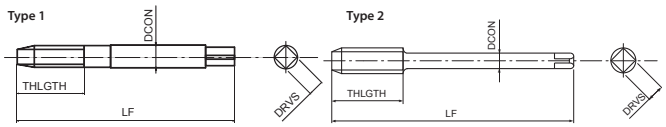
## Threading | Cutting taps | UNJF




- Powder metal spiral-point cutting tap for through holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 2-4

m/min

UNJF | PM | HR | ANSI 3BX | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48079467 | 10 | 32 | 70 | 20 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48079472 | 1/4 | 28 | 80 | 25 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48079476 | 5/16 | 24 | 90 | 31 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48079481 | 3/8 | 24 | 90 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48079486 | 7/16 | 20 | 100 | 20 | 9 | 7 | 3 | 2 | 2184-1 |
| 48079491 | 1/2 | 20 | 100 | 22 | 10 | 8 | 3 | 2 | 2184-1 |
| 48079496 | 9/16 | 18 | 100 | 22 | 11 | 9 | 3 | 2 | 2184-1 |
| 48079504 | 5/8 | 18 | 100 | 22 | 12 | 9 | 3 | 2 | 2184-1 |
| 48079517 | 3/4 | 16 | 110 | 25 | 14 | 11 | 4 | 2 | 2184-1 |
| 48079528 | 7/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 2 | 2184-1 |

# H-POT

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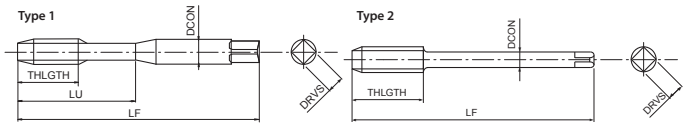
## Threading | Cutting taps | UNJF




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

P C ≥ 0,45% 8-13 | K GGG 10-15 | S Ti 4-6 | S Ni 2-4 | H 25-35 HRC 6-10 | H 35-45 HRC 6-10

m/min

UNJF | PM | OX | ANSI 3B | B/5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48010467 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48010472 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48010476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48010481 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 48010486 | 7/16 | 20 | 100 | 20 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48010491 | 1/2 | 20 | 100 | 22 | - | 9 | 7 | 3 | 2 | 2184-1 |

# VA-SFT

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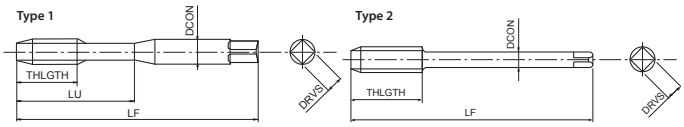
## Threading | Cutting taps | UNJF




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P | P | P | P | M | K | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG | |
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

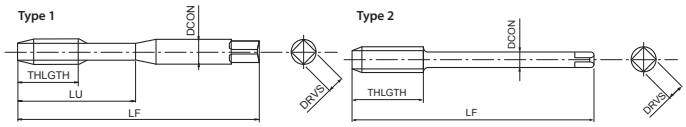
| UNJF | HSSE | 0X | 40° | ANSI 3B | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48001467 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48001472 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48001476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48001481 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 48001486 | 7/16 | 20 | 100 | 15 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48001491 | 1/2 | 20 | 100 | 16 | - | 9 | 7 | 4 | 2 | 2184-1 |

# M-SFT-DUPLEX

INDEX

## Threading | Cutting taps | UNJF




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

| P | P | P | P | M | S | S | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Inconel 625 | Ti Gr.2 | |
| | | | | 3-15 | 2-3 | 3-6 | m/min |
| | | | | Super Duplex | 15-5 PH | 17-4 PH | |

| UNJF | PM | TiN | 50° | ANSI 3BX | C/2,5 | |
|---|---|---|---|---|---|---|
| DIN 2184-1 | DIN 2184-1 | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48373458 | 4 | 48 | 56 | 5,1 | 18 | 3,5 | 2,7 | 2 | 1 | 2184-1 |
| 48373462 | 6 | 40 | 56 | 6,4 | 20 | 4 | 3 | 2 | 1 | 2184-1 |
| 48373465 | 8 | 36 | 63 | 6,4 | 21 | 4,5 | 3,4 | 2 | 1 | 2184-1 |
| 48373467 | 10 | 32 | 70 | 8,5 | 25 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48373469 | 12 | 28 | 80 | 8,5 | 30 | 6 | 4,9 | 2 | 1 | 2184-1 |
| 48373472 | 1/4 | 28 | 80 | 10,2 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48373476 | 5/16 | 24 | 90 | 11,3 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48373481 | 3/8 | 24 | 90 | 12,7 | 35 | 10 | 8 | 4 | 1 | 2184-1 |
| 48373486 | 7/16 | 20 | 100 | 14,5 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48373491 | 1/2 | 20 | 100 | 15,6 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48373496 | 9/16 | 18 | 100 | 16,9 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48373504 | 5/8 | 18 | 100 | 18,5 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48373517 | 3/4 | 16 | 110 | 25,4 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48373528 | 7/8 | 14 | 125 | 28,2 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48373539 | 1 | 12 | 140 | 31,8 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# CC-SFT

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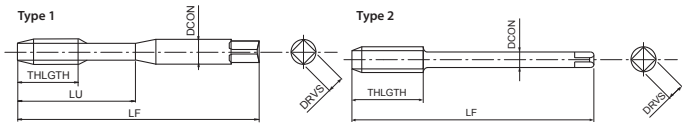
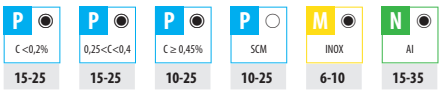
## Threading | Cutting taps | UNJF




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines




m/min

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48032467 | 10 | 32 | 70 | - | 19,3 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48032472 | 1/4 | 28 | 80 | - | 25,4 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48032476 | 5/16 | 24 | 90 | - | 11 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48032481 | 3/8 | 24 | 90 | - | 12 | 9 | 7 | 3 | 1 | 2184-1 |
| 48032486 | 7/16 | 20 | 100 | 14 | - | 8 | 6,2 | 4 | 2 | 2184-1 |
| 48032491 | 1/2 | 20 | 100 | 15 | - | 9 | 7 | 4 | 2 | 2184-1 |
| 48032496 | 9/16 | 18 | 100 | 15 | - | 11 | 9 | 4 | 2 | 2184-1 |
| 48032504 | 5/8 | 18 | 100 | 17 | - | 12 | 9 | 4 | 2 | 2184-1 |
| 48032517 | 3/4 | 16 | 110 | 19 | - | 14 | 11 | 4 | 2 | 2184-1 |
| 48032528 | 7/8 | 14 | 125 | 21 | - | 18 | 14,5 | 4 | 2 | 2184-1 |
| 48032539 | 1 | 12 | 125 | 24 | - | 18 | 14,5 | 4 | 2 | 2184-1 |

# V-TI-SFT

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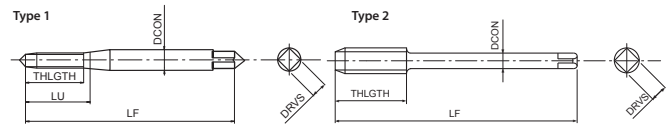
## Threading | Cutting taps | UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- For Titanium alloys

m/min

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48013467 | 10 | 32 | 70 | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48013472 | 1/4 | 28 | 80 | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48013476 | 5/16 | 24 | 90 | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48013481 | 3/8 | 24 | 90 | 35 | 10 | 8 | 3 | 1 | 2184-1 |
| 48013486 | 7/16 | 20 | 100 | 15 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48013491 | 1/2 | 20 | 100 | 16 | 9 | 7 | 3 | 2 | 2184-1 |

# E-SFT

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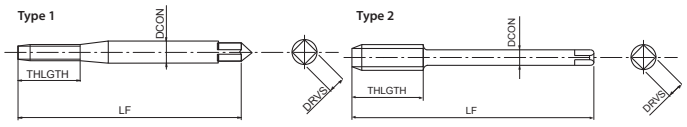
## Threading | Cutting taps | UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718

S Ni 1-3

m/min

UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 89546730 | 10 | 32 | 70 | 18 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 89547230 | 1/4 | 28 | 80 | 23 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 89547630 | 5/16 | 24 | 90 | 28 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 89548130 | 3/8 | 24 | 90 | 33 | 10 | 8 | 3 | 1 | 2184-1 |
| 89648630 | 7/16 | 20 | 100 | 15 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 89649130 | 1/2 | 20 | 100 | 16 | 9 | 7 | 3 | 2 | 2184-1 |
| 89549630 | 9/16 | 18 | 100 | 17 | 11 | 9 | 4 | 2 | 2184-1 |
| 89550430 | 5/8 | 18 | 100 | 19 | 12 | 9 | 4 | 2 | 2184-1 |
| 89551730 | 3/4 | 16 | 110 | 21 | 14 | 11 | 4 | 2 | 2184-1 |
| 89552830 | 7/8 | 14 | 125 | 23 | 18 | 14,5 | 4 | 2 | 2184-1 |

# WHR-NI-SFT

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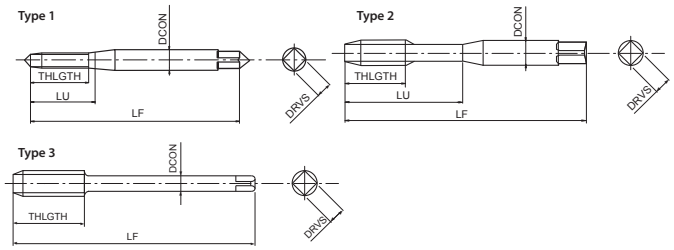
## Threading | Cutting taps | UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- HR coating
- For Nickel-based alloys including Inconel 718

S Ni 1-3

m/min

UNJF | PM | HR | 11° | ANSI 3BX | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48078467 | 10 | 32 | 70 | 18 | 21 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48078472 | 1/4 | 28 | 80 | 21 | 23 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48078476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48078481 | 3/8 | 24 | 90 | - | 35 | 10 | 8 | 3 | 2 | 2184-1 |
| 48078486 | 7/16 | 20 | 100 | 15 | - | 8 | 6,2 | 3 | 3 | 2184-1 |
| 48078491 | 1/2 | 20 | 100 | 16 | - | 9 | 7 | 3 | 3 | 2184-1 |
| 48078496 | 9/16 | 18 | 100 | 17 | - | 11 | 9 | 3 | 3 | 2184-1 |
| 48078504 | 5/8 | 18 | 100 | 19 | - | 12 | 9 | 4 | 3 | 2184-1 |
| 48078517 | 3/4 | 16 | 110 | 21 | - | 14 | 11 | 4 | 3 | 2184-1 |
| 48078528 | 7/8 | 14 | 125 | 23 | - | 18 | 14,5 | 4 | 3 | 2184-1 |

# H-SFT

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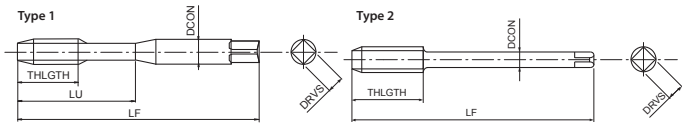
## Threading | Cutting taps | UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

UNJF | PM | 0X | 15° | ANSI 3B | C/2,5 | DIN 2184-1 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48009467 | 10 | 32 | 70 | - | 25 | 6 | 4,9 | 3 | 1 | 2184-1 |
| 48009472 | 1/4 | 28 | 80 | - | 30 | 7 | 5,5 | 3 | 1 | 2184-1 |
| 48009476 | 5/16 | 24 | 90 | - | 35 | 8 | 6,2 | 3 | 1 | 2184-1 |
| 48009481 | 3/8 | 24 | 90 | - | 35 | 9 | 7 | 3 | 1 | 2184-1 |
| 48009486 | 7/16 | 20 | 100 | 15 | - | 8 | 6,2 | 3 | 2 | 2184-1 |
| 48009491 | 1/2 | 20 | 100 | 16 | - | 9 | 7 | 3 | 2 | 2184-1 |

# CC-HL-SFT

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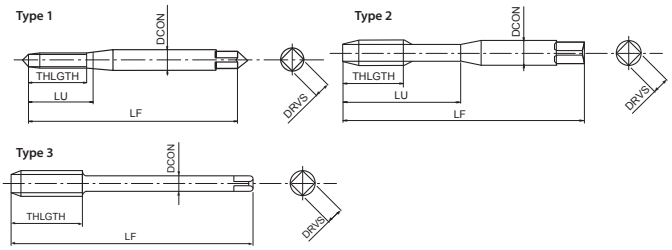
## Threading | Cutting taps | Helicoil EG-M




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines, for thread insert

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | |
|---|---|---|---|---|---|---|
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

EG M | HSSE | CrN | 45° | ISO 2 6H | C/2,5 | DIN 371 | DIN 376

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48044138 | 3 | 0,5 | 3,65 | 56 | 4,5 | 15 | 4 | 3 | 3 | 3,2 | 1 | 371 |
| 48044144 | 4 | 0,7 | 4,909 | 70 | 6,6 | 20 | 6 | 4,9 | 3 | 4,2 | 1 | 371 |
| 48044149 | 5 | 0,8 | 6,039 | 80 | 7,2 | 25 | 6 | 4,9 | 3 | 5,2 | 1 | 371 |
| 48044155 | 6 | 1 | 7,299 | 90 | 9 | 35 | 8 | 6,2 | 3 | 6,3 | 2 | 371 |
| 48044161 | 8 | 1,25 | 9,624 | 100 | 12 | 39 | 10 | 8 | 3 | 8,4 | 2 | 371 |
| 48044169 | 10 | 1,5 | 11,949 | 110 | 14 | 46 | 12 | 9 | 4 | 10,4 | 2 | 371 |
| 48044179 | 12 | 1,75 | 14,273 | 110 | 16 | - | 11 | 9 | 4 | 12,5 | 3 | 376 |
| 48044202 | 16 | 2 | 18,598 | 125 | 20 | - | 14 | 11 | 4 | 16,6 | 3 | 376 |
| 48044228 | 20 | 2,5 | 23,248 | 160 | 25 | - | 18 | 14,5 | 4 | 20,7 | 3 | - |

# E-HL-POT

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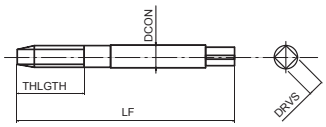
## Threading | Cutting taps | Helicoil EG-MJ




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

| S Ni | m/min |
|---|---|
| 2-4 | |

EG MJ | PM | ISO 1 4H | B/5 | DIN 371

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48008125 | 2 | 0,4 | 2,52 | 50 | 9 | 2,8 | 2,1 | 2 | 2,1 | 371 |
| 48008133 | 2,5 | 0,45 | 3,085 | 56 | 11 | 3,5 | 2,7 | 3 | 2,6 | 371 |
| 48008138 | 3 | 0,5 | 3,65 | 56 | 13 | 4 | 3 | 3 | 3,2 | 371 |
| 48008144 | 4 | 0,7 | 4,9090 | 70 | 17 | 6 | 4,9 | 3 | 4,2 | 371 |
| 48008149 | 5 | 0,8 | 6,039 | 80 | 21 | 6 | 4,9 | 3 | 5,2 | 371 |
| 48008155 | 6 | 1 | 7,299 | 90 | 25 | 8 | 6,2 | 3 | 6,3 | 371 |
| 48008161 | 8 | 1,25 | 9,624 | 100 | 33 | 10 | 8 | 3 | 8,4 | 371 |
| 48008169 | 10 | 1,5 | 11,949 | 110 | 41 | 12 | 9 | 3 | 10,4 | 371 |

# H-HL-POT

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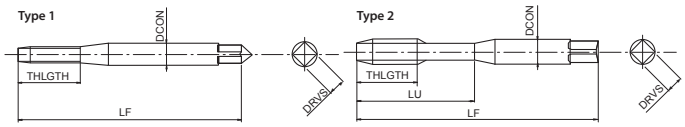
## Threading | Cutting taps | Helicoil EG-MJ




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert

| P C ≥ 0,45% | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | m/min |
|---|---|---|---|---|---|---|
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 | |

EG MJ | PM | OX | ISO 1 4H | B/5 | DIN 371

| EDP | TD | TP | Cutter dia. EG | LF | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48006125 | 2 | 0,4 | 2,52 | 50 | 9 | 2,8 | 2,1 | 2 | 2,1 | 1 | 371 |
| 48006133 | 2,5 | 0,45 | 3,085 | 56 | 18 | 3,5 | 2,7 | 3 | 2,6 | 2 | 371 |
| 48006138 | 3 | 0,5 | 3,65 | 56 | 20 | 4 | 3 | 3 | 3,2 | 2 | 371 |
| 48006144 | 4 | 0,7 | 4,9090 | 70 | 25 | 6 | 4,9 | 3 | 4,2 | 2 | 371 |
| 48006149 | 5 | 0,8 | 6,039 | 80 | 30 | 6 | 4,9 | 3 | 5,2 | 2 | 371 |
| 48006155 | 6 | 1 | 7,299 | 90 | 35 | 8 | 6,2 | 3 | 6,3 | 2 | 371 |
| 48006161 | 8 | 1,25 | 9,624 | 100 | 39 | 10 | 8 | 3 | 8,4 | 2 | 371 |
| 48006169 | 10 | 1,5 | 11,949 | 110 | 46 | 12 | 9 | 3 | 10,4 | 2 | 371 |

# E-HL-SFT

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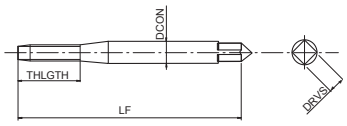
## Threading | Cutting taps | Helicoil EG-MJ




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

| S Ni | m/min |
|---|---|
| 1-3 | |

EG MJ | PM | 10° | ISO 1 4H | C/2,5 | DIN 371

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48007125 | 2 | 0,4 | 2,52 | 5 | 9 | 2,8 | 2,1 | 2 | 2,1 | 371 |
| 48007133 | 2,5 | 0,45 | 3,085 | 56 | 11 | 3,5 | 2,7 | 3 | 2,6 | 371 |
| 48007138 | 3 | 0,5 | 3,65 | 56 | 13 | 4 | 3 | 3 | 3,2 | 371 |
| 48007144 | 4 | 0,7 | 4,9090 | 70 | 17 | 6 | 4,9 | 3 | 4,2 | 371 |
| 48007149 | 5 | 0,8 | 6,039 | 80 | 21 | 6 | 4,9 | 3 | 5,2 | 371 |
| 48007155 | 6 | 1 | 7,299 | 90 | 25 | 8 | 6,2 | 3 | 6,3 | 371 |
| 48007161 | 8 | 1,25 | 9,624 | 100 | 33 | 10 | 8 | 3 | 8,4 | 371 |
| 48007169 | 10 | 1,5 | 11,949 | 110 | 41 | 12 | 9 | 3 | 10,4 | 371 |

# H-HL-SFT

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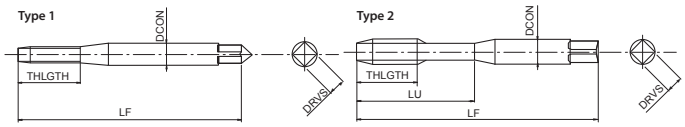
## Threading | Cutting taps | Helicoil EG-MJ




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | m/min |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | |

EG MJ | PM | 0X | 15° | ISO 1 4H | C/3 | DIN 371

| EDP | TD | TP | Cutter dia. EG | LF | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48005125 | 2 | 0,4 | 2,52 | 50 | 9 | 2,8 | 2,1 | 2 | 2,1 | 1 | 371 |
| 48005133 | 2,5 | 0,45 | 3,085 | 56 | 18 | 3,5 | 2,7 | 3 | 2,6 | 2 | 371 |
| 48005138 | 3 | 0,5 | 3,65 | 56 | 20 | 4 | 3 | 3 | 3,2 | 2 | 371 |
| 48005144 | 4 | 0,7 | 4,9090 | 70 | 25 | 6 | 4,9 | 3 | 4,2 | 2 | 371 |
| 48005149 | 5 | 0,8 | 6,039 | 80 | 30 | 6 | 4,9 | 3 | 5,2 | 2 | 371 |
| 48005155 | 6 | 1 | 7,299 | 90 | 35 | 8 | 6,2 | 3 | 6,3 | 2 | 371 |
| 48005161 | 8 | 1,25 | 9,624 | 100 | 39 | 10 | 8 | 3 | 8,4 | 2 | 371 |
| 48005169 | 10 | 1,5 | 11,949 | 110 | 46 | 12 | 9 | 3 | 10,4 | 2 | 371 |

# E-HL-POT

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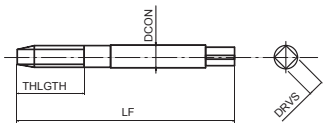
## Threading | Cutting taps | Helicoil EG-UNJC




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

| S | m/min |
|---|---|
| Ni | |
| 2-4 | |

EG UNJC | PM | ANSI 3B | B/5 | DIN 371

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48016457 | 4 | 40 | 3,67 | 56 | 14 | 4 | 3 | 3 | 3 | 2184-1 |
| 48016461 | 6 | 32 | 4,536 | 63 | 18 | 4,5 | 3,4 | 3 | 3,7 | 2184-1 |
| 48016464 | 8 | 32 | 5,197 | 70 | 20 | 6 | 4,9 | 3 | 4,4 | 2184-1 |

# H-HL-POT

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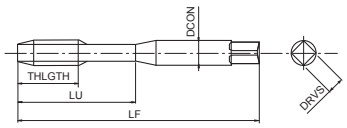
## Threading | Cutting taps | Helicoil EG-UNJC




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert

| P | K | S | S | H | H | m/min |
|---|---|---|---|---|---|---|
| C ≥ 0,45% | GGG | Ti | Ni | 25-35 HRC | 35-45 HRC | |
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 | |

EG UNJC | PM | 0X | ANSI 3B | B/5 | DIN 2184-1

| EDP | TD | TP | Cutter dia. EG | LF | LU | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48018457 | 4 | 40 | 3,67 | 56 | 20 | 4 | 3 | 3 | 3 | 2184-1 |
| 48018461 | 6 | 32 | 4,536 | 63 | 21 | 4,5 | 3,4 | 3 | 3,7 | 2184-1 |
| 48018464 | 8 | 32 | 5,197 | 70 | 25 | 6 | 4,9 | 3 | 4,4 | 2184-1 |

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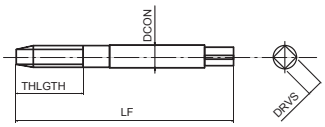
## Threading | Cutting taps | Helicoil EG-UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48015457 | 4 | 40 | 3,67 | 56 | 13 | 4 | 3 | 3 | 3 | 2184-1 |
| 48015461 | 6 | 32 | 4,536 | 63 | 18 | 4,5 | 3,4 | 3 | 3,7 | 2184-1 |
| 48015464 | 8 | 32 | 5,197 | 70 | 20 | 6 | 4,9 | 3 | 4,4 | 2184-1 |

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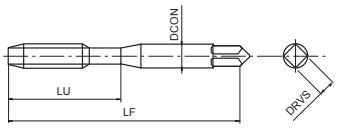
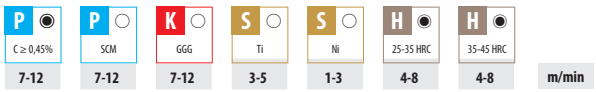
## Threading | Cutting taps | Helicoil EG-UNJC




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert



| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48017457 | 4 | 40 | 3,67 | 56 | 20 | 4 | 3 | 3 | 3 | 2184-1 |
| 48017461 | 6 | 32 | 4,536 | 63 | 21 | 4,5 | 3,4 | 3 | 3,7 | 2184-1 |
| 48017464 | 8 | 32 | 5,197 | 70 | 25 | 6 | 4,9 | 3 | 4,4 | 2184-1 |

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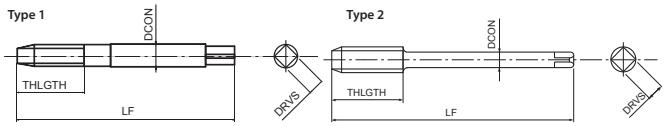
## Threading | Cutting taps | Helicoil EG-UNJF




- Powder metal spiral-point cutting tap for through holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

| S | m/min |
|---|---|
| Ni | |
| 2-4 | |

EG UNJF | PM | ANSI 3B | B/5 | DIN 2184-1

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48016467 | 10 | 32 | 5,857 | 80 | 23 | 7 | 5,5 | 3 | 5,1 | 1 | 2184-1 |
| 48016472 | 1/4 | 28 | 7,528 | 90 | 29 | 8 | 6,2 | 3 | 6,6 | 1 | 2184-1 |
| 48016476 | 5/16 | 24 | 9,312 | 90 | 35 | 10 | 8 | 3 | 8,3 | 1 | 2184-1 |
| 48016481 | 3/8 | 24 | 10,9 | 100 | 41 | 12 | 9 | 3 | 9,8 | 1 | 2184-1 |
| 48016486 | 7/16 | 20 | 12,762 | 100 | 22 | 10 | 8 | 3 | 11,5 | 2 | 2184-1 |
| 48016491 | 1/2 | 20 | 14,35 | 100 | 22 | 12 | 9 | 3 | 13,1 | 2 | 2184-1 |

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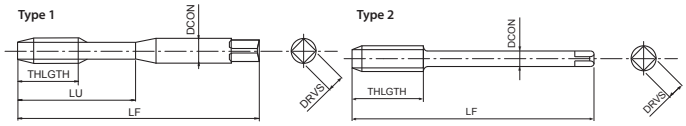
## Threading | Cutting taps | Helicoil EG-UNJF




- Powder metal spiral-point cutting tap for through holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert

| P | K | S | S | H | H | m/min |
|---|---|---|---|---|---|---|
| C ≥ 0,45% | GGG | Ti | Ni | 25-35 HRC | 35-45 HRC | |
| 8-13 | 10-15 | 4-6 | 2-4 | 6-10 | 6-10 | |

EG UNJF | PM | OX | ANSI 3B | B/5 | DIN 2184-1

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48018467 | 10 | 32 | 5,857 | 80 | - | 30 | 7 | 5,5 | 3 | 5,1 | 1 | 2184-1 |
| 48018472 | 1/4 | 28 | 7,528 | 90 | - | 35 | 8 | 6,2 | 3 | 6,6 | 1 | 2184-1 |
| 48018476 | 5/16 | 24 | 9,312 | 90 | - | 35 | 9 | 7 | 3 | 8,3 | 1 | 2184-1 |
| 48018481 | 3/8 | 24 | 10,9 | 100 | - | 39 | 11 | 9 | 3 | 9,8 | 1 | 2184-1 |
| 48018486 | 7/16 | 20 | 12,762 | 100 | 22 | - | 9 | 7 | 3 | 11,5 | 2 | 2184-1 |
| 48018491 | 1/2 | 20 | 14,35 | 100 | 22 | - | 11 | 9 | 3 | 13,1 | 2 | 2184-1 |

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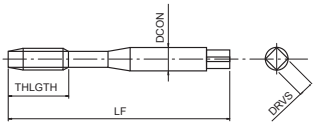
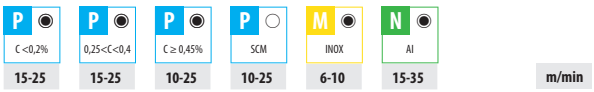
## Threading | Cutting taps | Helicoil EG-UNJF




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines, for thread insert




m/min

EG UNJF | HSSE | CrN | 45° | ANSI 3B | C/2,5 | DIN 2184-1

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|---|
| 48033467 | 10 | 32 | 5,857 | 80 | 25,4 | 7 | 5,5 | 3 | 5,1 | 2184-1 |
| 48033472 | 1/4 | 28 | 7,528 | 90 | 11 | 8 | 6,2 | 3 | 6,6 | 2184-1 |
| 48033476 | 5/16 | 24 | 9,312 | 90 | 12 | 9 | 7 | 3 | 8,3 | 2184-1 |
| 48033481 | 3/8 | 24 | 10,9 | 100 | 14 | 11 | 9 | 3 | 9,8 | 2184-1 |

# E-HL-SFT

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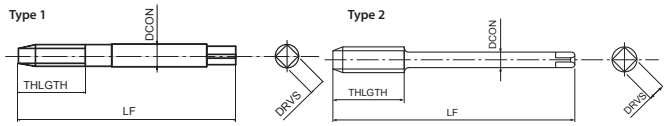
## Threading | Cutting taps | Helicoil EG-UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- Bright finish
- For Nickel-based alloys including Inconel 718
- For thread insert

m/min

EG UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2184-1

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48015467 | 10 | 32 | 5,857 | 80 | 21 | 7 | 5,5 | 3 | 5,1 | 1 | 2184-1 |
| 48015472 | 1/4 | 28 | 7,528 | 90 | 27 | 8 | 6,2 | 3 | 6,6 | 1 | 2184-1 |
| 48015476 | 5/16 | 24 | 9,312 | 90 | 33 | 10 | 8 | 3 | 8,3 | 1 | 2184-1 |
| 48015481 | 3/8 | 24 | 10,9 | 100 | 38 | 12 | 9 | 3 | 9,8 | 1 | 2184-1 |
| 48015486 | 7/16 | 20 | 12,762 | 100 | 15 | 10 | 8 | 3 | 11,5 | 2 | 2284-1 |
| 48015491 | 1/2 | 20 | 14,35 | 100 | 16 | 12 | 9 | 3 | 13,1 | 2 | 2284-1 |

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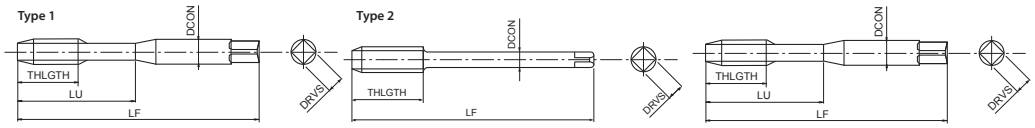
## Threading | Cutting taps | Helicoil EG-UNJF




- Powder metal low spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- For hardened steels up to 45 HRC
- For thread insert

| P C ≥ 0,45% | P SCM | K GGG | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | |
|---|---|---|---|---|---|---|---|
| 7-12 | 7-12 | 7-12 | 3-5 | 1-3 | 4-8 | 4-8 | m/min |

| EG UNJF | PM | 0X | 15° | ANSI 3B | C/2,5 | | |
|---|---|---|---|---|---|---|---|
| DIN 2184-1 | | | | | | | |

| EDP | TD | TP | Cutter dia. EG | LF | THLGTH | LU | DCON | DRVS | NOF | PHD | Type | DIN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48017467 | 10 | 32 | 5,857 | 80 | - | 30 | 7 | 5,5 | 3 | 5,1 | 1 | 2184-1 |
| 48017472 | 1/4 | 28 | 7,528 | 90 | - | 35 | 8 | 6,2 | 3 | 6,6 | 1 | 2184-1 |
| 48017476 | 5/16 | 24 | 9,312 | 90 | - | 35 | 9 | 7 | 3 | 8,3 | 1 | 2184-1 |
| 48017481 | 3/8 | 24 | 10,9 | 100 | - | 39 | 11 | 9 | 3 | 9,8 | 1 | 2184-1 |
| 48017486 | 7/16 | 20 | 12,762 | 100 | 15 | - | 9 | 7 | 3 | 11,5 | 2 | 2184-1 |
| 48017491 | 1/2 | 20 | 14,35 | 100 | 16 | - | 11 | 9 | 3 | 13,1 | 2 | 2184-1 |

# A-POT

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## Threading | Cutting taps | BSW

- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC | |
|---|---|---|
| 5-10 | 8-20 | |

| A | BSW | PM | V | MED | B/4 | |
|---|---|---|---|---|---|---|
| DIN 2184-1 | | | | | | |

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48205702 | 1/8 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2184-1 |
| 48205704 | 3/16 | 24 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2184-1 |
| 48205706 | 1/4 | 20 | 80 | 19 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48205707 | 5/16 | 18 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48205708 | 3/8 | 16 | 100 | 24 | 39 | 10 | 8 | 3 | 2184-1 |
| 48205709 | 7/16 | 14 | 100 | 24 | - | 8 | 6,2 | 3 | 2184-1 |
| 48205710 | 1/2 | 12 | 110 | 28 | - | 9 | 7 | 3 | 2184-1 |
| 48205712 | 5/8 | 11 | 110 | 32 | - | 12 | 9 | 3 | 2184-1 |
| 48205713 | 3/4 | 10 | 125 | 34 | - | 14 | 11 | 3 | 2184-1 |
| 48205714 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 3 | 2184-1 |
| 48205715 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 3 | 2184-1 |

# S-POT

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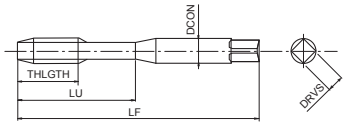
## Threading | Cutting taps | BSW




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48272702 | 1/8 | 40 | 56 | 11 | 18 | 3,5 | 2,7 | 3 | 2184-1 |
| 48272704 | 3/16 | 24 | 70 | 16 | 25 | 6 | 4,9 | 3 | 2184-1 |
| 48272706 | 1/4 | 20 | 80 | 19 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48272707 | 5/16 | 18 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48272708 | 3/8 | 16 | 100 | 24 | 39 | 10 | 8 | 3 | 2184-1 |
| 48272709 | 7/16 | 14 | 100 | 24 | - | 8 | 6,2 | 3 | 2184-1 |
| 48272710 | 1/2 | 12 | 110 | 28 | - | 9 | 7 | 3 | 2184-1 |
| 48272712 | 5/8 | 11 | 110 | 32 | - | 12 | 9 | 3 | 2184-1 |
| 48272713 | 3/4 | 10 | 125 | 34 | - | 14 | 11 | 3 | 2184-1 |
| 48272714 | 7/8 | 9 | 140 | 34 | - | 18 | 14,5 | 3 | 2184-1 |
| 48272715 | 1 | 8 | 160 | 38 | - | 18 | 14,5 | 3 | 2184-1 |

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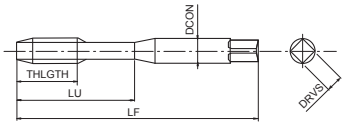
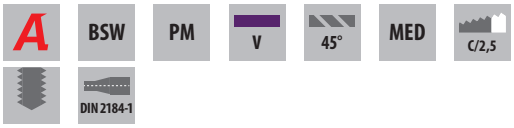
## Threading | Cutting taps | BSW




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48139702 | 1/8 | 40 | 56 | 7 | 18 | 3,5 | 2,7 | 3 | 2184-1 |
| 48139704 | 3/16 | 24 | 70 | 10 | 25 | 6 | 4,9 | 3 | 2184-1 |
| 48139706 | 1/4 | 20 | 80 | 13 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48139707 | 5/16 | 18 | 90 | 14 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48139708 | 3/8 | 16 | 100 | 16 | 39 | 10 | 8 | 3 | 2184-1 |
| 48139709 | 7/16 | 14 | 100 | 22 | - | 8 | 6,2 | 3 | 2184-1 |
| 48139710 | 1/2 | 12 | 110 | 25 | - | 9 | 7 | 3 | 2184-1 |
| 48139712 | 5/8 | 11 | 110 | 27 | - | 12 | 9 | 3 | 2184-1 |
| 48139713 | 3/4 | 10 | 125 | 30 | - | 14 | 11 | 3 | 2184-1 |
| 48139714 | 7/8 | 9 | 140 | 32 | - | 18 | 14,5 | 3 | 2184-1 |
| 48139715 | 1 | 8 | 160 | 36 | - | 18 | 14,5 | 3 | 2184-1 |

# S-SFT

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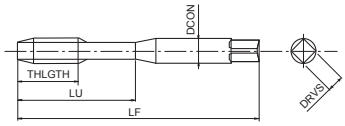
## Threading | Cutting taps | BSW




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

BSW | HSSE | 0X | 40° | MED | C/2,5 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48223702 | 1/8 | 40 | 56 | 7 | 18 | 3,5 | 2,7 | 3 | 2184-1 |
| 48223704 | 3/16 | 24 | 70 | 10 | 25 | 6 | 4,9 | 3 | 2184-1 |
| 48223706 | 1/4 | 20 | 80 | 13 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48223707 | 5/16 | 18 | 90 | 14 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48223708 | 3/8 | 16 | 100 | 16 | 39 | 10 | 8 | 3 | 2184-1 |
| 48223709 | 7/16 | 14 | 100 | 22 | - | 8 | 6,2 | 3 | 2184-1 |
| 48223710 | 1/2 | 12 | 110 | 25 | - | 9 | 7 | 4 | 2184-1 |
| 48223712 | 5/8 | 11 | 110 | 27 | - | 12 | 9 | 4 | 2184-1 |
| 48223713 | 3/4 | 10 | 125 | 30 | - | 14 | 11 | 4 | 2184-1 |
| 48223714 | 7/8 | 9 | 140 | 32 | - | 18 | 14,5 | 4 | 2184-1 |
| 48223715 | 1 | 8 | 160 | 36 | - | 18 | 14,5 | 4 | 2184-1 |

# A-POT

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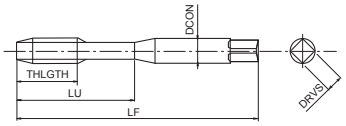
## Threading | Cutting taps | BSF




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

A | BSF | PM | V | MED | B/4 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48205731 | 1/4 | 26 | 80 | 19 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48205732 | 5/16 | 22 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48205733 | 3/8 | 20 | 100 | 24 | 39 | 10 | 8 | 3 | 2184-1 |
| 48205734 | 7/16 | 18 | 100 | 24 | - | 8 | 6,2 | 3 | 2184-1 |
| 48205735 | 1/2 | 16 | 100 | 22 | - | 9 | 7 | 3 | 2184-1 |
| 48205737 | 5/8 | 14 | 110 | 32 | - | 12 | 9 | 3 | 2184-1 |
| 48205739 | 3/4 | 12 | 125 | 34 | - | 14 | 11 | 3 | 2184-1 |
| 48205742 | 1 | 10 | 160 | 38 | - | 18 | 14,5 | 3 | 2184-1 |

# S-POT

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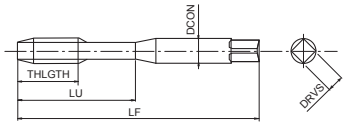
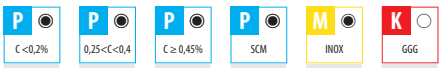
## Threading | Cutting taps | BSF




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels



| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48272731 | 1/4 | 26 | 80 | 19 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48272732 | 5/16 | 22 | 90 | 22 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48272733 | 3/8 | 20 | 100 | 24 | 39 | 10 | 8 | 3 | 2184-1 |
| 48272734 | 7/16 | 18 | 100 | 24 | - | 8 | 6,2 | 3 | 2184-1 |
| 48272735 | 1/2 | 16 | 100 | 22 | - | 9 | 7 | 3 | 2184-1 |
| 48272737 | 5/8 | 14 | 110 | 32 | - | 12 | 9 | 3 | 2184-1 |
| 48272739 | 3/4 | 12 | 125 | 34 | - | 14 | 11 | 3 | 2184-1 |
| 48272742 | 1 | 10 | 160 | 38 | - | 18 | 14,5 | 3 | 2184-1 |

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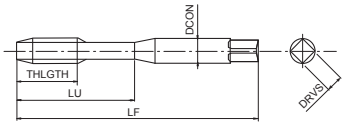
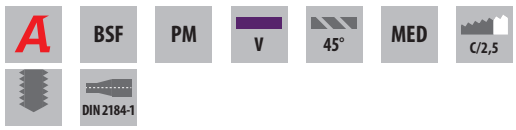
## Threading | Cutting taps | BSF




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels




| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48139731 | 1/4 | 26 | 80 | 17 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48139732 | 5/16 | 22 | 90 | 17 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48139733 | 3/8 | 20 | 100 | 18 | 39 | 10 | 8 | 3 | 2184-1 |
| 48139734 | 7/16 | 18 | 100 | 22 | - | 8 | 6,2 | 3 | 2184-1 |
| 48139735 | 1/2 | 16 | 100 | 22 | - | 9 | 7 | 3 | 2184-1 |
| 48139737 | 5/8 | 14 | 110 | 27 | - | 12 | 9 | 3 | 2184-1 |
| 48139739 | 3/4 | 12 | 125 | 27 | - | 14 | 11 | 4 | 2184-1 |
| 48139742 | 1 | 10 | 160 | 36 | - | 18 | 14,5 | 4 | 2184-1 |

# S-SFT

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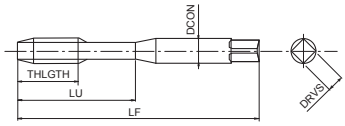
## Threading | Cutting taps | BSF




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

BSF | HSSE | 0X | 40° | MED | C/2,5 | DIN 2184-1

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48223731 | 1/4 | 26 | 80 | 17 | 30 | 7 | 5,5 | 3 | 2184-1 |
| 48223732 | 5/16 | 22 | 90 | 17 | 35 | 8 | 6,2 | 3 | 2184-1 |
| 48223733 | 3/8 | 20 | 100 | 18 | 39 | 10 | 8 | 3 | 2184-1 |
| 48223734 | 7/16 | 18 | 100 | 22 | - | 8 | 6,2 | 3 | 2184-1 |
| 48223735 | 1/2 | 16 | 100 | 22 | - | 9 | 7 | 4 | 2184-1 |
| 48223737 | 5/8 | 14 | 110 | 27 | - | 12 | 9 | 4 | 2184-1 |
| 48223739 | 3/4 | 12 | 125 | 27 | - | 14 | 11 | 4 | 2184-1 |
| 48223742 | 1 | 10 | 160 | 36 | - | 18 | 14,5 | 4 | 2184-1 |

# A-POT

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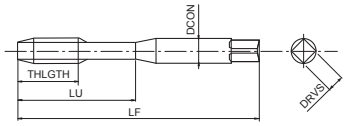
## Threading | Cutting taps | BA




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

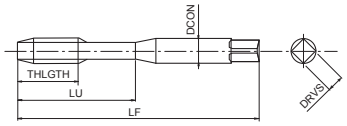
| S Ti | H 25-35 HRC | |
|---|---|---|
| 5-10 | 8-20 | |

A | BA (BS93) | PM | V | B/4

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48205910 | 0 | 1 | 66 | 19 | 30 | 6,3 | 5 | 3 |
| 48205911 | 1 | 0,9 | 62 | 17 | 26 | 5,6 | 4,5 | 3 |
| 48205912 | 2 | 0,81 | 58 | 16 | 25 | 5 | 4 | 3 |
| 48205913 | 3 | 0,73 | 53 | 13 | 21 | 4,5 | 3,55 | 3 |
| 48205914 | 4 | 0,66 | 50 | 13 | 20 | 3,55 | 2,8 | 3 |
| 48205915 | 5 | 0,59 | 48 | 11 | 18 | 3,15 | 2,5 | 3 |
| 48205916 | 6 | 0,53 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48205917 | 7 | 0,48 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48205918 | 8 | 0,43 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48205919 | 9 | 0,39 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48205920 | 10 | 0,35 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48205921 | 11 | 0,31 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48205922 | 12 | 0,28 | 40 | 7 | - | 2,5 | 2 | 2 |

# S-POT

## Threading | Cutting taps | BA




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

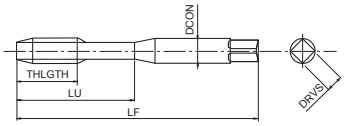
| P | P | P | P | M | K | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG | |
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 | m/min |

| BA (BS93) | HSSE | OX | B/4 | |
|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48272910 | 0 | 1 | 66 | 19 | 30 | 6,3 | 5 | 3 |
| 48272911 | 1 | 0,9 | 62 | 17 | 26 | 5,6 | 4,5 | 3 |
| 48272912 | 2 | 0,81 | 58 | 16 | 25 | 5 | 4 | 3 |
| 48272913 | 3 | 0,73 | 53 | 13 | 21 | 4,5 | 3,55 | 3 |
| 48272914 | 4 | 0,66 | 50 | 13 | 20 | 3,55 | 2,8 | 3 |
| 48272915 | 5 | 0,59 | 48 | 11 | 18 | 3,15 | 2,5 | 3 |
| 48272916 | 6 | 0,53 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48272917 | 7 | 0,48 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48272918 | 8 | 0,43 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48272919 | 9 | 0,39 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48272920 | 10 | 0,35 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48272921 | 11 | 0,31 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48272922 | 12 | 0,28 | 40 | 7 | - | 2,5 | 2 | 2 |

# A-SFT

## Threading | Cutting taps | BA




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P | P | P | P | M | N | N | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Al | AC, ADC | |
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S | H | |
|---|---|---|
| Ti | 25-35 HRC | |
| 5-10 | 8-20 | |

| A | BA (BS93) | PM | V | 45° | C/2,5 | |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48139910 | 0 | 1 | 66 | 19 | 30 | 6,3 | 5 | 3 |
| 48139911 | 1 | 0,9 | 62 | 17 | 26 | 5,6 | 4,5 | 3 |
| 48139912 | 2 | 0,81 | 58 | 16 | 25 | 5 | 4 | 3 |
| 48139913 | 3 | 0,73 | 53 | 13 | 21 | 4,5 | 3,55 | 2 |
| 48139914 | 4 | 0,66 | 50 | 13 | 20 | 3,55 | 2,8 | 2 |
| 48139915 | 5 | 0,59 | 48 | 11 | 18 | 3,15 | 2,5 | 2 |
| 48139916 | 6 | 0,53 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48139917 | 7 | 0,48 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48139918 | 8 | 0,43 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48139919 | 9 | 0,39 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48139920 | 10 | 0,35 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48139921 | 11 | 0,31 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48139922 | 12 | 0,28 | 40 | 7 | - | 2,5 | 2 | 2 |

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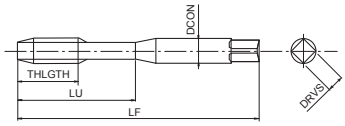
## Threading | Cutting taps | BA




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

BA (BS93) | HSSE | OX | 40° | C/2,5

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF |
|---|---|---|---|---|---|---|---|---|
| 48223910 | 0 | 1 | 66 | 19 | 30 | 6,3 | 5 | 3 |
| 48223911 | 1 | 0,9 | 62 | 17 | 26 | 5,6 | 4,5 | 3 |
| 48223912 | 2 | 0,81 | 58 | 16 | 25 | 5 | 4 | 3 |
| 48223913 | 3 | 0,73 | 53 | 13 | 21 | 4,5 | 3,55 | 3 |
| 48223914 | 4 | 0,66 | 50 | 13 | 20 | 3,55 | 2,8 | 3 |
| 48223915 | 5 | 0,59 | 48 | 11 | 18 | 3,15 | 2,5 | 3 |
| 48223916 | 6 | 0,53 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48223917 | 7 | 0,48 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48223918 | 8 | 0,43 | 44,5 | 9,5 | - | 2,8 | 2,24 | 2 |
| 48223919 | 9 | 0,39 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48223920 | 10 | 0,35 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48223921 | 11 | 0,31 | 41 | 8 | - | 2,5 | 2 | 2 |
| 48223922 | 12 | 0,28 | 40 | 7 | - | 2,5 | 2 | 2 |

# A-POT

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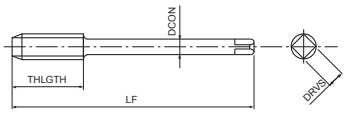
## Threading | Cutting taps | G (BSP)




- First choice in quality and performance
- Powder metal spiral-point cutting tap for through holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

A | G | PM | V | B/4 | DIN 5156

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48145900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48145000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48145100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 3 | 5156 |
| 48145200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 3 | 5156 |
| 48145300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 48145400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48145500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48145600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# S-POT

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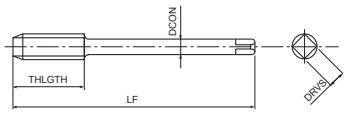
## Threading | Cutting taps | G (BSP)




- HSSE spiral-point cutting tap for through holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P | P | P | P | M | K |
|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GGG |
| 15-24 | 10-15 | 10-15 | 8-13 | 8-16 | 10-15 |

m/min

G | HSSE | OX | B/4 | DIN 5156

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48224900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48224000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48224100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 3 | 5156 |
| 48224200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 3 | 5156 |
| 48224300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 3 | 5156 |
| 48224400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48224500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48224600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# POT

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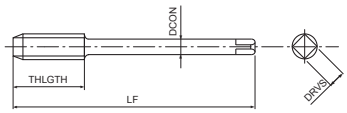
## Threading | Cutting taps | G (BSP)




- HSSE spiral-point cutting tap for through holes
- Bright finish
- For general purpose applications

| P | P | P | P | K | N | N |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | GGG | AI | AC, ADC |
| 12-20 | 8-12 | 8-12 | 8-12 | 8-12 | 15-25 | 15-20 |

m/min

G | HSSE | B/4 | DIN 5156

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 63581900 | 1/8 | 28 | 90 | 16 | 7 | 5,5 | 3 | 5156 |
| 63582000 | 1/4 | 19 | 100 | 20 | 11 | 9 | 3 | 5156 |
| 63582100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 63582200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 63582300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 63582400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 63582500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 63582600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

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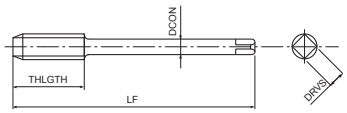
## Threading | Cutting taps | G (BSP)




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

A | G | PM | V | 45° | C/2,5 | DIN 5156

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48139700 | 1/16 | 28 | 90 | 22 | 6 | 4,9 | 3 | 5156 |
| 48139900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48139000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48139100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48139200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48139300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 48139400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48139500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48139600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# A-SFT-INOX

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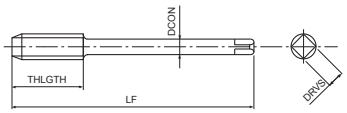
## Threading | Cutting taps | G (BSP)

**NEW**




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer VI coating
- Eliminates chip entanglement issues in stainless steel

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-20 | 5-50 | 5-50 | 5-30 | 5-15 | 5-50 | m/min |

A | G | PM | VI | 45° | C/2,5 | DIN 5156

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48455700 | 1/16 | 28 | 90 | 22 | 6 | 4,9 | 3 | 5156 |
| 48455900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48455000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48455100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48455200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48455300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 48455400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48455500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48455600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# S-SFT

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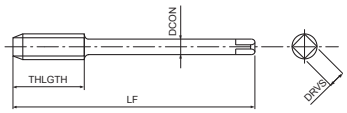
## Threading | Cutting taps | G (BSP)




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| G | HSSE | OX | 40° | C/2,5 | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48223900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48223000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 4 | 5156 |
| 48223100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48223200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48223300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 48223400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48223500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48223600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# VA-SFT

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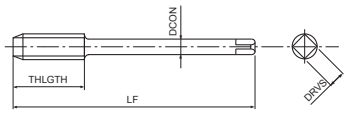
## Threading | Cutting taps | G (BSP)




- HSSE spiral-fluted cutting tap for blind holes
- Steam oxide treatment
- General purpose tapping in steels and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GGG | |
|---|---|---|---|---|---|---|
| 10-15 | 8-14 | 8-14 | 7-11 | 7-12 | 7-14 | m/min |

| G | HSSE | OX | 40° | C/2,5 | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 65881909 | 1/8 | 28 | 90 | 11 | 7 | 5,5 | 4 | 5156 |
| 65882009 | 1/4 | 19 | 100 | 16 | 11 | 9 | 4 | 5156 |
| 65882109 | 3/8 | 19 | 100 | 16 | 12 | 9 | 5 | 5156 |
| 65882209 | 1/2 | 14 | 125 | 22 | 16 | 12 | 5 | 5156 |
| 65882309 | 5/8 | 14 | 125 | 22 | 18 | 14,5 | 5 | 5156 |
| 65882409 | 3/4 | 14 | 140 | 22 | 20 | 16 | 5 | 5156 |
| 65882509 | 7/8 | 14 | 150 | 22 | 22 | 18 | 5 | 5156 |
| 65882609 | 1 | 11 | 160 | 28 | 25 | 20 | 5 | 5156 |

# SFT

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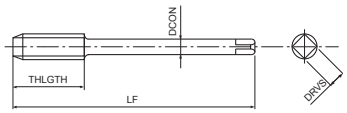
## Threading | Cutting taps | G (BSP)




- HSSE spiral-fluted cutting tap for blind holes
- Bright finish
- For general purpose applications

| P | P | P | P | K | N | N | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | GGG | AI | AC, ADC | |
| 8-13 | 7-12 | 7-12 | 6-9 | 6-8 | 10-20 | 10-15 | m/min |

| G | HSSE | 40° | C/2,5 | | DIN 5156 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 63681900 | 1/8 | 28 | 90 | 16 | 7 | 5,5 | 3 | 5156 |
| 63682000 | 1/4 | 19 | 100 | 20 | 11 | 9 | 3 | 5156 |
| 63682100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 3 | 5156 |
| 63682200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 63682300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 63682400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 63682500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 63682600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# SH-SFT

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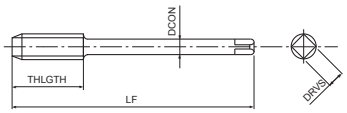
## Threading | Cutting taps | G (BSP)




- HSSE low spiral-fluted cutting tap for blind holes
- Bright finish
- For alloyed steels ≥ 1100N/mm$^2$
- Short chip creation

| P | P | P | K | K | N | |
|---|---|---|---|---|---|---|
| 0,25<C<0,4 | C ≥ 0,45% | SCM | GG | GGG | AC, ADC | |
| 7-12 | 7-12 | 6-9 | 7-12 | 6-8 | 10-15 | m/min |

| G | HSSE | 15° | C/3 | | DIN 5156 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 72281900 | 1/8 | 28 | 90 | 16 | 7 | 5,5 | 3 | 5156 |
| 72282000 | 1/4 | 19 | 100 | 20 | 11 | 9 | 4 | 5156 |
| 72282100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 72282200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |

# M-SFT-DUPLEX

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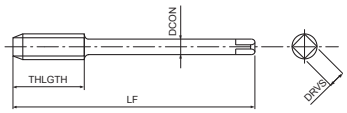
## Threading | Cutting taps | G (BSP)




- Powder metal spiral-fluted cutting tap for blind holes
- TiN coating
- For stainless steels, Duplex, Super Duplex

| P | P | P | P | M | S | S | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Inconel 625 | Ti Gr.2 | |
| 10-25 | 10-25 | 10-25 | 8-20 | 3-15 | 3-6 | 2-3 | m/min |
| | | | | Super Duplex | 15-5 PH | 17-4 PH | |

| G | PM | TiN | 50° | C/2,5 | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48336900 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 4 | 5156 |
| 48336000 | 1/4 | 19 | 100 | 22 | 11 | 9 | 4 | 5156 |
| 48336100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48336200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48336300 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 4 | 5156 |
| 48336400 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48336500 | 7/8 | 14 | 150 | 28 | 22 | 18 | 4 | 5156 |
| 48336600 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# CC-SFT

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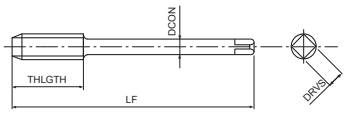
## Threading | Cutting taps | G (BSP)




- HSSE spiral-fluted cutting tap for blind holes
- CrN coating
- For general steels, stainless steels and aluminium
- Developed for rigid tapping on CNC machines

| P | P | P | P | M | N | |
|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | Al | |
| 15-25 | 15-25 | 10-25 | 10-25 | 6-10 | 15-35 | m/min |

| G | HSSE | CrN | 45° | C/2,5 | ≥2D | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48034838 | 1/8 | 28 | 90 | 10 | 7 | 5,5 | 3 | 5156 |
| 48034839 | 1/4 | 19 | 100 | 15 | 11 | 9 | 4 | 5156 |
| 48034840 | 3/8 | 19 | 100 | 15 | 12 | 9 | 4 | 5156 |
| 48034841 | 1/2 | 14 | 125 | 20 | 16 | 12 | 4 | 5156 |

# VP-DC-MT

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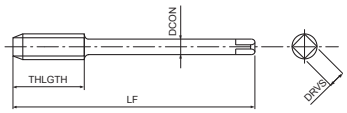
## Threading | Cutting taps | G (BSP)




- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- For cast iron and cast aluminium
- Synchro taps at cutting speeds > 30 m/min

| P | P | K | K | N | H | H | |
|---|---|---|---|---|---|---|---|
| C ≥ 0,45% | SCM | GG | GGG | AC, ADC | 25-35 HRC | 35-45 HRC | |
| 10-25 | 10-20 | 15-60 | 15-40 | 25-70 | 8-20 | 8-20 | m/min |

| G | PM | V | C/2,5 | | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | LH | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48020837 | 1/16 | 28 | 90 | 11 | 6 | 4,9 | 4 | 32 | 5156 |
| 48020838 | 1/8 | 28 | 90 | 11 | 7 | 5,5 | 4 | 32 | 5156 |
| 48020839 | 1/4 | 19 | 100 | 16 | 11 | 9 | 4 | 35 | 5156 |
| 48020840 | 3/8 | 19 | 100 | 16 | 12 | 9 | 4 | 35 | 5156 |
| 48020841 | 1/2 | 14 | 125 | 22 | 16 | 12 | 5 | 44 | 5156 |
| 48020842 | 5/8 | 14 | 125 | 22 | 18 | 14,5 | 5 | 44 | 5156 |
| 48020843 | 3/4 | 14 | 140 | 22 | 20 | 16 | 5 | 49 | 5156 |
| 48020844 | 7/8 | 14 | 150 | 22 | 22 | 18 | 5 | 53 | 5156 |
| 48020845 | 1 | 11 | 160 | 28 | 25 | 20 | 6 | 56 | 5156 |
| 48020846 | 1 1/8 | 11 | 170 | 28 | 28 | 22 | 6 | 60 | 5156 |
| 48020847 | 1 1/4 | 11 | 170 | 28 | 32 | 24 | 6 | 60 | 5156 |
| 48020849 | 1 1/2 | 11 | 190 | 28 | 36 | 29 | 6 | 67 | 5156 |
| 48020850 | 1 3/4 | 11 | 190 | 28 | 40 | 32 | 6 | 67 | 5156 |
| 48020851 | 2 | 11 | 220 | 28 | 45 | 35 | 6 | 77 | 5156 |

# GG-MT

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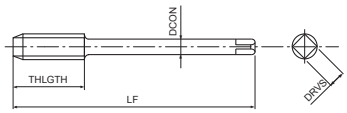
## Threading | Cutting taps | G (BSP)




- HSSE straight flute cutting tap for blind and through holes
- NiOx coating
- For cast iron

| K | K | | | | | | |
|---|---|---|---|---|---|---|---|
| GG | GGG | | | | | | |
| 10-15 | 7-12 | | | | | | m/min |

| G | HSSE | NI-OX | C/2,5 | | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 67681900 | 1/8 | 28 | 90 | 16 | 7 | 5,5 | 4 | 5156 |
| 67682000 | 1/4 | 19 | 100 | 20 | 11 | 9 | 4 | 5156 |
| 67682100 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 67682200 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |

# VX-OT

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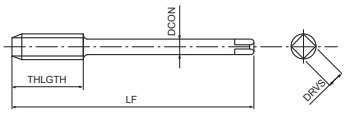
## Threading | Cutting taps | G (BSP)




- Carbide straight flute cutting tap for blind and through holes
- Multilayer TiCN coating
- For hardened steels up to 62 HRC

1-3 m/min

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48080838 | 1/8 | 28 | 90 | 11 | 7 | 5,5 | 5 | 5156 |
| 48080839 | 1/4 | 19 | 100 | 16 | 11 | 9 | 5 | 5156 |
| 48080840 | 3/8 | 19 | 100 | 16 | 12 | 9 | 6 | 5156 |
| 48080841 | 1/2 | 14 | 125 | 22 | 16 | 12 | 6 | 5156 |

# A-XPF

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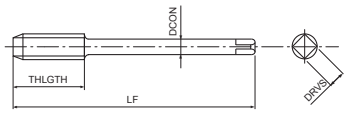
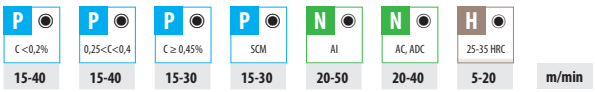
NEW

## Threading | Forming taps | G (BSP)




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium




m/min

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48433838 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 8 | 9,24 ~ 9,35 | 2189 |
| 48433839 | 1/4 | 19 | 100 | 13 | 11 | 9 | 9 | 12,41 ~ 12,62 | 2189 |
| 48433840 | 3/8 | 19 | 100 | 13 | 12 | 9 | 9 | 15,92 ~ 16,12 | 2189 |
| 48433841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 9 | 19,93 ~ 20,15 | 2189 |

# A-OIL-XPF

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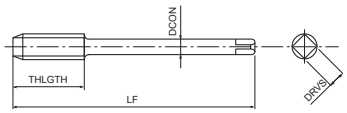
**Threading | Forming taps | G (BSP)** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | G | PM | VI | C/2,5 | DIN 2189

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48225838 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 8 | 9,24 ~ 9,35 | 2189 |
| 48225839 | 1/4 | 19 | 100 | 13 | 11 | 9 | 9 | 12,41 ~ 12,62 | 2189 |
| 48225840 | 3/8 | 19 | 100 | 13 | 12 | 9 | 9 | 15,92 ~ 16,12 | 2189 |
| 48225841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 9 | 19,93 ~ 20,15 | 2189 |

# A-XPF FORM E

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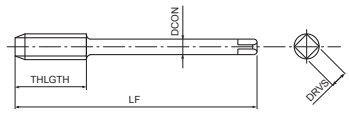
**Threading | Forming taps | G (BSP)** **NEW**




- First choice in quality and performance
- Powder metal forming tap for through & blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

A | G | PM | VI | E/1,5 | DIN 2189

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48436900 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 8 | 9,24 ~ 9,35 | 2189 |
| 48436000 | 1/4 | 19 | 100 | 13 | 11 | 9 | 9 | 12,41 ~ 12,62 | 2189 |
| 48436100 | 3/8 | 19 | 100 | 13 | 12 | 9 | 9 | 15,92 ~ 16,12 | 2189 |
| 48436200 | 1/2 | 14 | 125 | 18 | 16 | 12 | 9 | 19,93 ~ 20,15 | 2189 |

# A-OIL-XPF FORM E

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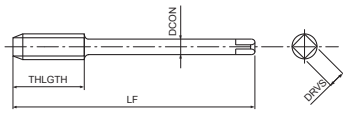
## Threading | Forming taps | G (BSP)

NEW




- First choice in quality and performance
- Powder metal forming tap for blind holes
- Multilayer VI coating
- High speed tapping in general steels and aluminium
- Centre through coolant, Form E chamfer

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | H 25-35 HRC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 20-50 | 20-40 | 5-20 | m/min |

| A | G | PM | VI | E/1,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2189 | | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48437900 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 8 | 9,24 ~ 9,35 | 2189 |
| 48437000 | 1/4 | 19 | 100 | 13 | 11 | 9 | 9 | 12,41 ~ 12,62 | 2189 |
| 48437100 | 3/8 | 19 | 100 | 13 | 12 | 9 | 9 | 15,92 ~ 16,12 | 2189 |
| 48437200 | 1/2 | 14 | 125 | 18 | 16 | 12 | 9 | 19,93 ~ 20,15 | 2189 |

# S-XPF

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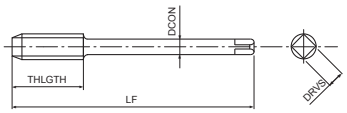
## Threading | Forming taps | G (BSP)




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC |
|---|
| 5-20 |

| A | G | HSS-Co | V | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| DIN 2189 | | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48064838 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 8 | 9,24 ~ 9,35 | 2189 |
| 48064839 | 1/4 | 19 | 100 | 13 | 11 | 9 | 8 | 12,41 ~ 12,62 | 2189 |
| 48064840 | 3/8 | 19 | 100 | 13 | 12 | 9 | 8 | 15,92 ~ 16,12 | 2189 |
| 48064841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 8 | 19,93 ~ 20,15 | 2189 |
| 48064842 | 5/8 | 14 | 125 | 18 | 18 | 14,5 | 8 | 21,89 ~ 22,11 | 2189 |
| 48064843 | 3/4 | 14 | 140 | 18 | 20 | 16 | 8 | 25,42 ~ 25,64 | 2189 |
| 48064844 | 7/8 | 14 | 150 | 18 | 22 | 18 | 8 | 29,18 ~ 29,40 | 2189 |
| 48064845 | 1 | 11 | 160 | 23 | 25 | 20 | 8 | 31,92 ~ 32,20 | 2189 |

# S-OIL-XPF

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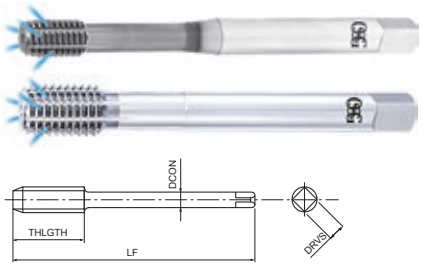
## Threading | Forming taps | G (BSP)




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- For general steels, stainless steels, aluminium
- Side through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | |
|---|---|
| 5-20 | |

| A | G | HSS-Co | V | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| | DIN 2189 | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48042839 | 1/4 | 19 | 100 | 13 | 11 | 9 | 8 | 12,41 ~ 12,62 | 2189 |
| 48042840 | 3/8 | 19 | 100 | 13 | 12 | 9 | 8 | 15,92 ~ 16,12 | 2189 |
| 48042841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 8 | 19,93 ~ 20,15 | 2189 |
| 48042842 | 5/8 | 14 | 125 | 18 | 18 | 14,5 | 8 | 21,89 ~ 22,11 | 2189 |
| 48042843 | 3/4 | 14 | 140 | 18 | 20 | 16 | 8 | 25,42 ~ 25,64 | 2189 |
| 48042844 | 7/8 | 14 | 150 | 18 | 22 | 18 | 8 | 29,18 ~ 29,40 | 2189 |
| 48042845 | 1 | 11 | 160 | 23 | 25 | 20 | 8 | 31,92 ~ 32,20 | 2189 |

# S-XPF-GL

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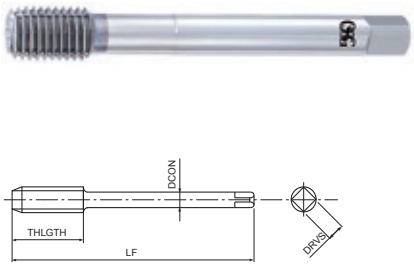
## Threading | Forming taps | G (BSP)




- First choice in quality and performance
- HSSE forming tap for through and blind holes
- Multilayer TiCN coating
- Without oil grooves for higher rigidity

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-40 | 15-40 | 15-30 | 15-30 | 8-20 | 20-50 | 20-40 | m/min |

| H 25-35 HRC | |
|---|---|
| 5-20 | |

| A | G | HSS-Co | V | C/2,5 | | | |
|---|---|---|---|---|---|---|---|
| | DIN 2189 | | | | | | |

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | PHD | DIN |
|---|---|---|---|---|---|---|---|---|
| 48296838 | 1/8 | 28 | 90 | 9 | 7 | 5,5 | 9,24 ~ 9,35 | 2189 |
| 48296839 | 1/4 | 19 | 100 | 13 | 11 | 9 | 12,41 ~ 12,62 | 2189 |
| 48296840 | 3/8 | 19 | 100 | 13 | 12 | 9 | 15,92 ~ 16,12 | 2189 |
| 48296841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 19,93 ~ 20,15 | 2189 |
| 48296842 | 5/8 | 14 | 125 | 18 | 18 | 14,5 | 21,89 ~ 22,11 | 2189 |
| 48296843 | 3/4 | 14 | 140 | 18 | 20 | 16 | 25,42 ~ 25,64 | 2189 |
| 48296844 | 7/8 | 14 | 150 | 18 | 22 | 18 | 29,18 ~ 29,40 | 2189 |
| 48296845 | 1 | 11 | 160 | 23 | 25 | 20 | 31,92 ~ 32,20 | 2189 |

# VA-XPF

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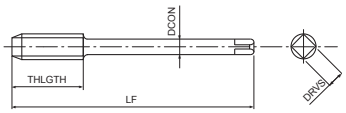
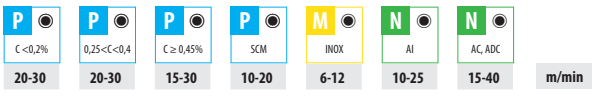
**NEW**

## Threading | Forming taps | G (BSP)




- Powder metal forming tap for through & blind holes
- AlCrN coating
- For general steels, stainless steels and aluminium



| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48443838 | 1/8 | 28 | 90 | 12 | 7 | 5,5 | 5 | 9,25 | 2189 |
| 48443839 | 1/4 | 19 | 100 | 15 | 11 | 9 | 6 | 12,5 | 2189 |
| 48443840 | 3/8 | 19 | 100 | 15 | 12 | 9 | 6 | 16 | 2189 |
| 48443841 | 1/2 | 14 | 125 | 18 | 16 | 12 | 7 | 20 | 2189 |
| 48443842 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 7 | 22 | 2189 |
| 48443843 | 3/4 | 14 | 140 | 28 | 20 | 16 | 8 | 25,5 | 2189 |
| 48443844 | 7/8 | 14 | 150 | 22 | 22 | 18 | 8 | 29,18 ~ 29,40 | 2189 |
| 48443845 | 1 | 11 | 160 | 30 | 25 | 20 | 8 | 31,92 ~ 32,20 | 2189 |

# M-NRT

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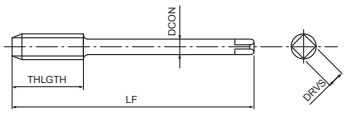
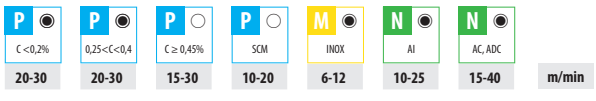
## Threading | Forming taps | G (BSP)




- Powder metal forming tap for through & blind holes
- TiN coating
- For general steels, stainless steels and aluminium



| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | PHD | DIN |
|---|---|---|---|---|---|---|---|---|---|
| EP0203838 | 1/8 | 28 | 90 | 18 | 7 | 5,5 | 5 | 9,25 | 2189 |
| EP0203839 | 1/4 | 19 | 100 | 22 | 11 | 9 | 6 | 12,5 | 2189 |
| EP0203840 | 3/8 | 19 | 100 | 22 | 12 | 9 | 6 | 16 | 2189 |
| EP0203841 | 1/2 | 14 | 125 | 25 | 16 | 12 | 7 | 20 | 2189 |
| EP0203842 | 5/8 | 14 | 125 | 25 | 18 | 14,5 | 7 | 22 | 2189 |
| EP0203843 | 3/4 | 14 | 140 | 28 | 20 | 16 | 8 | 25,5 | 2189 |

# A-SFT RC

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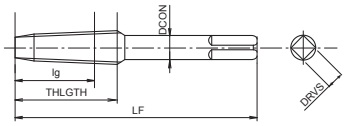
## Threading | Cutting taps | RC (BSPT)




- First choice in quality and performance
- Powder metal spiral flute cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- Rc (BSPT) tapered 1:16

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 15-35 | 15-35 | m/min |

A | Rc (BSPT) | PM | V | 45° | C/2,5 | DIN 5156

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48302374 | 1/16 | 28 | 90 | 10,1 | 14 | 6 | 4,9 | 3 | 5156 |
| 48302384 | 1/8 | 28 | 90 | 10,1 | 15 | 7 | 5,5 | 3 | 5156 |
| 48302394 | 1/4 | 19 | 100 | 15 | 19 | 11 | 9 | 3 | 5156 |
| 48302404 | 3/8 | 19 | 100 | 15,4 | 21 | 12 | 9 | 4 | 5156 |
| 48302414 | 1/2 | 14 | 125 | 20,5 | 26 | 16 | 12 | 4 | 5156 |
| 48302434 | 3/4 | 14 | 140 | 21,8 | 28 | 20 | 16 | 4 | 5156 |
| 48302454 | 1 | 11 | 160 | 26 | 33 | 25 | 23 | 4 | 5156 |

# A-TPT

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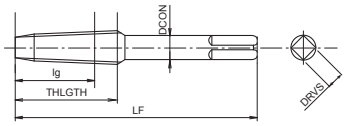
## Threading | Cutting taps | RC (BSPT)




- First choice in quality and performance
- Powder metal straight flute cutting tap for through and blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- RC (BSPT) tapered 1:16

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-10 | 5-10 | 5-10 | 5-10 | 5-10 | 10-15 | m/min |

A | Rc (PT) | PM | V | C/2,5 | DIN 5156

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48212384 | 1/8 | 28 | 90 | 15 | 7 | 5,5 | 4 | 5156 |
| 48212394 | 1/4 | 19 | 100 | 19 | 11 | 9 | 4 | 5156 |
| 48212404 | 3/8 | 19 | 110 | 21 | 12 | 9 | 4 | 5156 |
| 48212414 | 1/2 | 14 | 125 | 26 | 16 | 12 | 4 | 5156 |
| 48212434 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48212454 | 1 | 11 | 160 | 33 | 25 | 20 | 4 | 5156 |

# S-TPT

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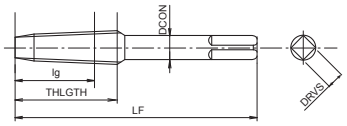
## Threading | Cutting taps | RC (BSPT)




- HSSE straight flute cutting tap for through & blind holes
- Steam oxide treatment
- For general steels and aluminium
- RC (BSPT) tapered 1:16

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-10 | 5-10 | 5-10 | 5-10 | 5-10 | 10-15 | m/min |

| Rc (PT) | HSSE | OX | C/2,5 | | | DIN 5156 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48281384 | 1/8 | 28 | 90 | 15 | 7 | 5,5 | 4 | 5156 |
| 48281394 | 1/4 | 19 | 100 | 19 | 11 | 9 | 4 | 5156 |
| 48281404 | 3/8 | 19 | 110 | 21 | 12 | 9 | 4 | 5156 |
| 48281414 | 1/2 | 14 | 125 | 26 | 16 | 12 | 4 | 5156 |
| 48281434 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48281454 | 1 | 11 | 160 | 33 | 25 | 20 | 4 | 5156 |

# A-SFT FORM E

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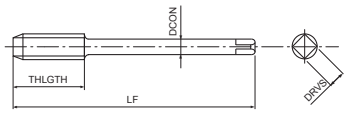
## Threading | Cutting taps | Rp

**NEW**




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC | |
|---|---|---|
| 5-10 | 8-20 | |

| A | Rp | PM | V | 45° | E/1,5 | | DIN 5156 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48203799 | 1/16 | 28 | 90 | 22 | 6 | 4,9 | 3 | 5156 |
| 48203999 | 1/8 | 28 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48203099 | 1/4 | 19 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48203199 | 3/8 | 19 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48203299 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48203499 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48203699 | 1 | 11 | 160 | 30 | 25 | 20 | 4 | 5156 |

# A-SFT FORM E

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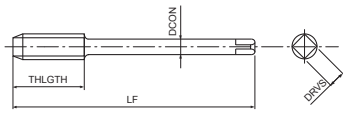
## Threading | Cutting taps | NPSF




- First choice in quality and performance
- Powder metal spiral-fluted cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels, aluminium, stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|---|
| 15-60 | 15-60 | 10-60 | 8-30 | 8-20 | 15-35 | 15-35 | m/min |

| S Ti | H 25-35 HRC |
|---|---|
| 5-10 | 8-20 |

| A | NPSF | PM | V | 45° | E/1,5 | | DIN 5156 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 48203885 | 1/16 | 27 | 90 | 14 | 6 | 4,9 | 3 | 5156 |
| 48203886 | 1/8 | 27 | 90 | 20 | 7 | 5,5 | 3 | 5156 |
| 48203887 | 1/4 | 18 | 100 | 22 | 11 | 9 | 3 | 5156 |
| 48203888 | 3/8 | 18 | 100 | 22 | 12 | 9 | 4 | 5156 |
| 48203889 | 1/2 | 14 | 125 | 25 | 16 | 12 | 4 | 5156 |
| 48203890 | 3/4 | 14 | 140 | 28 | 20 | 16 | 4 | 5156 |
| 48203891 | 1 | 11,5 | 160 | 30 | 25 | 20 | 4 | 5156 |

# A-SFT NPT

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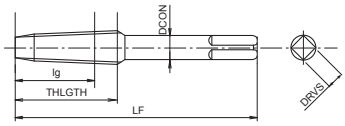
## Threading | Cutting taps | NPT




- First choice in quality and performance
- Powder metal spiral flute cutting tap for blind holes
- Multilayer TiCN coating
- High speed tapping in general steels and aluminium
- NPT tapered 1:16

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | N Al | N AC, ADC | |
|---|---|---|---|---|---|---|
| 5-10 | 5-10 | 5-10 | 5-10 | 5-10 | 10-15 | m/min |

| A | NPT | PM | V | 45° | C/2,5 | | DIN 5156 |
|---|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | LU | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|---|
| 48331500 | 1/16 | 27 | 90 | 12 | 18 | 6 | 4,9 | 3 | 5156 |
| 48331600 | 1/8 | 27 | 90 | 12,05 | 19 | 7 | 5,5 | 3 | 5156 |
| 48331700 | 1/4 | 18 | 100 | 17,45 | 28 | 11 | 9 | 3 | 5156 |
| 48331800 | 3/8 | 18 | 110 | 17,65 | 28 | 12 | 9 | 4 | 5156 |
| 48331900 | 1/2 | 14 | 125 | 22,85 | 35 | 16 | 12 | 4 | 5156 |
| 48331000 | 3/4 | 14 | 140 | 22,95 | 35 | 20 | 16 | 4 | 5156 |
| 48331100 | 1 | 11,5 | 160 | 27,4 | 45 | 25 | 20 | 4 | 5156 |

# NPT

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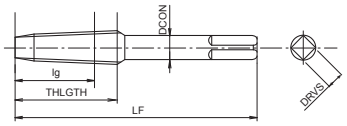
## Threading | Cutting taps | NPT




- HSSE straight flute cutting tap for through & blind holes
- For general steels, aluminium and cast iron
- Tapered 1:16

| P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ○ GG | K ○ GGG | N ○ Al | |
|---|---|---|---|---|---|---|---|
| 3-6 | 3-6 | 2-5 | 2-5 | 2-5 | 4-8 | 5-10 | m/min |

| N ○ AC, ADC |
|---|
| 10-15 |

| NPT | HSSE | C/2,5 | | | DIN 2181 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 60087500 | 1/16 | 27 | 56 | 14 | 6 | 4,9 | 4 | 2181 |
| 60087600 | 1/8 | 27 | 63 | 15 | 7 | 5,5 | 4 | 2181 |
| 60087700 | 1/4 | 18 | 63 | 21 | 11 | 9 | 4 | 2181 |
| 60087800 | 3/8 | 18 | 70 | 21 | 12 | 9 | 4 | 2181 |
| 60087900 | 1/2 | 14 | 80 | 27 | 16 | 12 | 4 | 2181 |
| 60088000 | 3/4 | 14 | 100 | 27 | 20 | 16 | 5 | 2181 |
| 60088100 | 1 | 11,5 | 110 | 32 | 25 | 20 | 5 | 2181 |

# PG

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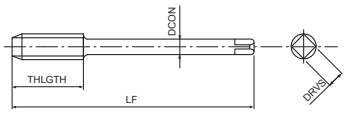
## Threading | Cutting taps | PG




- HSSE straight flute cutting tap for through & blind holes
- Bright finish
- For general steels, aluminium and cast iron
- For PG thread

| P ○ C <0,2% | P ○ 0,25<C<0,4 | P ○ C ≥ 0,45% | K ○ GGG | N ○ Al | N ○ AC, ADC | |
|---|---|---|---|---|---|---|
| 8-13 | 7-12 | 6-9 | 7-12 | 10-20 | 10-15 | m/min |

| Pg | HSSE | C/2,5 | | | DIN 374 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 1089700110 | 7 | 20 | 100 | 22 | 9 | 7 | 4 | 374 |
| 1089700060 | 9 | 18 | 100 | 22 | 12 | 9 | 4 | 374 |
| 1089700020 | 11 | 18 | 110 | 25 | 14 | 11 | 4 | 374 |
| 1089700120 | 13,5 | 18 | 125 | 25 | 16 | 12 | 4 | 374 |
| 1089700220 | 16 | 18 | 125 | 25 | 18 | 14,5 | 4 | 374 |
| 1089700030 | 21 | 16 | 150 | 30 | 22 | 18 | 4 | 374 |
| 1089700130 | 29 | 16 | 170 | 33 | 28 | 22 | 6 | 374 |
| 1089700140 | 36 | 16 | 190 | 36 | 36 | 29 | 6 | 374 |
| 1089700150 | 42 | 16 | 220 | 36 | 40 | 32 | 6 | 374 |
| 1089700160 | 48 | 16 | 250 | 36 | 45 | 35 | 6 | 374 |

# HT

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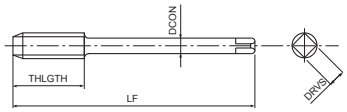
## Threading | Cutting taps | Metric




- HSS straight flute cutting tap for through & blind holes
- Bright finish
- For general steels, aluminium and cast iron
- Progressive thread , set of 3 taps with short shank
- 5, 3,5 & 2 pitch chamfer lead

| P | P | K | N | N | |
|---|---|---|---|---|---|
| 0,25<C<0,4 | C ≥ 0,45% | GGG | AI | AC, ADC | |
| 7-12 | 6-9 | 7-12 | 10-20 | 10-15 | m/min |

| M | HSS | ISO 2 6H | | | DIN 352 |
|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 10212566 | 2 | 0,4 | 36 | 8 | 2,8 | 2,1 | 3 | 352 |
| 10213866 | 3 | 0,5 | 40 | 11 | 3,5 | 2,7 | 3 | 352 |
| 10214066 | 3,5 | 0,6 | 45 | 12 | 4 | 3 | 3 | 352 |
| 10214466 | 4 | 0,7 | 45 | 13 | 4,5 | 3,4 | 3 | 352 |
| 10214966 | 5 | 0,8 | 50 | 16 | 6 | 4,9 | 3 | 352 |
| 10215566 | 6 | 1 | 56 | 19 | 6 | 4,9 | 3 | 352 |
| 10216166 | 8 | 1,25 | 63 | 22 | 6 | 4,9 | 4 | 352 |
| 10216966 | 10 | 1,5 | 70 | 24 | 7 | 5,5 | 4 | 352 |
| 10217966 | 12 | 1,75 | 75 | 28 | 9 | 7 | 4 | 352 |
| 10219166 | 14 | 2 | 80 | 30 | 11 | 9 | 4 | 352 |
| 10220266 | 16 | 2 | 80 | 32 | 12 | 9 | 4 | 352 |
| 10221466 | 18 | 2,5 | 95 | 34 | 14 | 11 | 4 | 352 |
| 10222866 | 20 | 2,5 | 95 | 34 | 16 | 12 | 4 | 352 |

# HT-VA-OX

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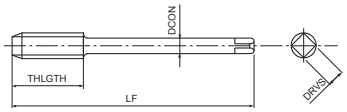
## Threading | Cutting taps | Metric




- HSS straight flute cutting tap for through & blind holes
- Steam oxide treatment
- For general steels, aluminium and cast iron
- Progressive thread , set of 3 taps with short shank
- 5, 3,5 & 2 pitch chamfer lead

| P | P | K | N | N | |
|---|---|---|---|---|---|
| 0,25<C<0,4 | C ≥ 0,45% | GGG | AI | AC, ADC | |
| 7-12 | 6-9 | 7-12 | 10-20 | 10-15 | m/min |

| M | HSS | OX | ISO 2 6H | | | DIN 352 |
|---|---|---|---|---|---|---|

| EDP | TD | TP | LF | THLGTH | DCON | DRVS | NOF | DIN |
|---|---|---|---|---|---|---|---|---|
| 60112596 | 2 | 0,4 | 36 | 8 | 2,8 | 2,1 | 3 | 352 |
| 60113896 | 3 | 0,5 | 40 | 11 | 3,5 | 2,7 | 3 | 352 |
| 60114496 | 4 | 0,7 | 45 | 13 | 4,5 | 3,4 | 3 | 352 |
| 60114996 | 5 | 0,8 | 50 | 24 | 6 | 4,9 | 3 | 352 |
| 60115596 | 6 | 1 | 56 | 27 | 6 | 4,9 | 3 | 352 |
| 60116196 | 8 | 1,25 | 63 | 22 | 6 | 4,9 | 4 | 352 |
| 60116996 | 10 | 1,5 | 70 | 24 | 7 | 5,5 | 4 | 352 |
| 60117996 | 12 | 1,75 | 75 | 28 | 9 | 7 | 4 | 352 |
| 60119196 | 14 | 2 | 80 | 30 | 11 | 9 | 4 | 352 |
| 60120296 | 16 | 2 | 80 | 32 | 12 | 9 | 4 | 352 |
| 60121496 | 18 | 2,5 | 95 | 34 | 14 | 11 | 4 | 352 |
| 60122896 | 20 | 2,5 | 95 | 34 | 16 | 12 | 4 | 352 |

# SYNCHROMASTER

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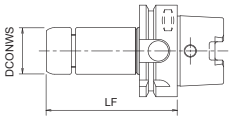
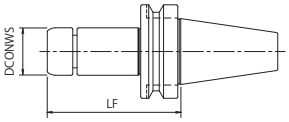
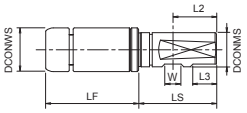
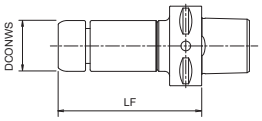
Threading | Holder | SynchroMaster




- Tap holder synchronized
- Improve the tool life
- For tapping sizes from M3 to M24
- HSK & BT type for ER16, ST & Polygon Taper Shank Type for ER16 & ER32 collet

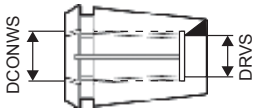
| EDP | Designation | LF | LS | DCONWS | DCONMS | L2 | L3 |
|---|---|---|---|---|---|---|---|
| 79912 | HSK40A-SMH16-85 | 85 | - | 32 | - | - | - |
| 79913 | HSK63A-SMH16-90 | 90 | - | 32 | - | - | - |
| 79910 | BT30-SMH16-90 | 90 | - | 32 | - | - | - |
| 79911 | BT40-SMH16-90 | 90 | - | 32 | - | - | - |
| 79924 | ST20D-SMH16-68 | 68 | 51 | 32 | 20 | 25 | - |
| 79925 | ST25D-SMH16-68 | 68 | 57 | 32 | 25 | 32 | 17 |
| 48329004 | ST20D-SMH32-87 | 87 | 51 | 50 | 20 | 25 | - |
| 48329002 | ST25D-SMH32-87 | 87 | 57 | 50 | 25 | 32 | 17 |
| 79994 | C4-SMH16-90A | 90 | - | 32 | - | - | - |
| 79995 | C5-SMH16-90A | 90 | - | 32 | - | - | - |
| 79996 | C6-SMH16-90A | 90 | - | 32 | - | - | - |
| 79997 | C5-SMH32-120A | 120 | - | 50 | - | - | - |
| 79998 | C6-SMH32-120A | 120 | - | 50 | - | - | - |

Accessories and spare parts

| Applicable | EDP | Designation | Specification |
|---|---|---|---|
| SMH16 | 79923 | FKT-32L | Wrench |
| SMH16 | 79922 | ERP-16T | Cap Nut |
| SMH32 | 79993 | FKT-50L | Wrench |
| SMH32 | 79992 | ERP-32T | Cap Nut |

# SYNCHROMASTER Collet

Threading | Holder | SynchroMaster

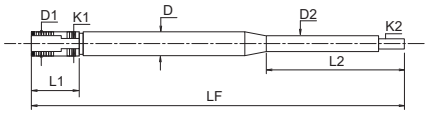



| EDP | Designation | DCONWS | DRVS | DIN 371 | DIN 376 |
|---|---|---|---|---|---|
| 79949 | ER16GH3,52,7 | 3,5 | 2,7 | M3 | M5 |
| 79951 | ER16GH4,53,4 | 4,5 | 3,4 | M4 | M6 |
| 79953 | ER16GH64,9 | 6 | 4,9 | M5 M6 | M8 |
| 79919 | ER16GH75,5 | 7 | 5,5 | M7 | M10 |
| 79955 | ER16GH86,3 | 8 | 6,3 | M8 | M11 |
| 79956 | ER16GH97,1 | 9 | 7,1 | M9 | M12 |
| 79970 | ER32GH-7x5,5 | 7 | 5,5 | M7 | M10 |
| 48329007 | ER32GH-8x6,3 | 8 | 6,3 | M8 | M11 |
| 48329008 | ER32GH-9x7,1 | 9 | 7,1 | M9 | M12 |
| 79973 | ER32GH-10x8 | 10 | 8 | M10 | - |
| 79975 | ER32GH-11x9 | 11 | 9 | - | M14 |
| 79976 | ER32GH-12x9 | 12 | 9 | - | M16 |
| 79978 | ER32GH-14x11,2 | 14 | 11,2 | - | M18 |
| 79980 | ER32GH-16x12 | 16 | 12 | - | M20 |
| 48329014 | ER32GH-18x14,5 | 18 | 14,5 | - | M22 M24 |

# TAP EXTENSION SHANK

**Threading | Tap Extension** **NEW**

INDEX




- Short tap extensions
- Without internal coolant supply
- For machining deeper threads with standard threading tools

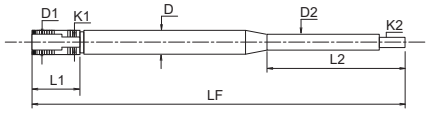
DIN 371 DIN 376

| EDP | Tap size | DIN | D1 | K1 | L1 | D2 | K2 | D | L2 | LF |
|---|---|---|---|---|---|---|---|---|---|---|
| 20137113006 | M4,5-6 | DIN371 | 6 | 4,9 | 25 | 6 | 4,9 | 11 | 40 | 130 |
| 20137113007 | M7 | DIN371 | 7 | 5,5 | 25 | 7 | 5,5 | 12 | 40 | 130 |
| 20137113008 | M8 | DIN371 | 8 | 6,2 | 25 | 8 | 6,2 | 13 | 50 | 130 |
| 20137113010 | M10 | DIN371 | 10 | 8 | 27 | 10 | 8 | 15 | 50 | 130 |
| 20137613012 | M12 | DIN376 | 9 | 7 | 27 | 9 | 7 | 15 | 50 | 130 |
| 20137613014 | M14 | DIN376 | 11 | 9 | 27 | 11 | 9 | 17 | 60 | 130 |
| 20137613016 | M16 | DIN376 | 12 | 9 | 27 | 12 | 9 | 18 | 60 | 130 |
| 20137620018 | M18 | DIN376 | 14 | 11 | 27 | 14 | 11 | 20 | 60 | 200 |
| 20137620020 | M20 | DIN376 | 16 | 12 | 27 | 16 | 12 | 22 | 70 | 200 |
| 20137620024 | M22-24 | DIN376 | 18 | 14,5 | 30 | 18 | 14,5 | 24 | 70 | 200 |
| 20137620027 | M27 | DIN376 | 20 | 16 | 37 | 20 | 16 | 26 | 70 | 200 |
| 20137620030 | M30 | DIN376 | 22 | 18 | 40 | 22 | 18 | 28 | 80 | 200 |
| 20137620033 | M33 | DIN376 | 25 | 20 | 40 | 25 | 20 | 32 | 80 | 200 |

# TAP EXTENSION SHANK

**Threading | Tap Extension** **NEW**

INDEX




- Long tap extensions
- Without internal coolant supply
- For machining deeper threads with standard threading tools

DIN 371 DIN 376

| EDP | Tap size | DIN | D1 | K1 | L1 | D2 | K2 | D | L2 | LF |
|---|---|---|---|---|---|---|---|---|---|---|
| 20137123006 | M4,5-6 | DIN371 | 6 | 4,9 | 25 | 6 | 4,9 | 11 | 40 | 230 |
| 20137123007 | M7 | DIN371 | 7 | 5,5 | 25 | 7 | 5,5 | 12 | 40 | 230 |
| 20137123008 | M8 | DIN371 | 8 | 6,2 | 25 | 8 | 6,2 | 13 | 50 | 230 |
| 20137123010 | M10 | DIN371 | 10 | 8 | 27 | 10 | 8 | 15 | 50 | 230 |
| 20137623012 | M12 | DIN376 | 9 | 7 | 27 | 9 | 7 | 15 | 50 | 230 |
| 20137623014 | M14 | DIN376 | 11 | 9 | 27 | 11 | 9 | 17 | 60 | 230 |
| 20137623016 | M16 | DIN376 | 12 | 9 | 27 | 12 | 9 | 18 | 60 | 230 |
| 20137633018 | M18 | DIN376 | 14 | 11 | 27 | 14 | 11 | 20 | 60 | 330 |
| 20137633020 | M20 | DIN376 | 16 | 12 | 27 | 16 | 12 | 22 | 70 | 330 |
| 20137633024 | M22-24 | DIN376 | 18 | 14,5 | 30 | 18 | 14,5 | 24 | 70 | 330 |
| 20137633027 | M27 | DIN376 | 20 | 16 | 37 | 20 | 16 | 26 | 70 | 330 |
| 20137633030 | M30 | DIN376 | 22 | 18 | 40 | 22 | 18 | 28 | 80 | 330 |
| 20137633033 | M33 | DIN376 | 25 | 20 | 40 | 25 | 20 | 32 | 80 | 330 |

# AT-1

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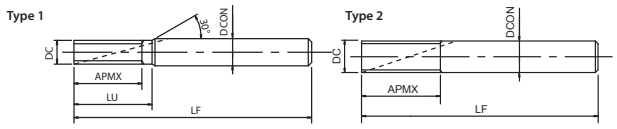
## Threading | Thread milling | Metric & Metric Fine




- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | m/min |

| N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|
| 80-160 | 100-300 | 80-200 | 80-200 |

A | M | MF | MJ | CARBIDE | EgiAs | 9°~13° | h6

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331000 | M6 | 0,75 | 4,5 | 75 | 13,5 | 15 | 6 | 4 | 1 |
| 8331001 | M6 | 1 | 4,5 | 75 | 14 | 16 | 6 | 4 | 1 |
| 8331002 | M8 | 0,5 | 5,7 | 75 | 17 | - | 6 | 4 | 2 |
| 8331003 | M8 | 1 | 5,7 | 75 | 18 | - | 6 | 4 | 2 |
| 8331004 | M8 | 1,25 | 5,7 | 75 | 18,75 | - | 6 | 4 | 2 |
| 8331005 | M10 | 1 | 7,7 | 85 | 22 | - | 8 | 4 | 2 |
| 8331006 | M10 | 1,25 | 7,7 | 85 | 22,5 | - | 8 | 4 | 2 |
| 8331007 | M10 | 1,5 | 7,7 | 85 | 24 | - | 8 | 4 | 2 |
| 8331008 | M12 | 1 | 9,7 | 100 | 26 | - | 10 | 5 | 2 |
| 8331009 | M12 | 1,25 | 9,7 | 100 | 27,5 | - | 10 | 5 | 2 |
| 8331010 | M12 | 1,5 | 9,7 | 100 | 27 | - | 10 | 5 | 2 |
| 8331011 | M12 | 1,75 | 9,7 | 100 | 28 | - | 10 | 5 | 2 |
| 8331016 | M14 | 2 | 9,7 | 100 | 32 | - | 10 | 5 | 2 |
| 8331012 | M14 | 0,5 | 11,7 | 120 | 29 | - | 12 | 5 | 2 |
| 8331013 | M14 | 0,75 | 11,7 | 120 | 30 | - | 12 | 5 | 2 |
| 8331014 | M14 | 1 | 11,7 | 120 | 30 | - | 12 | 5 | 2 |
| 8331015 | M14 | 1,5 | 10,7 | 120 | 31,5 | 34,5 | 12 | 5 | 1 |
| 8331019 | M16 | 2 | 11,7 | 120 | 36 | - | 12 | 5 | 2 |
| 8331017 | M16 | 1 | 13,7 | 135 | 34 | 36 | 16 | 5 | 1 |
| 8331018 | M16 | 1,5 | 13,7 | 135 | 36 | 39 | 16 | 5 | 1 |
| 8331020 | M18 | 2,5 | 11,7 | 120 | 42,5 | - | 12 | 5 | 2 |
| 8331021 | M20 | 1,5 | 15,7 | 135 | 43,5 | - | 16 | 5 | 2 |
| 8331022 | M20 | 2,5 | 13,7 | 135 | 45 | 50 | 16 | 5 | 1 |
| 8331023 | M24 | 1,5 | 19,7 | 150 | 51 | - | 20 | 6 | 2 |
| 8331024 | M24 | 2 | 19,7 | 150 | 52 | - | 20 | 6 | 2 |
| 8331025 | M24 | 3 | 19,7 | 150 | 54 | - | 20 | 6 | 2 |

# AT-2

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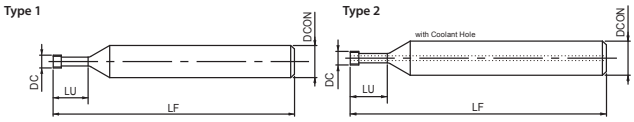
## Threading | Thread milling | Metric




- First choice in quality and performance
- Thread milling without pre-drilled hole
- DUROREY coating
- For hardened steels up to 65 HRC and stainless steels
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | mm/t |

| N Al | N AC, ADC | S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC |
|---|---|---|---|---|---|---|
| 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-65 | 35-55 |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 |

A | M | CARBIDE | DUROREY | h6 | LH

A.272

| EDP | Min cutting bore diameter | Max cutting bore diameter | TP | DC | LF | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331200 | M3 | 4,2 | 0,5 | 2,4 | 50 | 7,2 | 6 | 4 | 1 |
| 8331207 | M3 | 4,2 | 0,7 | 2,4 | 50 | 9,7 | 6 | 4 | 1 |
| 8331201 | M4 | 5,3 | 0,8 | 3,1 | 50 | 12 | 6 | 4 | 1 |
| 8331208 | M4 | 5,3 | 1 | 3,1 | 50 | 14,5 | 6 | 4 | 1 |
| 8331202 | M5 | 7 | 1,25 | 4 | 70 | 19,1 | 10 | 4 | 1 |
| 8331209 | M5 | 7 | 1,5 | 4 | 70 | 23,7 | 10 | 4 | 1 |
| 8331203 | M6 | 8 | 1,75 | 4,6 | 80 | 28,3 | 10 | 4 | 1 |
| 8331210 | M6 | 8 | 0,5 | 4,6 | 50 | 8,7 | 6 | 4 | 1 |
| 8331204 | M8 | 10,9 | 0,7 | 6,2 | 50 | 11,7 | 6 | 4 | 1 |
| 8331211 | M8 | 10,9 | 0,8 | 6,2 | 50 | 14,5 | 6 | 4 | 1 |
| 8331205 | M10 | 13,2 | 1 | 7,5 | 50 | 17,5 | 6 | 4 | 2 |
| 8331212 | M10 | 13,2 | 1,25 | 7,5 | 70 | 23,1 | 10 | 4 | 2 |
| 8331206 | M12 | 15,9 | 1,5 | 9 | 70 | 28,7 | 10 | 4 | 2 |
| 8331213 | M12 | 15,9 | 1,75 | 9 | 80 | 34,3 | 10 | 4 | 2 |
| 8331240 | M16 | 21,1 | 2 | 11,7 | 100 | 37 | 12 | 4 | 2 |
| 8331243 | M16 | 21,1 | 2,5 | 11,7 | 135 | 42,2 | 16 | 4 | 2 |
| 8331241 | M18 | 25,1 | 2,5 | 14 | 135 | 46,2 | 16 | 4 | 2 |
| 8331244 | M18 | 25,1 | 2 | 14 | 100 | 45 | 12 | 4 | 2 |
| 8331242 | M20 | 28,5 | 2,5 | 15,7 | 135 | 51,2 | 16 | 4 | 2 |
| 8331245 | M20 | 28,5 | 2,5 | 15,7 | 135 | 56,2 | 16 | 4 | 2 |

# AT-2 R-SPEC

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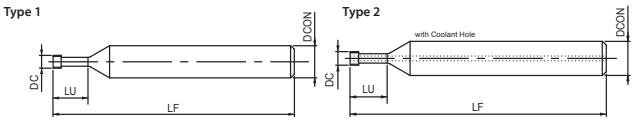
## Threading | Thread milling | Metric




- First choice in quality and performance
- Thread milling without pre-drilled hole
- DLC-IGUSS coating
- For non-ferrous materials
- "ThreadPro" NC code generator software available

| N Al | N AC, ADC | N Cu | |
|---|---|---|---|
| 100-300 | 100-300 | 100-300 | m/min |

| A | M | CARBIDE | DLC-IGUSS | h6 | | LH |
|---|---|---|---|---|---|---|

A.275

| EDP | Min cutting bore diameter | TP | DC | LF | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|
| 8331220 | M3 | 0,5 | 2,4 | 50 | 7,75 | 6 | 2 | 1 |
| 8331227 | M3 | 0,5 | 2,4 | 50 | 9,25 | 6 | 2 | 1 |
| 8331221 | M4 | 0,7 | 3,1 | 50 | 10,45 | 6 | 2 | 1 |
| 8331228 | M4 | 0,7 | 3,1 | 50 | 12,45 | 6 | 2 | 1 |
| 8331222 | M5 | 0,8 | 4 | 50 | 12,8 | 6 | 2 | 1 |
| 8331229 | M5 | 0,8 | 4 | 50 | 15,3 | 6 | 2 | 1 |
| 8331223 | M6 | 1 | 4,6 | 50 | 15,5 | 6 | 2 | 2 |
| 8331230 | M6 | 1 | 4,6 | 50 | 18,5 | 6 | 2 | 2 |
| 8331224 | M8 | 1,25 | 6,2 | 70 | 20,38 | 8 | 2 | 2 |
| 8331231 | M8 | 1,25 | 6,2 | 70 | 24,38 | 8 | 2 | 2 |
| 8331225 | M10 | 1,5 | 7,5 | 80 | 25,25 | 10 | 2 | 2 |
| 8331232 | M10 | 1,5 | 7,5 | 80 | 30,25 | 10 | 2 | 2 |
| 8331226 | M12 | 1,75 | 9 | 80 | 30,13 | 10 | 2 | 2 |
| 8331233 | M12 | 1,75 | 9 | 80 | 36,13 | 10 | 2 | 2 |

# WH-EM-PNC

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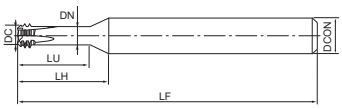
## Threading | Thread milling | Metric | Metric Fine




- Thread milling without pre-drilled hole
- WXS coating
- For hardened steels up to 62 HRC and stainless steels

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-100 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,1 | 0,01~0,05 | mm/t |

| S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC |
|---|---|---|---|---|
| 35-55 | 35-55 | 35-75 | 35-55 | 35-55 |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 |

| M | MF | CARBIDE | WXS | h6 | LH |
|---|---|---|---|---|---|

A.272

| EDP | Min cutting bore diameter | TP | DC | LF | LU | LH | DN | DCON | NOF |
|---|---|---|---|---|---|---|---|---|---|
| 48347003 | M3 | 0,5 | 2,4 | 50 | 7,5 | 12,3 | 1,70 | 6 | 4 |
| 48347004 | M4 | 0,7 | 3,1 | 50 | 9,9 | 14,2 | 2,18 | 6 | 4 |
| 48347005 | M5 | 0,8 | 4 | 50 | 12 | 15,5 | 2,97 | 6 | 4 |
| 48347006 | M6 | 1 | 4,6 | 50 | 14,5 | 17,5 | 3,36 | 6 | 4 |
| 48347008 | M8 | 1,25 | 6,2 | 70 | 19,2 | 24,1 | 4,66 | 10 | 4 |
| 48347010 | M10 | 1,5 | 7,5 | 70 | 23,7 | 27,7 | 5,78 | 10 | 4 |
| 48347012 | M12 | 1,75 | 9 | 80 | 28,4 | 31,4 | 6,92 | 10 | 4 |

# WHO-EM-PNC

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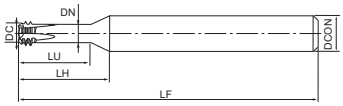
## Threading | Thread milling | Metric




- Thread milling without pre-drilled hole
- WXS coating
- For hardened steels up to 62 HRC and stainless steels
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,1 | 0,01~0,05 | mm/t |
| S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC | | | |
| 35-55 | 35-55 | 35-75 | 35-65 | 35-55 | | | |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | | | |

M | CARBIDE | WXS | h6 | | LH

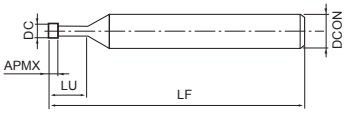
A.272

| EDP | Min cutting bore diameter | TP | DC | LF | LU | LH | DN | DCON | NOF |
|---|---|---|---|---|---|---|---|---|---|
| 48348003 | M3 | 0,5 | 2,4 | 50 | 7,5 | 12,3 | 1,7 | 6 | 4 |
| 48348004 | M4 | 0,7 | 3,1 | 50 | 9,9 | 14,2 | 2,18 | 6 | 4 |
| 48348005 | M5 | 0,8 | 4 | 50 | 12 | 15,5 | 2,97 | 6 | 4 |
| 48348006 | M6 | 1 | 4,6 | 50 | 14,5 | 17,5 | 3,36 | 6 | 4 |
| 48348008 | M8 | 1,25 | 6,2 | 70 | 19,2 | 24,1 | 4,66 | 10 | 4 |
| 48348009 | M10 | 1 | 7,5 | 70 | 23,7 | 27,7 | 5,78 | 10 | 4 |
| 48348010 | M10 | 1,5 | 7,5 | 70 | 23,7 | 27,7 | 5,78 | 10 | 4 |
| 48348012 | M12 | 1,75 | 9 | 80 | 28,4 | 31,4 | 6,92 | 10 | 4 |
| 48348014 | M14 | 2 | 9 | 90 | 33 | 37,9 | 6,62 | 12 | 4 |
| 48348016 | M16 | 2 | 11,7 | 90 | 37 | 39,5 | 9,36 | 12 | 4 |

# WX-ST-PNC-3P

INDEX

## Threading | Thread milling | Metric & Metric Fine




- Carbide thread milling cutter with 3 crest thread length
- WXS coating
- For all materials and hardened steels up to 50 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | m/min |
| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | | |
| 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 | | |

M | MF | MJ | CARBIDE | SC | WXS | 11°

h6

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|
| 48216000 | M1,8 | 0,35 | 1,3 | 40 | 1,05 | 5,4 | 3 | 3 |
| 48216001 | M2 | 0,4 | 1,5 | 40 | 1,2 | 6 | 3 | 3 |
| 48216002 | M2,5 | 0,45 | 1,9 | 40 | 1,35 | 7,5 | 6 | 3 |
| 48216003 | M3 | 0,5 | 2,4 | 60 | 1,5 | 9,5 | 6 | 3 |
| 48216004 | M4 | 0,7 | 3,1 | 60 | 2,1 | 12,7 | 6 | 3 |
| 48216005 | M5 | 0,8 | 4 | 60 | 2,4 | 15,8 | 6 | 3 |
| 48216006 | M6 | 1 | 4,5 | 60 | 3 | 20 | 6 | 4 |
| 48216007 | M8 | 1,25 | 6 | 60 | 3,75 | 24 | 6 | 4 |
| 48216008 | M10 | 1,5 | 7,5 | 80 | 4,5 | 33 | 8 | 4 |
| 48216011 | M12 | 1,5 | 9,5 | 100 | 4,5 | 50 | 12 | 5 |
| 48216009 | M16 | 1,5 | 12 | 100 | 4,5 | 50 | 16 | 5 |
| 48216012 | M16 | 2 | 12 | 100 | 6 | 50 | 12 | 5 |
| 48216010 | M20 | 1,75 | 16 | 80 | 5,25 | 38 | 10 | 5 |
| 48216013 | M20 | 2 | 16 | 100 | 6 | 50 | 16 | 5 |
| 48216014 | M20 | 2,5 | 16 | 100 | 7,5 | 50 | 16 | 5 |

# WH-VM-PNC

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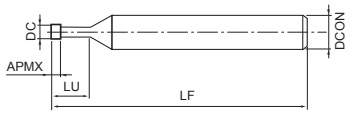
## Threading | Thread milling | Metric & Metric Fine




- Carbide thread milling cutter for small sizes
- WXS coating1,5 ≤ D, SC coating Dc ≤ 1,3
- For all materials and hardened steels up to 50 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | m/min |

| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|---|---|
| 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 |

M | MF | MJ | CARBIDE | SC | WXS | 11° | h6

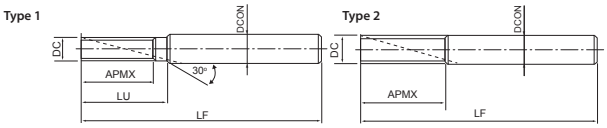
A.271

| EDP | Min cutting bore diameter | Thread per flute | TP | DC | LF | APMX | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|---|
| 3900495 | M1 | 1 | 0,25 | 0,72 | 40 | 0,25 | 2,75 | 3 | 3 |
| 3900496 | M1,2 | 1 | 0,25 | 0,92 | 40 | 0,25 | 3,25 | 3 | 3 |
| 3900497 | M1,4 | 1 | 0,3 | 1,05 | 40 | 0,3 | 3,8 | 3 | 3 |
| 3900498 | M1,6 | 1 | 0,35 | 1,2 | 40 | 0,35 | 4,35 | 3 | 3 |
| 3900499 | M1,7M1,8 | 1 | 0,35 | 1,3 | 40 | 0,35 | 4,85 | 3 | 3 |
| 3900500 | M2 | 3 | 0,4 | 1,5 | 40 | 1,2 | 4,4 | 6 | 3 |
| 3900501 | M2,5M2,6 | 3 | 0,45 | 1,9 | 40 | 1,4 | 5,6 | 6 | 3 |
| 3900502 | M3 | 3 | 0,5 | 2,4 | 40 | 1,5 | 6,5 | 6 | 3 |
| 3900503 | M4 | 3 | 0,7 | 3,1 | 40 | 2,1 | 8,7 | 6 | 3 |
| 3900504 | M5 | 3 | 0,8 | 4 | 40 | 2,4 | 10,8 | 6 | 3 |

# WX-PNC

INDEX

## Threading | Thread milling | Metric & Metric Fine




- Carbide thread milling cutter
- WX coating
- For all materials
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | m/min |

| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|---|---|
| 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 |

M | MF | MJ | CARBIDE | WX | 30° | h6

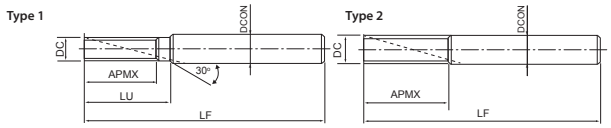
A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 3900001 | M6 | 1 | 4,5 | 60 | 13 | 15 | 6 | 3 | 1 |
| 3900011 | M8 | 1 | 6 | 65 | 17 | - | 6 | 3 | 2 |
| 3900012 | M8 | 1,25 | 6 | 65 | 17,5 | - | 6 | 3 | 2 |
| 3900021 | M10 | 1 | 7,5 | 70 | 21 | 26 | 8 | 3 | 1 |
| 1004470640 | M10 | 1,25 | 7,5 | 70 | 21,3 | 26 | 8 | 3 | 1 |
| 3900023 | M10 | 1,5 | 7,5 | 70 | 22,5 | 26 | 8 | 3 | 1 |
| 3900032 | M12 | 1,25 | 9,5 | 85 | 26,3 | 28 | 10 | 4 | 1 |
| 3900033 | M12 | 1,5 | 9,5 | 85 | 25,5 | 28 | 10 | 4 | 1 |
| 3900034 | M12 | 1,75 | 9,5 | 85 | 26,3 | 28 | 10 | 4 | 1 |
| 3900042 | M14 | 1 | 10 | 85 | 29 | - | 10 | 4 | 2 |
| 3900043 | M14 | 1,5 | 10 | 85 | 30 | - | 10 | 4 | 2 |
| 3900044 | M14 | 2 | 10 | 85 | 30 | - | 10 | 4 | 2 |
| 3900052 | M16 | 1 | 12 | 95 | 33 | - | 12 | 4 | 2 |
| 3900053 | M16 | 1,5 | 12 | 95 | 34,5 | - | 12 | 4 | 2 |
| 3900054 | M16 | 2 | 12 | 95 | 34 | - | 12 | 4 | 2 |
| 3900073 | M20 | 1,5 | 16 | 105 | 42 | - | 16 | 4 | 2 |
| 3900075 | M20 | 2,5 | 16 | 105 | 42,5 | - | 16 | 4 | 2 |
| 3900083 | M27 | 1,5 | 20 | 120 | 49,5 | - | 20 | 5 | 2 |
| 3900084 | M27 | 2 | 20 | 120 | 50 | - | 20 | 5 | 2 |
| 3900086 | M27 | 3 | 20 | 120 | 51 | - | 20 | 5 | 2 |

# WXO-ST-PNC

INDEX

## Threading | Thread milling | Metric & Metric Fine




- Carbide thread milling cutter with Centre through coolant
- WX coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available



| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 80-120 | 80-120 | 80-120 | 80-120 | 40-80 | 50-100 | 50-65 | m/min |

| N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|
| 50-70 | 65-130 | 60-100 | 60-100 |

M | MF | MJ | CARBIDE | WX | 11° | h6

A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8304700 | M6 | 0,75 | 4,5 | 60 | 12,8 | 15 | 6 | 4 | 1 |
| 8304701 | M6 | 1 | 4,5 | 60 | 13 | 15 | 6 | 4 | 1 |
| 8304710 | M8 | 0,5 | 6 | 65 | 16,5 | - | 6 | 4 | 2 |
| 8304711 | M8 | 1 | 6 | 65 | 17 | - | 6 | 4 | 2 |
| 8304712 | M8 | 1,25 | 6 | 65 | 17,5 | - | 6 | 4 | 2 |
| 8304721 | M10 | 1 | 7,5 | 70 | 21 | 26 | 8 | 4 | 1 |
| 8304723 | M10 | 1,5 | 7,5 | 70 | 22,5 | 26 | 8 | 4 | 1 |
| 8304732 | M12 | 1,25 | 9,5 | 85 | 26,3 | 28 | 10 | 5 | 1 |
| 8304733 | M12 | 1,5 | 9,5 | 85 | 25,5 | 28 | 10 | 5 | 1 |
| 8304734 | M12 | 1,75 | 9,5 | 85 | 26,3 | 28 | 10 | 5 | 1 |
| 8304740 | M14 | 0,5 | 10 | 85 | 28,5 | - | 10 | 5 | 2 |
| 8304741 | M14 | 0,75 | 10 | 85 | 29,3 | - | 10 | 5 | 2 |
| 8304742 | M14 | 1 | 10 | 85 | 29 | - | 10 | 5 | 2 |
| 8304743 | M14 | 1,5 | 10 | 85 | 30 | - | 10 | 5 | 2 |
| 8304744 | M14 | 2 | 10 | 85 | 30 | - | 10 | 5 | 2 |
| 8304752 | M16 | 1 | 12 | 95 | 33 | - | 12 | 5 | 2 |
| 8304753 | M16 | 1,5 | 12 | 95 | 34,5 | - | 12 | 5 | 2 |
| 8304754 | M16 | 2 | 12 | 95 | 34 | - | 12 | 5 | 2 |
| 8304773 | M20 | 1,5 | 16 | 105 | 42 | - | 16 | 5 | 2 |
| 8304775 | M20 | 2,5 | 16 | 105 | 42,5 | - | 16 | 5 | 2 |
| 8304783 | M27 | 1,5 | 20 | 120 | 49,5 | - | 20 | 6 | 2 |
| 8304784 | M27 | 2 | 20 | 120 | 50 | - | 20 | 6 | 2 |
| 8304786 | M27 | 3 | 20 | 120 | 51 | - | 20 | 6 | 2 |

# AT-1

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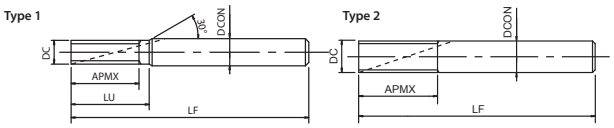
## Threading | Thread milling | UNC UNJC UNF UNJF




- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | m/min |

| N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|
| 80-160 | 100-300 | 80-200 | 80-200 |

A | UNC | UNJC | UNF | UNJF | CARBIDE | EgiAs

9°~13° | h6

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331026 | UN1/4 | 20 | 4,55 | 75 | 15,24 | 17,78 | 6 | 4 | 1 |
| 8331027 | UN1/4 | 28 | 4,55 | 75 | 15,42 | 17,23 | 6 | 4 | 1 |
| 8331028 | UN5/16 | 18 | 5,7 | 75 | 19,75 | - | 6 | 4 | 2 |
| 8331029 | UN5/16 | 24 | 5,7 | 75 | 19,04 | - | 6 | 4 | 2 |
| 8331030 | UN5/16 | 32 | 5,7 | 75 | 17,47 | - | 6 | 4 | 2 |
| 8331031 | UN3/8 | 16 | 6,7 | 85 | 22,23 | 25,41 | 8 | 4 | 1 |
| 8331032 | UN3/8 | 24 | 6,7 | 85 | 22,22 | 24,33 | 8 | 4 | 1 |
| 8331033 | UN3/8 | 32 | 6,7 | 85 | 20,64 | 22,23 | 8 | 4 | 1 |
| 8331034 | UN7/16 | 14 | 7,7 | 85 | 27,21 | - | 8 | 4 | 2 |
| 8331035 | UN7/16 | 20 | 7,7 | 85 | 25,4 | - | 8 | 4 | 2 |
| 8331036 | UN1/2 | 13 | 8,7 | 100 | 29,31 | 33,22 | 10 | 5 | 1 |
| 8331037 | UN1/2 | 20 | 8,7 | 100 | 27,94 | 30,48 | 10 | 5 | 1 |
| 8331038 | UN1/2 | 28 | 8,7 | 100 | 28,12 | 29,93 | 10 | 5 | 1 |
| 8331039 | UN9/16 | 12 | 9,7 | 100 | 33,87 | - | 10 | 5 | 2 |
| 8331040 | UN9/16 | 18 | 9,7 | 100 | 32,45 | - | 10 | 5 | 2 |
| 8331044 | UN3/4 | 10 | 11,7 | 120 | 43,18 | - | 12 | 5 | 2 |
| 8331045 | UN3/4 | 16 | 11,7 | 120 | 41,29 | - | 12 | 5 | 2 |
| 8331041 | UN5/8 | 11 | 10,7 | 120 | 36,94 | 41,6 | 12 | 5 | 1 |
| 8331042 | UN5/8 | 18 | 10,7 | 120 | 35,28 | 38,1 | 12 | 5 | 1 |
| 8331043 | UN5/8 | 24 | 10,7 | 120 | 34,91 | 37,03 | 12 | 5 | 1 |
| 8331046 | UN7/8 | 9 | 13,7 | 135 | 50,8 | 56,44 | 16 | 5 | 1 |
| 8331047 | UN7/8 | 14 | 13,7 | 135 | 48,98 | 52,61 | 16 | 5 | 1 |
| 8331048 | UN1 | 8 | 18,7 | 150 | 57,15 | 63,5 | 20 | 6 | 1 |
| 8331049 | UN1 | 20 | 18,7 | 150 | 53,34 | 55,88 | 20 | 6 | 1 |

# AT-2

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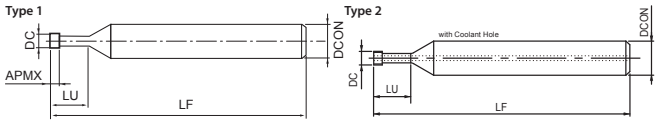
## Threading | Thread milling | UNC UNF




- First choice in quality and performance
- Thread milling without pre-drilled hole
- DUROREY coating
- For hardened steels up to 65 HRC and stainless steels
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | mm/t |
| N Al | N AC, ADC | S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC | |
| 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-65 | 35-55 | |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | |

| A | UNC | UNJC | UNF | UNJF | CARBIDE | DUROREY |
|---|---|---|---|---|---|---|
| h6 | | LH | | | | |

A.272

| EDP | Min cutting bore diameter | Max cutting bore diameter | TP | DC | LF | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331246 | No 8 | 5,2 | 32 | 3,1 | 50 | 10,3 | 6 | 4 | 1 |
| 8331254 | No 8 | 5,2 | 32 | 3,1 | 50 | 12,4 | 6 | 4 | 1 |
| 8331248 | UN1/4 | 7,6 | 20 | 4,55 | 70 | 15,8 | 6 | 4 | 1 |
| 8331256 | UN1/4 | 7,6 | 20 | 4,55 | 70 | 19 | 6 | 4 | 1 |
| 8331249 | UN1/4 | 8 | 28 | 4,55 | 70 | 14,9 | 6 | 4 | 1 |
| 8331257 | UN1/4 | 8 | 28 | 4,55 | 70 | 18,1 | 6 | 4 | 1 |
| 8331247 | No 10 | 6,1 | 24 | 3,7 | 70 | 12,2 | 6 | 4 | 1 |
| 8331255 | No 10 | 6,1 | 24 | 3,7 | 70 | 14,7 | 6 | 4 | 1 |
| 8331253 | UN1/2 | 16,2 | 13 | 9,2 | 80 | 30,2 | 10 | 4 | 2 |
| 8331261 | UN1/2 | 16,2 | 13 | 9,2 | 80 | 36,6 | 10 | 4 | 2 |
| 8331251 | UN3/8 | 11,6 | 16 | 6,7 | 80 | 23 | 10 | 4 | 1 |
| 8331259 | UN3/8 | 11,6 | 16 | 6,7 | 80 | 27,7 | 10 | 4 | 1 |
| 8331250 | UN5/16 | 9,7 | 18 | 5,7 | 80 | 19,4 | 10 | 4 | 1 |
| 8331258 | UN5/16 | 9,7 | 18 | 5,7 | 80 | 23,3 | 10 | 4 | 1 |
| 8331252 | UN7/16 | 13,3 | 14 | 7,7 | 80 | 26,7 | 10 | 4 | 2 |
| 8331260 | UN7/16 | 13,3 | 14 | 7,7 | 80 | 32,3 | 10 | 4 | 2 |

# WH-VM-PNC

INDEX

## Threading | Thread milling | UNC UNJC UNF UNJF

- Carbide thread milling cutter for small sizes
- WXS coating
- For all materials and hardened steels up to 50 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | m/min |
| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC | | |
| 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 | | |

| UNC | UNJC | UNF | UNJF | CARBIDE | WXS | 11° |
|---|---|---|---|---|---|---|
| h6 | | | | | | |

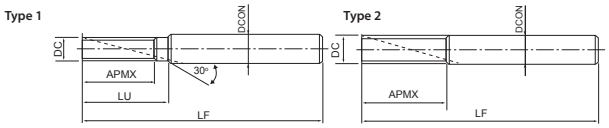
A.272

| EDP | Min cutting bore diameter | Thread per flute | TP | DC | LF | APMX | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|---|
| 3900513 | N8 | 3 | 32 | 3,2 | 40 | 2,4 | 9,1 | 6 | 3 |

# WX-PNC

INDEX

## Threading | Thread milling | UNC UNJC UNF UNJF




- Carbide thread milling cutter
- WX coating
- For all materials
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | m/min |

| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|---|---|
| 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 |

UNC | UNJC | UNF | UNJF | CARBIDE | WX | 30° | h6

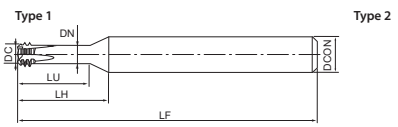
A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 3900350 | UN1/4 | 20 | 4,55 | 60 | 10,2 | 11,4 | 6 | 3 | 1 |
| 3900351 | UN1/4 | 28 | 4,55 | 60 | 10 | 10,9 | 6 | 3 | 1 |
| 3900360 | UN3/8 | 16 | 7,6 | 65 | 14,3 | - | 8 | 3 | 2 |
| 3900355 | UN5/16 | 18 | 6,2 | 65 | 12,7 | 14,1 | 8 | 3 | 1 |
| 3900356 | UN5/16 | 24 | 6,2 | 65 | 12,7 | 14,1 | 8 | 3 | 1 |
| 3900361 | UN3/8 | 24 | 7,6 | 65 | 14,8 | - | 8 | 3 | 2 |
| 3900370 | UN1/2 | 13 | 9,4 | 75 | 19,5 | 21,5 | 10 | 4 | 1 |
| 3900365 | UN7/16 | 14 | 8,8 | 75 | 18,1 | 19,9 | 10 | 3 | 1 |
| 3900366 | UN7/16 | 20 | 8,8 | 75 | 17,8 | 19,1 | 10 | 3 | 1 |
| 3900371 | UN1/2 | 20 | 9,4 | 75 | 19,1 | 20,4 | 10 | 4 | 1 |
| 3900375 | UN9/16 | 12 | 10,9 | 85 | 23,3 | 25,4 | 12 | 4 | 1 |
| 3900380 | UN9/16 | 18 | 11,4 | 85 | 22,6 | 24 | 12 | 4 | 1 |
| 3900390 | UN7/8 | 12 | 18,9 | 110 | 33,9 | 36 | 20 | 4 | 1 |

# WHO-EM-PNC

INDEX

## Threading | Thread milling | G (BSP)




- Thread milling without pre-drilled hole
- WXS coating
- For hardened steels up to 62 HRC and stainless steels
- Centre through coolant

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,1 | 0,01~0,05 | mm/t |

| S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC | |
|---|---|---|---|---|---|
| 35-55 | 35-55 | 35-75 | 35-65 | 35-55 | |
| 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | |

M | CARBIDE | WXS | h6 | | LH

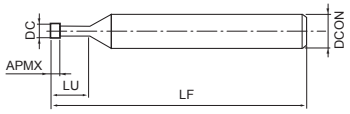
A.272

| EDP | Min cutting bore diameter | TP | DC | LF | LU | LH | DN | DCON | NOF |
|---|---|---|---|---|---|---|---|---|---|
| 48348104 | G1/16 | 28 | 5,8 | 57 | 18 | 19,2 | 4,40 | 6 | 4 |
| 48348100 | G1/8 | 28 | 7,3 | 72 | 22 | 24,4 | 5,90 | 10 | 4 |
| 48348101 | G1/4 | 19 | 9,8 | 72 | 30 | 31,5 | 7,70 | 10 | 4 |
| 48348105 | G3/8 | 19 | 11,8 | 83 | 37 | 38,5 | 9,80 | 12 | 4 |
| 48348102 | G1/2 | 14 | 15,7 | 100 | 47 | 48,8 | 12,90 | 16 | 4 |

# WX-ST-PNC-3P

INDEX

## Threading | Thread milling | G (BSP)




- Carbide thread milling cutter with 3 crest thread length
- WXS coating
- For all materials and hardened steels up to 50 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 60-90 | 60-90 | 60-90 | 30-60 | 60-90 | 50-100 | 50-70 | m/min |

| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|---|---|
| 50-100 | 50-100 | 20-60 | 20-60 | 30-60 | 30-60 |

| G | CARBIDE | WXS | 11° | h6 |
|---|---|---|---|---|

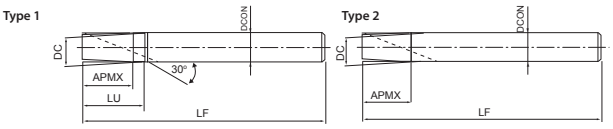
A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|
| 48216100 | G1/8G1/16 | 28 | 5,9 | 64 | 2,72 | 19,5 | 8 | 4 |
| 48216101 | G1/4G3/8 | 19 | 10 | 80 | 4 | 30 | 10 | 5 |
| 48216102 | G1/2G7/8 | 14 | 12 | 100 | 5,44 | 37 | 12 | 5 |
| 48216103 | G1G2 | 11 | 16 | 100 | 6,93 | 48 | 16 | 5 |

# WX-PNC

INDEX

## Threading | Thread milling | G (BSP)




- Carbide thread milling cutter
- WX coating
- For all materials
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | m/min |

| N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|---|---|
| 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 |

| G | CARBIDE | WX | 30° | h6 |
|---|---|---|---|---|

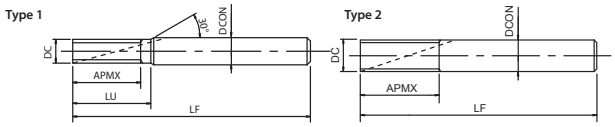
A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 3900299 | G1/16G1/8 | 28 | 5,9 | 60 | 11,8 | - | 6 | 3 | 2 |
| 3900301 | G1/8 | 28 | 7,5 | 65 | 14,5 | 15,4 | 8 | 3 | 1 |
| 3900311 | G1/4 G3/8 | 19 | 10 | 75 | 20,1 | - | 10 | 4 | 2 |
| 3900312 | G3/8 | 19 | 11 | 85 | 25,4 | 26,7 | 12 | 4 | 1 |

# AT-1

INDEX

## Threading | Thread milling | Rc (PT), R (PT)




- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | m/min |

| N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|
| 80-160 | 100-300 | 80-200 | 80-200 |

| A | Rc (PT) | R (PT) | CARBIDE | EgiAs | 9°~13° | h6 |
|---|---|---|---|---|---|---|

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331075 | 1/16 | 28 | 5,67 | 60 | 9,1 | - | 6 | 4 | 2 |
| 8331076 | 1/8 | 28 | 7,67 | 60 | 9,1 | - | 8 | 4 | 2 |
| 8331077 | 1/4-3/8 | 19 | 9,67 | 75 | 14,7 | - | 10 | 5 | 2 |
| 8331078 | 3/8 | 19 | 11,67 | 85 | 14,7 | - | 12 | 5 | 2 |
| 8331079 | 1/2-3/4 | 14 | 11,67 | 85 | 20 | - | 12 | 5 | 2 |
| 8331080 | 3/4 | 14 | 15,67 | 95 | 20 | - | 16 | 5 | 2 |
| 8331081 | 1-2 | 11 | 19,67 | 105 | 27,7 | - | 20 | 6 | 2 |

# AT-2

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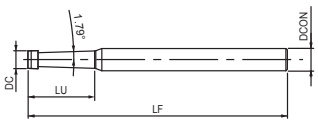
## Threading | Thread milling | RC




- First choice in quality and performance
- Thread milling without pre-drilled hole
- DUROREY coating
- For hardened steels up to 65 HRC and stainless steels
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 35-55 | 80-160 | 80-160 | 60-120 | 35-100 | 35-100 | 35-100 | m/min |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | mm/t |

| N Al | N AC, ADC | S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC |
|---|---|---|---|---|---|---|
| 35-100 | 35-100 | 35-55 | 35-55 | 35-75 | 35-65 | 35-55 |
| 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 | 0,01~0,07 |

| A | Rc (PT) | CARBIDE | DUROREY | h6 | LH |
|---|---|---|---|---|---|

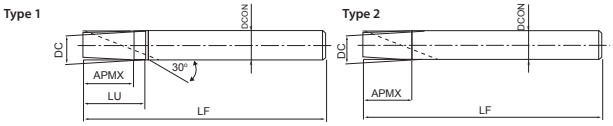
A.272

| EDP | Min cutting bore diameter | Min cutting bore diameter inch | TP | DC | LF | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|
| 8331214 | 1/16 | 1/8 | 28 | 4,86 | 70 | 18 | 6 | 4 |
| 8331215 | 1/8 | - | 28 | 5,76 | 70 | 19 | 6 | 4 |
| 8331216 | 1/4 | 3/8 | 19 | 7,98 | 80 | 28 | 10 | 4 |
| 8331217 | 3/8 | - | 19 | 9,68 | 80 | 28 | 10 | 4 |
| 8331218 | 1/2 | 3/4 | 14 | 11,61 | 110 | 35 | 12 | 4 |
| 8331219 | 1 | - | 11 | 15,54 | 135 | 45 | 16 | 4 |

# WX-PNC

INDEX

## Threading | Thread milling | Rc R




- Carbide thread milling cutter
- WX coating
- For all materials
- "ThreadPro" NC code generator software available

| P | P | P | P | M | K | K | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | |
| 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | m/min |

| N | N | S | S | H | H | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Al | AC, ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | | | | | | |
| 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 | | | | | | |

| Rc (PT) | R (PT) | CARBIDE | WX | 30° | h6 |
|---|---|---|---|---|---|

A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 3900201 | 1/8 | 28 | 7,5 | 60 | 9,1 | 12,7 | 8 | 3 | 1 |
| 3900211 | 1/4-3/8 | 19 | 10 | 75 | 14,7 | - | 10 | 4 | 2 |
| 3900214 | 1/2-3/4 | 14 | 12 | 85 | 20 | - | 12 | 4 | 2 |
| 3900218 | 1-2 | 11 | 20 | 95 | 27,7 | - | 20 | 5 | 2 |

# AT-1

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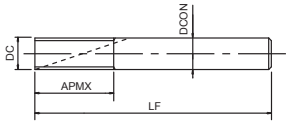
## Threading | Thread milling | Rp




- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available

| P | P | P | P | M | K | K | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | |
| 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | m/min |

| N | N | H | H | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Al | AC, ADC | 25-35 HRC | 35-45 HRC | | | | | | | | |
| 80-160 | 100-300 | 80-200 | 80-200 | | | | | | | | |

| A | Rp (PS) | G (PF) | CARBIDE | EgiAs | 9°~13° | h6 |
|---|---|---|---|---|---|---|

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | DCON | NOF |
|---|---|---|---|---|---|---|---|
| 8331082 | 1/16-1/8 | 28 | 5,67 | 60 | 11,8 | 6 | 4 |
| 8331083 | 1/8 | 28 | 7,67 | 65 | 14,5 | 8 | 4 |
| 8331084 | 1/4-3/8 | 19 | 9,67 | 80 | 20,1 | 10 | 5 |
| 8331085 | 3/8 | 19 | 11,67 | 100 | 25,4 | 12 | 5 |
| 8331086 | 1/2-7/8 | 14 | 11,67 | 100 | 32,7 | 12 | 5 |
| 8331087 | 3/4-7/8 | 14 | 15,67 | 115 | 39,9 | 16 | 5 |
| 8331088 | 1-2 | 11 | 19,67 | 130 | 50,8 | 20 | 6 |

# AT-1

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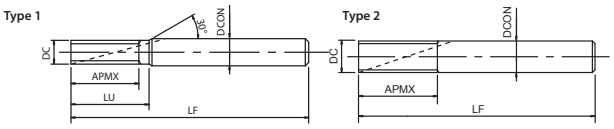
## Threading | Thread milling | NPT




- First choice in quality and performance
- One pass thread mill
- EgiAs coating
- For all materials and hardened steels up to 45 HRC
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | |
|---|---|---|---|---|---|---|---|
| 80-160 | 80-160 | 80-160 | 60-120 | 60-120 | 80-160 | 60-120 | m/min |

| N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC |
|---|---|---|---|
| 80-160 | 100-300 | 80-200 | 80-200 |

| A | NPT | CARBIDE | EgiAs | 9°~13° | h6 |
|---|---|---|---|---|---|

A.271

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | LU | DCON | NOF | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8331089 | 1/16-1/8 | 27 | 5,67 | 60 | 10,35 | - | 6 | 4 | 2 |
| 8331090 | 1/8 | 27 | 7,67 | 60 | 10,35 | - | 8 | 4 | 2 |
| 8331091 | 1/4-3/8 | 18 | 9,67 | 75 | 15,52 | - | 10 | 5 | 2 |
| 8331092 | 3/8 | 18 | 11,67 | 85 | 15,52 | - | 12 | 5 | 2 |
| 8331093 | 1/2-3/4 | 14 | 15,67 | 95 | 19,96 | - | 16 | 5 | 2 |
| 8331094 | 1-2 | 11,5 | 18,72 | 105 | 24,3 | 28,7 | 20 | 6 | 1 |

# AT-2

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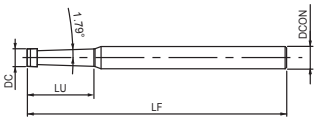
## Threading | Thread milling | NPT




- First choice in quality and performance
- Thread milling without pre-drilled hole
- DUROREY coating
- For hardened steels up to 65 HRC and stainless steels
- "ThreadPro" NC code generator software available

| P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | | |
|---|---|---|---|---|---|---|---|---|
| 35-55 0,01~0,07 | 80-160 0,01~0,07 | 80-160 0,01~0,07 | 60-120 0,01~0,07 | 35-100 0,01~0,07 | 35-100 0,01~0,07 | 35-100 0,01~0,07 | m/min | mm/t |

| N Al | N AC, ADC | S Ti | S Ni | H 25-45 HRC | H 45-55 HRC | H ~65 HRC |
|---|---|---|---|---|---|---|
| 35-100 0,01~0,07 | 35-100 0,01~0,07 | 35-55 0,01~0,07 | 35-55 0,01~0,07 | 35-75 0,01~0,07 | 35-65 0,01~0,07 | 35-55 0,01~0,07 |

| A | NPT | CARBIDE | DUROREY | h6 | LH |
|---|---|---|---|---|---|

A.272

| EDP | Min cutting bore diameter | Max cutting bore diameter | TP | DC | LF | LU | DCON | NOF |
|---|---|---|---|---|---|---|---|---|
| 8331234 | 1/16 | 1/8 | 27 | 4,86 | 70 | 18 | 6 | 4 |
| 8331235 | 1/8 | - | 27 | 5,76 | 70 | 19 | 6 | 4 |
| 8331236 | 1/4 | 3/8 | 18 | 7,98 | 80 | 28 | 10 | 4 |
| 8331237 | 3/8 | - | 18 | 9,68 | 80 | 28 | 10 | 4 |
| 8331238 | 1/2 | 3/4 | 14 | 11,61 | 110 | 35 | 12 | 4 |
| 8331239 | 1 | 1 | 11,5 | 15,54 | 135 | 45 | 16 | 4 |

# WX-PNC

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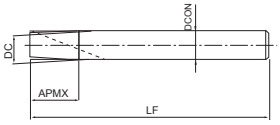
## Threading | Thread milling | NPT




- Carbide thread milling cutter
- WX coating
- For all materials
- "ThreadPro" NC code generator software available

| P | P | P | P | M | K | K | |
|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | |
| 50-75 | 50-75 | 40-70 | 15-30 | 20-40 | 50-100 | 50-65 | m/min |

| N | N | S | S | H | H |
|---|---|---|---|---|---|
| Al | AC, ADC | Ti | Ni | 25-35 HRC | 35-45 HRC |
| 50-70 | 65-130 | 20-60 | 20-60 | 15-30 | 15-30 |

NPT | CARBIDE | WX | 30° | h6

A.276

| EDP | Min cutting bore diameter | TP | DC | LF | APMX | DCON | NOF |
|---|---|---|---|---|---|---|---|
| 3900259 | 1/16-1/8 | 27 | 5,9 | 60 | 10,3 | 6 | 3 |
| 3900261 | 1/4-3/8 | 18 | 10 | 75 | 15,5 | 10 | 4 |
| 3900265 | 1/2-3/4 | 14 | 16 | 85 | 20 | 16 | 4 |
| 3900268 | 1-2 | 11,5 | 20 | 95 | 24,3 | 20 | 5 |

# E-DCT

INDEX

## Threading | Measuring | M MJ

- Diameter correction tool for thread mill
- Reduce the set up and machining time

M | MJ | ISO 2 6H

### FOR 6H

| EDP | Thread size |
|---|---|
| G1609311 | M(J)3 x 0,5 |
| G1609312 | M(J)4 x 0,7 |
| G1609313 | M(J)5 x 0,8 |
| G1609314 | M(J)6 x 1 |
| G1609317 | M(J)8 x 1,25 |
| G1609322 | M(J)10 x 1,5 |
| G1609323 | M(J)10 x 1,25 |
| G1609325 | M(J)12 x 1,75 |
| G1609326 | M(J)12 x 1,5 |
| G1609327 | M(J)12 x 1,25 |
| G1609329 | M(J)14 x 2 |
| G1609330 | M(J)14 x 1,5 |
| G1609334 | M(J)16 x 2 |
| G1609335 | M(J)16 x 1,5 |
| G1609339 | M(J)20 x 2,5 |
| G1609340 | M(J)20 x 1,5 |

# E-DCT

INDEX

## Threading | Measuring | UNJC UNJF

- Diameter correction tool for thread mill
- Reduce the set up and machining time

# DCT

INDEX

## Threading | Measuring | Metric

- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Measurable range 100% ~-50% tolerance of thread size 6H





**UNJC** **UNJF**

### For 3B

| EDP | Thread size |
|---|---|
| G1609623 | 1/4 - 20 UN(J)C |
| G1609624 | 1/4 - 28 UN(J)F |
| G1609625 | 5/16 - 18 UN(J) |
| G1609626 | 5/16 - 24 UN(J) |
| G1609627 | 3/8 - 16 UN(J)C |
| G1609628 | 3/8 - 24 UN(J)F |
| G1609631 | 1/2 - 13 UN(J)C |
| G1609632 | 1/2 - 20 UN(J)F |
| G1609635 | 5/8 - 11 UN(J)C |
| G1609636 | 5/8 - 18 UN(J)F |
| G1609638 | 3/4 - 16 UN(J)F |

### For EG-3B Helicoil

| EDP | Thread size |
|---|---|
| G1609723 | 1/4 - 20 EG-UN(J)C |
| G1609724 | 1/4 - 28 EG-UN(J)F |
| G1609726 | 5/16 - 24 EG-UN(J) |
| G1609728 | 3/8 - 24 EG-UN(J)F |
| G1609731 | 1/2 - 13 EG-UN(J)C |
| G1609732 | 1/2 - 20 EG-UN(J)F |
| G1609736 | 5/8 - 18 EG-UN(J)F |
| G1609738 | 3/4 - 16 EG-UN(J)F |

| EDP | Thread size | Measurable depth in blind hole (mm) | Sleeve diameter |
|---|---|---|---|
| 9342000 | M6 x 1 -1,5D | 9 | 13 |
| 9342012 | M16 x 1,5 - 1D | 16 | 21 |
| 9342002 | M8 x 1 - 1,5D | 12 | 13 |
| 9342013 | M18 x 2,5 - 1D | 18 | 23 |
| 9342011 | M16 x 2 - 1D | 16 | 21 |
| 9342015 | M20 x 2,5 - 1D | 20 | 25 |
| 9342006 | M12 x 1,5 - 1,2D | 14,4 | 17 |
| 9342017 | M24 x 3 - 1D | 24 | 29 |
| 9342007 | M12 x 1,25 - 1,2D | 14,4 | 17 |
| 9342004 | M10 x 1 - 1,2D | 12 | 15 |
| 9342009 | M14 x 1,5 - 1,2D | 16,8 | 19 |
| 9342008 | M14 x 2 - 1,2D | 16,8 | 19 |
| 9342016 | M20 x 1,5 - 1D | 20 | 25 |
| 9342003 | M10 x 1,5 - 1,2D | 12 | 15 |
| 9342010 | M14 x 1 - 1,2D | 16,8 | 19 |
| 9342001 | M8 x 1,25 - 1,5D | 12 | 13 |
| 9342005 | M12 x 1,75 - 1,2D | 14,4 | 17 |
| 9342014 | M18 x 1,5 - 1D | 18 | 23 |

# DCT

INDEX

## Threading | Measuring | UNJF

- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Measurable range 100% ~-50% tolerance of thread size 3B

| EDP | Thread size | Measurable depth in blind hole (mm) | Sleeve diameter |
|---|---|---|---|
| 9342018 | 5/16 - 24UNJF - 1,5D | 11,9 | 13 |

# DCT75

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## Threading | Measuring | M MJ

- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Possible to aim at 75% from the min. pitch diameter tolerance

**M** **MJ**

| EDP | Thread size | Thread length | DCON | Taper | Height Master recommended |
|---|---|---|---|---|---|
| 9342019 | M6 x 1 | 6,2 | 10 | 1/25 | 8 |
| 9342020 | M8 x 1,25 | 7,3 | 10 | 1/25 | 8 |
| 9342021 | M8 x 1 | 6,2 | 10 | 1/25 | 8 |
| 9342022 | M10 x 1,5 | 8,3 | 10 | 1/25 | 7 |
| 9342023 | M10 x 1,25 | 7,3 | 10 | 1/25 | 7 |
| 9342024 | M10 x 1 | 6,2 | 10 | 1/25 | 7 |
| 9342025 | M12 x 1,75 | 9,7 | 12 | 1/25 | 7 |
| 9342026 | M14 x 1,5 | 8,7 | 14 | 1/25 | 7 |
| 9342027 | M16 x 1,5 | 8,7 | 16 | 1/25 | 7 |

# DCT75

INDEX

## Threading | Measuring | UNC

- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Possible to aim at 75% from the min. pitch diameter tolerance

**UNC** **UNF** **UNEF**

| EDP | Thread size | Thread length | DCON | Taper | Height Master recommended |
|---|---|---|---|---|---|
| 9342028 | 1/4 - 20 UNC | 7 | 10 | 1/25 | 8 |
| 9342029 | 1/4 - 28 UNF | 5 | 10 | 1/25 | 8 |
| 9342030 | 5/16 - 18 UNC | 7 | 10 | 1/25 | 8 |
| 9342031 | 5/16 - 24 UNF | 7 | 10 | 1/25 | 8 |
| 9342032 | 5/16 - 32 UNEF | 5 | 10 | 1/25 | 8 |
| 9342033 | 3/8 - 16 UNC | 8,8 | 10 | 1/25 | 7 |
| 9342034 | 3/8 - 24 UNF | 7 | 10 | 1/25 | 7 |
| 9342035 | 7/16 - 14 UNC | 10 | 12 | 1/25 | 7 |
| 9342036 | 7/16 - 20 UNF | 7 | 12 | 1/25 | 7 |
| 9342037 | 1/2 - 13 UNC | 10,8 | 13 | 1/25 | 7 |
| 9342038 | 1/2 - 20 UNF | 7 | 13 | 1/25 | 7 |

# DCT75

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## Threading | Measuring | R (PT)

- Diameter correction tool for thread mill
- Reduce the set up and machining time
- Possible to aim at 75% from the min. pitch diameter tolerance

**R (PT)**

| EDP | Thread size | Thread length | DCON | Taper | Height Master recommended |
|---|---|---|---|---|---|
| 9342039 | R(PT) 1/16 | 6,01 | 10 | 1/16 | 9 |
| 9342040 | R(PT) 1/8 | 6,01 | 10 | 1/16 | 9 |
| 9342041 | R(PT) 1/4 | 9,02 | 14 | 1/16 | 9 |
| 9342042 | R(PT) 3/8 | 9,36 | 17 | 1/16 | 9 |

# DCT75

Threading | Measuring

## DIGITAL INDICATOR

- High performance type
- Digital display system
- Eliminate calculation errors, measurement and calculation with a digital display

| EDP | Thread size | Sleeve diameter | DCON | Taper |
|---|---|---|---|---|
| 9342052 | M6 - M16 U1/4 - 1/2 | 23,5 | 17,5 | 1/25 |
| 9342053 | R(PT) 1/16 - 3/8 | 23,5 | 17,5 | 1/16 |

# DCT75

Threading | Measuring

## HEIGHT MASTER

| EDP | Size | Height Master recommended |
|---|---|---|
| 9342043 | 28 | 1 |
| 9342044 | 28,25 | 2 |
| 9342045 | 28,5 | 3 |
| 9342046 | 28,75 | 4 |
| 9342047 | 29 | 5 |
| 9342048 | 29,25 | 6 |
| 9342049 | 295 | 7 |
| 9342050 | 29,75 | 8 |
| 9342051 | 30 | 9 |

# 223B

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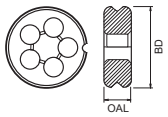
## Threading | Circular dies | Metric




- HSS solid circular dies DIN223B
- Bright finish
- With spiral entry for forward chip ejection
- Chamfer lead on both sides

M | HSS | ISO 2 6G

| EDP | TD | TP | BD | OAL |
|---|---|---|---|---|
| 16213871 | 3 | 0,5 | 20 | 5 |
| 16214471 | 4 | 0,7 | 20 | 5 |
| 16214971 | 5 | 0,8 | 20 | 7 |
| 16215571 | 6 | 1 | 20 | 7 |
| 16216172 | 8 | 1,25 | 25 | 9 |
| 16216973 | 10 | 1,5 | 30 | 11 |
| 16217974 | 12 | 1,75 | 38 | 14 |
| 16219174 | 14 | 2 | 38 | 14 |
| 16220275 | 16 | 2 | 45 | 18 |
| 16221475 | 18 | 2,5 | 45 | 18 |
| 16222875 | 20 | 2,5 | 45 | 18 |

# 223B

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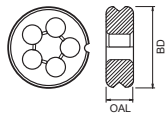
## Threading | Circular dies | G




- HSS solid circular dies DIN223B
- Bright finish
- With spiral entry for forward chip ejection
- Chamfer lead on both sides

G | HSS | ISO 228 | DIN 259

| EDP | TD | TP | BD | OAL |
|---|---|---|---|---|
| 16281974 | 1/8 | 28 | 38 | 10 |
| 16282074 | 1/4 | 19 | 38 | 10 |
| 16282175 | 3/8 | 19 | 45 | 14 |
| 16282275 | 1/2 | 14 | 45 | 14 |

# CUTTING CONDITIONS



## AT-1

| Work Material | | Vc (m/min) | F (mm/tooth) |
|---|---|---|---|
| Low Tensile Strength Steel | C~0,25% | 80~160 | 0,01~0,05 |
| Medium Tensile Strength Steel | C~0,25% ~ 0,45% | 80~160 | 0,01~0,05 |
| High Tensile Strength Steel | C~0,45% | 80~160 | 0,01~0,05 |
| Alloy Steel | SCM | 60~120 | 0,01~0,05 |
| Hardened Steel | 25~45 HRC | 80~200 | 0,01~0,05 |
| | 45~55 HRC | - | - |
| | 50~60 HRC | - | - |
| Stainless Steel | SUS | 60~120 | 0,01~0,05 |
| Tool Steel | SKD | - | - |
| Cast Steel | SC | 60~120 | 0,01~0,05 |
| Cast Iron | FC | 80~160 | 0,01~0,05 |
| Ductile Cast Iron | FCD | 60~120 | 0,01~0,05 |
| Copper | Cu | 80~160 | 0,03~0,1 |
| Brass | Bs | 80~160 | 0,03~0,1 |
| Brass Casting | BsC | 80~160 | 0,03~0,1 |
| Bronze | PB | 80~160 | 0,03~0,1 |
| Aluminium Rolled Steel | AL | 80~160 | 0,03~0,1 |
| Aluminium Alloy Casting | AC, ADC | 100~300 | 0,05~0,2 |
| Magnesium Alloy Casting | MC | 100~300 | 0,05~0,2 |
| Zinc Alloy Casting | ZDC | 100~300 | 0,05~0,2 |
| Titanium Alloy | Ti-6AL-4V | - | - |
| Nickel Alloy | Inconel® | - | - |
| Thermosetting plastic | - | 80~160 | 0,03~0,1 |
| Thermoplastic | - | 80~160 | 0,03~0,1 |

1. The indicated speeds and feeds are for water-soluble oil.
2. Water-soluble oil is not suitable for tapping magnesium alloy.
3. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
4. If the tapping length is long, or when machining a large-pitch thread, select a smaller feed rate and separate the machining process into a few segments.
5. If a machined parallel internal thread is tapered and prevents the go-gauge from going through, add a zero cut (finish machining).

## WH-VM-PNC/WX-ST-PNC-3P

| Work Material | | Vc (m/min) | F (mm/tooth) |
|---|---|---|---|
| Low Tensile Strength Steel | C~0,25% | 60~90 | 0,02~0,08 |
| Medium Tensile Strength Steel | C~0,25% ~ 0,45% | 60~90 | 0,02~0,08 |
| High Tensile Strength Steel | C~0,45% | 60~90 | 0,02~0,08 |
| Alloy Steel | SCM | 30~60 | 0,01~0,03 |
| Hardened Steel | 25~45 HRC | 30~60 | 0,01~0,03 |
| | 45~55 HRC | 30~60 | 0,01~0,03 |
| | 50~60 HRC | - | - |
| Stainless Steel | SUS | 60~90 | 0,02~008 |
| Tool Steel | SKD | - | - |
| Cast Steel | SC | 40~65 | 0,02~0,09 |
| Cast Iron | FC | 50~100 | 0,03~0,1 |
| Ductile Cast Iron | FCD | 50~70 | 0,03~0,1 |
| Copper | Cu | - | - |
| Brass | Bs | - | - |
| Brass Casting | BsC | 50~100 | 0,02~0,06 |
| Bronze | PB | 50~100 | 0,02~0,06 |
| Aluminium Rolled Steel | AL | 50~100 | 0,02~0,06 |
| Aluminium Alloy Casting | AC, ADC | 50~100 | 0,02~0,06 |
| Magnesium Alloy Casting | MC | 50~100 | 0,02~0,06 |
| Zinc Alloy Casting | ZDC | 50~100 | 0,02~0,06 |
| Titanium Alloy | Ti-6AL-4V | 20~60 | 0,01~0,03 |
| Nickel Alloy | Inconel® | 20~60 | 0,01~0,03 |
| Thermosetting plastic | - | 50~100 | 0,02~0,06 |
| Thermoplastic | - | 50~100 | 0,02~0,06 |

# CUTTING CONDITIONS

## AT-2 / WH(O)-EM-PNC

| | | | Low Carbon Steel - Mild Steel ~C0,25% | | | Medium Carbon Steel - High Carbon Steel ~C0,25% | | | Alloy Steel SCM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Recommended Coolant | | | Water-Soluble | | | Water-Soluble | | | Water-Soluble | | |
| Vc (m/min) | | | 35 ~ 55 | | | 80 ~ 120 | | | 60 ~ 120 | | |
| Thread | Thread Size | DC | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) |
| M | M 3 ×0,5 | 2,4 | 5.968 | 48 | 0,01 | 10.610 | 85 | 0,01 | 7.958 | 64 | 0,01 |
| | M 4 ×0,7 | 3,1 | 4.621 | 62 | 0,015 | 8.214 | 111 | 0,015 | 6.161 | 83 | 0,015 |
| | M 5 ×0,8 | 4 | 3.581 | 49 | 0,017 | 6.366 | 87 | 0,017 | 4.775 | 65 | 0,017 |
| | M 6 ×1 | 4,6 | 3.114 | 58 | 0,02 | 5.536 | 103 | 0,02 | 4.152 | 78 | 0,02 |
| | M 8 ×1,25 | 6,2 | 2.310 | 62 | 0,03 | 4.107 | 111 | 0,03 | 3.080 | 83 | 0,03 |
| | M 10 ×1,5 | 7,5 | 1.910 | 67 | 0,035 | 3.395 | 119 | 0,035 | 2.546 | 89 | 0,035 |
| | M 12 ×1,75 | 9 | 1.592 | 72 | 0,045 | 2.829 | 127 | 0,045 | 2.122 | 95 | 0,045 |
| | M 16 ×2 | 11,7 | 1.224 | 72 | 0,055 | 2.176 | 129 | 0,055 | 1.632 | 96 | 0,055 |
| | M 18 ×2,5 | 14 | 1.023 | 55 | 0,06 | 1.819 | 97 | 0,06 | 1.364 | 73 | 0,06 |
| | M 20 ×2,5 | 15,7 | 912 | 51 | 0,065 | 1.622 | 91 | 0,065 | 1.216 | 68 | 0,065 |
| U | No, 8 - 32UNC | 3,1 | 4.621 | 47 | 0,01 | 8.214 | 84 | 0,01 | 6.161 | 63 | 0,01 |
| | No, 10 - 24UNC | 3,7 | 3.871 | 54 | 0,015 | 6.882 | 96 | 0,015 | 5.162 | 72 | 0,015 |
| | 1/4 - 20UNC | 4,55 | 3.148 | 89 | 0,025 | 5.597 | 159 | 0,025 | 4.197 | 119 | 0,025 |
| | 1/4 - 28UNF | 4,55 | 3.148 | 89 | 0,025 | 5.597 | 159 | 0,025 | 4.197 | 119 | 0,025 |
| | 5/16 - 18UNC | 5,7 | 2.513 | 85 | 0,03 | 4.468 | 151 | 0,03 | 3.351 | 113 | 0,03 |
| | 3/8 - 16UNC | 6,7 | 2.138 | 89 | 0,035 | 3.801 | 158 | 0,035 | 2.851 | 118 | 0,035 |
| | 7/16 - 14UNC | 7,7 | 1.860 | 91 | 0,04 | 3.307 | 162 | 0,04 | 2.480 | 122 | 0,04 |
| | 1/2 - 13UNC | 9,2 | 1.557 | 77 | 0,045 | 2.768 | 137 | 0,045 | 2.076 | 103 | 0,045 |
| Rc (PT) | 1/16 - 28 | 4,86 | 2.982 | *1 | 0,025 | 5.302 | *1 | 0,025 | 3.976 | *1 | 0,025 |
| | 1/8 - 28 | 5,76 | 2.512 | *1 | 0,03 | 4.465 | *1 | 0,03 | 3.349 | *1 | 0,03 |
| | 1/4 - 19 | 7,98 | 1.814 | *1 | 0,04 | 3.225 | *1 | 0,04 | 2.419 | *1 | 0,04 |
| | 3/8 - 19 | 9,68 | 1.493 | *1 | 0,045 | 2.654 | *1 | 0,045 | 1.990 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 2.215 | *1 | 0,055 | 1.661 | *1 | 0,055 |
| | 1 - 11 | 15,54 | 930 | *1 | 0,065 | 1.654 | *1 | 0,065 | 1.240 | *1 | 0,065 |
| NPT | 1/16 - 27 | 4,86 | 2.984 | *1 | 0,025 | 5.304 | *1 | 0,025 | 3.978 | *1 | 0,025 |
| | 1/8 - 27 | 5,76 | 2.513 | *1 | 0,03 | 4.467 | *1 | 0,03 | 3.350 | *1 | 0,03 |
| | 1/4 - 18 | 7,98 | 1.815 | *1 | 0,04 | 3.227 | *1 | 0,04 | 2.420 | *1 | 0,04 |
| | 3/8 - 18 | 9,68 | 1.493 | *1 | 0,045 | 2.655 | *1 | 0,045 | 1.991 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 2.215 | *1 | 0,055 | 1.661 | *1 | 0,055 |
| | 1 - 11 1/2 | 15,54 | 930 | *1 | 0,065 | 1.653 | *1 | 0,065 | 1.240 | *1 | 0,065 |

| | | | Hardened Steel | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 25~45 HRC | | | 45~50 HRC | | | 50~65 HRC | | |
| Recommended Coolant | | | Air-Blow | | | | | | | | |
| Vc (m/min) | | | 35 ~ 75 | | | 35 ~ 65 | | | 35 ~ 55 | | |
| Thread | Thread Size | DC | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) |
| M | M 3 ×0,5 | 2,4 | 5.968 | 48 | 0,01 | 5.968 | 48 | 0,01 | 5.968 | 48 | 0,01 |
| | M 4 ×0,7 | 3,1 | 4.621 | 62 | 0,015 | 4.621 | 62 | 0,015 | 4.621 | 62 | 0,015 |
| | M 5 ×0,8 | 4 | 3.581 | 49 | 0,017 | 3.581 | 49 | 0,017 | 3.581 | 49 | 0,017 |
| | M 6 ×1 | 4,6 | 3.114 | 58 | 0,02 | 3.114 | 58 | 0,02 | 3.114 | 58 | 0,02 |
| | M 8 ×1,25 | 6,2 | 2.310 | 62 | 0,03 | 2.310 | 62 | 0,03 | 2.310 | 62 | 0,03 |
| | M 10 ×1,5 | 7,5 | 1.910 | 67 | 0,035 | 1.910 | 67 | 0,035 | 1.910 | 67 | 0,035 |
| | M 12 ×1,75 | 9 | 1.592 | 72 | 0,045 | 1.592 | 72 | 0,045 | 1.592 | 72 | 0,045 |
| | M 16 ×2 | 11,7 | 1.224 | 72 | 0,055 | 1.224 | 72 | 0,055 | 1.224 | 72 | 0,055 |
| | M 18 ×2,5 | 14 | 1.023 | 55 | 0,06 | 1.023 | 55 | 0,06 | 1.023 | 55 | 0,06 |
| | M 20 ×2,5 | 15,7 | 912 | 51 | 0,065 | 912 | 51 | 0,065 | 912 | 51 | 0,065 |
| U | No, 8 - 32UNC | 3,1 | 4.621 | 47 | 0,01 | 4.621 | 47 | 0,01 | 4.621 | 47 | 0,01 |
| | No, 10 - 24UNC | 3,7 | 3.871 | 54 | 0,015 | 3.871 | 54 | 0,015 | 3.871 | 54 | 0,015 |
| | 1/4 - 20UNC | 4,55 | 3.148 | 89 | 0,025 | 3.148 | 89 | 0,025 | 3.148 | 89 | 0,025 |
| | 1/4 - 28UNF | 4,55 | 3.148 | 89 | 0,025 | 3.148 | 89 | 0,025 | 3.148 | 89 | 0,025 |
| | 5/16 - 18UNC | 5,7 | 2.513 | 85 | 0,03 | 2.513 | 85 | 0,03 | 2.513 | 85 | 0,03 |
| | 3/8 - 16UNC | 6,7 | 2.138 | 89 | 0,035 | 2.138 | 89 | 0,035 | 2.138 | 89 | 0,035 |
| | 7/16 - 14UNC | 7,7 | 1.860 | 91 | 0,04 | 1.860 | 91 | 0,04 | 1.860 | 91 | 0,04 |
| | 1/2 - 13UNC | 9,2 | 1.557 | 77 | 0,045 | 1.557 | 77 | 0,045 | 1.557 | 77 | 0,045 |
| Rc (PT) | 1/16 - 28 | 4,86 | 2.982 | *1 | 0,025 | 2.982 | *1 | 0,025 | 2.982 | *1 | 0,025 |
| | 1/8 - 28 | 5,76 | 2.512 | *1 | 0,03 | 2.512 | *1 | 0,03 | 2.512 | *1 | 0,03 |
| | 1/4 - 19 | 7,98 | 1.814 | *1 | 0,04 | 1.814 | *1 | 0,04 | 1.814 | *1 | 0,04 |
| | 3/8 - 19 | 9,68 | 1.493 | *1 | 0,045 | 1.493 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 1.246 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 | 15,54 | 930 | *1 | 0,065 | 930 | *1 | 0,065 | 930 | *1 | 0,065 |
| NPT | 1/16 - 27 | 4,86 | 2.984 | *1 | 0,025 | 2.984 | *1 | 0,025 | 2.984 | *1 | 0,025 |
| | 1/8 - 27 | 5,76 | 2.513 | *1 | 0,03 | 2.513 | *1 | 0,03 | 2.513 | *1 | 0,03 |
| | 1/4 - 18 | 7,98 | 1.815 | *1 | 0,04 | 1.815 | *1 | 0,04 | 1.815 | *1 | 0,04 |
| | 3/8 - 18 | 9,68 | 1.493 | *1 | 0,045 | 1.493 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 1.246 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 1/2 | 15,54 | 930 | *1 | 0,065 | 930 | *1 | 0,065 | 930 | *1 | 0,065 |

* Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials. please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

# CUTTING CONDITIONS

## AT-2 / WH(O)-EM-PNC

| | | | Stainless Steel - Tool Steel SUS304 - SKD | | | Cast Steel - Cast Iron - Ductile Cast Iron SC - FC - FCD | | | Copper - Brass - Brass Casting - Bronze Cu - Bs - BsC - PB ~20HRC | | | Copper - Brass - Brass Casting - Bronze Cu - Bs - BsC - PB 20HRC~ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Recommended Coolant | | | Water-Soluble | | | Air-Blow | | | Water-Soluble | | | | | |
| Vc (m/min) | | | 35 ~ 100 | | | 35 ~ 100 | | | 35 ~ 100 | | | 35 ~ 75 | | |
| Thread | Thread Size | DC | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) |
| M | M 3 ×0,5 | 2,4 | 5.968 | 48 | 0,01 | 7.958 | 64 | 0,01 | 7.958 | 64 | 0,01 | 5.968 | 48 | 0,01 |
| | M 4 ×0,7 | 3,1 | 4.621 | 62 | 0,015 | 6.161 | 83 | 0,015 | 6.161 | 83 | 0,015 | 4.621 | 62 | 0,015 |
| | M 5 ×0,8 | 4 | 3.581 | 49 | 0,017 | 4.775 | 65 | 0,017 | 4.775 | 65 | 0,017 | 3.581 | 49 | 0,017 |
| | M 6 ×1 | 4,6 | 3.114 | 58 | 0,02 | 4.152 | 78 | 0,02 | 4.152 | 78 | 0,02 | 3.114 | 58 | 0,02 |
| | M 8 ×1,25 | 6,2 | 2.310 | 62 | 0,03 | 3.080 | 83 | 0,03 | 3.080 | 83 | 0,03 | 2.310 | 62 | 0,03 |
| | M 10 ×1,5 | 7,5 | 1.910 | 67 | 0,035 | 2.546 | 89 | 0,035 | 2.546 | 89 | 0,035 | 1.910 | 67 | 0,035 |
| | M 12 ×1,75 | 9 | 1.592 | 72 | 0,045 | 2.122 | 95 | 0,045 | 2.122 | 95 | 0,045 | 1.592 | 72 | 0,045 |
| | M 16 ×2 | 11,7 | 1.224 | 72 | 0,055 | 1.632 | 96 | 0,055 | 1.632 | 96 | 0,055 | 1.224 | 72 | 0,055 |
| | M 18 ×2,5 | 14 | 1.023 | 55 | 0,06 | 1.364 | 73 | 0,06 | 1.364 | 73 | 0,06 | 1.023 | 55 | 0,06 |
| | M 20 ×2,5 | 15,7 | 912 | 51 | 0,065 | 1.216 | 68 | 0,065 | 1.216 | 68 | 0,065 | 912 | 51 | 0,065 |
| U | No, 8 - 32UNC | 3,1 | 4.621 | 47 | 0,01 | 6.161 | 63 | 0,01 | 6.161 | 63 | 0,01 | 4.621 | 47 | 0,01 |
| | No, 10 - 24UNC | 3,7 | 3.871 | 54 | 0,015 | 5.162 | 72 | 0,015 | 5.162 | 72 | 0,015 | 3.871 | 54 | 0,015 |
| | 1/4 - 20UNC | 4,55 | 3.148 | 89 | 0,025 | 4.197 | 119 | 0,025 | 4.197 | 119 | 0,025 | 3.148 | 89 | 0,025 |
| | 1/4 - 28UNF | 4,55 | 3.148 | 89 | 0,025 | 4.197 | 119 | 0,025 | 4.197 | 119 | 0,025 | 3.148 | 89 | 0,025 |
| | 5/16 - 18UNC | 5,7 | 2.513 | 85 | 0,03 | 3.351 | 113 | 0,03 | 3.351 | 113 | 0,03 | 2.513 | 85 | 0,03 |
| | 3/8 - 16UNC | 6,7 | 2.138 | 89 | 0,035 | 2.851 | 118 | 0,035 | 2.851 | 118 | 0,035 | 2.138 | 89 | 0,035 |
| | 7/16 - 14UNC | 7,7 | 1.860 | 91 | 0,04 | 2.480 | 122 | 0,04 | 2.480 | 122 | 0,04 | 1.860 | 91 | 0,04 |
| | 1/2 - 13UNC | 9,2 | 1.557 | 77 | 0,045 | 2.076 | 103 | 0,045 | 2.076 | 103 | 0,045 | 1.557 | 77 | 0,045 |
| Rc (PT) | 1/16 - 28 | 4,86 | 2.982 | *1 | 0,025 | 3.976 | *1 | 0,025 | 3.976 | *1 | 0,025 | 2.982 | *1 | 0,025 |
| | 1/8 - 28 | 5,76 | 2.512 | *1 | 0,03 | 3.349 | *1 | 0,03 | 3.349 | *1 | 0,03 | 2.512 | *1 | 0,03 |
| | 1/4 - 19 | 7,98 | 1.814 | *1 | 0,04 | 2.419 | *1 | 0,04 | 2.419 | *1 | 0,04 | 1.814 | *1 | 0,04 |
| | 3/8 - 19 | 9,68 | 1.493 | *1 | 0,045 | 1.990 | *1 | 0,045 | 1.990 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 | 15,54 | 930 | *1 | 0,065 | 1.240 | *1 | 0,065 | 1.240 | *1 | 0,065 | 930 | *1 | 0,065 |
| NPT | 1/16 - 27 | 4,86 | 2.984 | *1 | 0,025 | 3.978 | *1 | 0,025 | 3.978 | *1 | 0,025 | 2.984 | *1 | 0,025 |
| | 1/8 - 27 | 5,76 | 2.513 | *1 | 0,03 | 3.350 | *1 | 0,03 | 3.350 | *1 | 0,03 | 2.513 | *1 | 0,03 |
| | 1/4 - 18 | 7,98 | 1.815 | *1 | 0,04 | 2.420 | *1 | 0,04 | 2.420 | *1 | 0,04 | 1.815 | *1 | 0,04 |
| | 3/8 - 18 | 9,68 | 1.493 | *1 | 0,045 | 1.991 | *1 | 0,045 | 1.991 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 1.246 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 1/2 | 15,54 | 930 | *1 | 0,065 | 1.240 | *1 | 0,065 | 1.240 | *1 | 0,065 | 930 | *1 | 0,065 |

| | | | Aluminium Rolled Steel - Aluminium Alloy Casting AL - AC _ ADC | | | Magnesium Alloy Casting - Zinc Alloy Casting MC - ZDC | | | Titanium Alloy Ti-6Al-4V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Recommended Coolant | | | Water-Soluble | | | Water-Soluble | | | Water-Soluble | | |
| Vc (m/min) | | | 35 ~ 100 | | | 35 ~ 100 | | | 35 ~ 55 | | |
| Thread | Thread Size | DC | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) |
| M | M 3 ×0,5 | 2,4 | 10.610 | 85 | 0,01 | 7.958 | 64 | 0,01 | 5.968 | 48 | 0,01 |
| | M 4 ×0,7 | 3,1 | 8.214 | 111 | 0,015 | 6.161 | 83 | 0,015 | 4.621 | 62 | 0,015 |
| | M 5 ×0,8 | 4 | 6.366 | 87 | 0,017 | 4.775 | 65 | 0,017 | 3.581 | 49 | 0,017 |
| | M 6 ×1 | 4,6 | 5.536 | 103 | 0,02 | 4.152 | 78 | 0,02 | 3.114 | 58 | 0,02 |
| | M 8 ×1,25 | 6,2 | 4.107 | 111 | 0,03 | 3.080 | 83 | 0,03 | 2.310 | 62 | 0,03 |
| | M 10 ×1,5 | 7,5 | 3.395 | 119 | 0,035 | 2.546 | 89 | 0,035 | 1.910 | 67 | 0,035 |
| | M 12 ×1,75 | 9 | 2.829 | 127 | 0,045 | 2.122 | 95 | 0,045 | 1.592 | 72 | 0,045 |
| | M 16 ×2 | 11,7 | 2.176 | 129 | 0,055 | 1.632 | 96 | 0,055 | 1.224 | 72 | 0,055 |
| | M 18 ×2,5 | 14 | 1.819 | 97 | 0,06 | 1.364 | 73 | 0,06 | 1.023 | 55 | 0,06 |
| | M 20 ×2,5 | 15,7 | 1.622 | 91 | 0,065 | 1.216 | 68 | 0,065 | 912 | 51 | 0,065 |
| U | No, 8 - 32UNC | 3,1 | 8.214 | 84 | 0,01 | 6.161 | 63 | 0,01 | 4.621 | 47 | 0,01 |
| | No, 10 - 24UNC | 3,7 | 6.882 | 96 | 0,015 | 5.162 | 72 | 0,015 | 3.871 | 54 | 0,015 |
| | 1/4 - 20UNC | 4,55 | 5.597 | 159 | 0,025 | 4.197 | 119 | 0,025 | 3.148 | 89 | 0,025 |
| | 1/4 - 28UNF | 4,55 | 5.597 | 159 | 0,025 | 4.197 | 119 | 0,025 | 3.148 | 89 | 0,025 |
| | 5/16 - 18UNC | 5,7 | 4.468 | 151 | 0,03 | 3.351 | 113 | 0,03 | 2.513 | 85 | 0,03 |
| | 3/8 - 16UNC | 6,7 | 3.801 | 158 | 0,035 | 2.851 | 118 | 0,035 | 2.138 | 89 | 0,035 |
| | 7/16 - 14UNC | 7,7 | 3.307 | 162 | 0,04 | 2.480 | 122 | 0,04 | 1.860 | 91 | 0,04 |
| | 1/2 - 13UNC | 9,2 | 2.768 | 137 | 0,045 | 2.076 | 103 | 0,045 | 1.557 | 77 | 0,045 |
| Rc (PT) | 1/16 - 28 | 4,86 | 5.302 | *1 | 0,025 | 3.976 | *1 | 0,025 | 2.982 | *1 | 0,025 |
| | 1/8 - 28 | 5,76 | 4.465 | *1 | 0,03 | 3.349 | *1 | 0,03 | 2.512 | *1 | 0,03 |
| | 1/4 - 19 | 7,98 | 3.225 | *1 | 0,04 | 2.419 | *1 | 0,04 | 1.814 | *1 | 0,04 |
| | 3/8 - 19 | 9,68 | 2.654 | *1 | 0,045 | 1.990 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 2.215 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 | 15,54 | 1.654 | *1 | 0,065 | 1.240 | *1 | 0,065 | 930 | *1 | 0,065 |
| NPT | 1/16 - 27 | 4,86 | 5.304 | *1 | 0,025 | 3.978 | *1 | 0,025 | 2.984 | *1 | 0,025 |
| | 1/8 - 27 | 5,76 | 4.467 | *1 | 0,03 | 3.350 | *1 | 0,03 | 2.513 | *1 | 0,03 |
| | 1/4 - 18 | 7,98 | 3.227 | *1 | 0,04 | 2.420 | *1 | 0,04 | 1.815 | *1 | 0,04 |
| | 3/8 - 18 | 9,68 | 2.655 | *1 | 0,045 | 1.991 | *1 | 0,045 | 1.493 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 2.215 | *1 | 0,055 | 1.661 | *1 | 0,055 | 1.246 | *1 | 0,055 |
| | 1 - 11 1/2 | 15,54 | 1,653 | *1 | 0,065 | 1.240 | *1 | 0,065 | 930 | *1 | 0,065 |

*1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

* For titanium alloys and Ni-based alloys, the above condition table applies only when using a water-soluble cutting fluid and processing with a thread length approximately 1xD or an oil hole compatible size (oil hole column: ○ mark).

## AT-2 / WH(O)-EM-PNC

| | | | Ni-based Alloy - Inconel | | | Plastic | | |
|---|---|---|---|---|---|---|---|---|
| Recommended Coolant | | | Water-Soluble | | | Water-Soluble | | |
| Vc (m/min) | | | 35 ~ 55 | | | 35 ~ 100 | | |
| Thread | Thread Size | DC | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) | Speed ($min^{-1}$) | Feed (mm/min) | Feed per Tooth (mm/t) |
| M | M 3 ×0,5 | 2,4 | 4.642 | 37 | 0,01 | 7.958 | 64 | 0,01 |
| | M 4 ×0,7 | 3,1 | 3.594 | 49 | 0,015 | 6.161 | 83 | 0,015 |
| | M 5 ×0,8 | 4 | 2.785 | 38 | 0,017 | 4.775 | 65 | 0,017 |
| | M 6 ×1 | 4,6 | 2.422 | 45 | 0,02 | 4.152 | 78 | 0,02 |
| | M 8 ×1,25 | 6,2 | 1.797 | 49 | 0,03 | 3.080 | 83 | 0,03 |
| | M 10 ×1,5 | 7,5 | 1.485 | 52 | 0,035 | 2.546 | 89 | 0,035 |
| | M 12 ×1,75 | 9 | 1.238 | 56 | 0,045 | 2.122 | 95 | 0,045 |
| | M 16 ×2 | 11,7 | 952 | 56 | 0,055 | 1.632 | 96 | 0,055 |
| | M 18 ×2,5 | 14 | 796 | 42 | 0,06 | 1.364 | 73 | 0,06 |
| | M 20 ×2,5 | 15,7 | 710 | 40 | 0,065 | 1.216 | 68 | 0,065 |
| U | No, 8 - 32UNC | 3,1 | 3.594 | 37 | 0,01 | 6.161 | 63 | 0,01 |
| | No, 10 - 24UNC | 3,7 | 3.011 | 42 | 0,015 | 5.162 | 72 | 0,015 |
| | 1/4 - 20UNC | 4,55 | 2.449 | 69 | 0,025 | 4.197 | 119 | 0,025 |
| | 1/4 - 28UNF | 4,55 | 2.449 | 69 | 0,025 | 4.197 | 119 | 0,025 |
| | 5/16 - 18UNC | 5,7 | 1.955 | 66 | 0,03 | 3.351 | 113 | 0,03 |
| | 3/8 - 16UNC | 6,7 | 1.663 | 69 | 0,035 | 2.851 | 118 | 0,035 |
| | 7/16 - 14UNC | 7,7 | 1.447 | 71 | 0,04 | 2.480 | 122 | 0,04 |
| | 1/2 - 13UNC | 9,2 | 1.211 | 60 | 0,045 | 2.076 | 103 | 0,045 |
| Rc (PT) | 1/16 - 28 | 4,86 | 2.320 | *1 | 0,025 | 3.976 | *1 | 0,025 |
| | 1/8 - 28 | 5,76 | 1.954 | *1 | 0,03 | 3.349 | *1 | 0,03 |
| | 1/4 - 19 | 7,98 | 1.411 | *1 | 0,04 | 2.419 | *1 | 0,04 |
| | 3/8 - 19 | 9,68 | 1.161 | *1 | 0,045 | 1.990 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 969 | *1 | 0,055 | 1.661 | *1 | 0,055 |
| | 1 - 11 | 15,54 | 724 | *1 | 0,065 | 1.240 | *1 | 0,065 |
| NPT | 1/16 - 27 | 4,86 | 2.321 | *1 | 0,025 | 3.978 | *1 | 0,025 |
| | 1/8 - 27 | 5,76 | 1.954 | *1 | 0,03 | 3.350 | *1 | 0,03 |
| | 1/4 - 18 | 7,98 | 1.412 | *1 | 0,04 | 2.420 | *1 | 0,04 |
| | 3/8 - 18 | 9,68 | 1.161 | *1 | 0,045 | 1.991 | *1 | 0,045 |
| | 1/2 - 14 | 11,61 | 969 | *1 | 0,055 | 1.661 | *1 | 0,055 |
| | 1 - 11 1/2 | 15,54 | 723 | *1 | 0,065 | 1.240 | *1 | 0,065 |

*1. Values vary depending on the depth of hole to be machined.

1. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
2. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
5. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

* For titanium alloys and Ni-based alloys, the above condition table applies only when using a water-soluble cutting fluid and processing with a thread length approximately 1xD or an oil hole compatible size (oil hole column: ○ mark).

### Formula for calculating the feed rate of thread mill

$$v_f = \frac{f_z \times z \times n \times (D_m - D_c)}{D_m} \text{ (mm/min)}$$

| | | | |
|---|---|---|---|
| $v_f$ | Feed (mm/min) | $z$ | Number of Flutes |
| $D_m$ | Actual Dia. (mm) | $f$ | Feed (mm/t) |
| $D_c$ | Tool Dia. (mm) | $n$ | Speed ($min^{-1}$) |

Note Internal: – External: +

When programming a circular process, the feed rate at the tool center can be obtained by multiplying the linear cut feed rate with a coefficient. The formulas for calculating coefficients vary between external and internal thread cutting. The formula listed left are for calculating the tool feed rate for circular process, including calculating the coefficients to be used for multiplication with the linear-cut feed rate.

## AT-2 R-SPEC

| | | Aluminium Alloy Casting<br>AC4C - ADC<br>Water Soluble | | | | | | Wrought Aluminium Alloy<br>Magnesium Alloy<br>A5052 - A7075 - AZ91 - AZ80A<br>Water Soluble | | | | | | Copper Alloy<br>C1100<br>Water Soluble | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 100~300m/min | | | | | | 100~300m/min | | | | | | 100~300m/min | | | | | |
| Type | | 2 X D Type | | | 2,5 X D Type | | | 2 X D Type | | | 2,5 X D Type | | | 2 X D Type | | | 2,5 X D Type | | |
| Thread Size | DC | S (min⁻¹) | F (mm/min.) | fz (mm/t) | S (min⁻¹) | F (mm/min.) | fz (mm/t) | S (min⁻¹) | F (mm/min.) | fz (mm/t) | S (min⁻¹) | F (mm/min.) | fz (mm/t) | S (min⁻¹) | F (mm/min.) | fz (mm/t) | S (min⁻¹) | F (mm/min.) | fz (mm/t) |
| M 3 X 0,5 | 2,4 | 13.263 | 1.592 | 0,3 | 13.263 | 1.592 | 0,3 | 13.263 | 159 | 0,03 | 13.263 | 159 | 0,03 | 13.263 | 159 | 0,03 | 13.263 | 159 | 0,03 |
| M 4 X 0,7 | 3,1 | 14.375 | 1.941 | 0,3 | 14.375 | 1.941 | 0,3 | 14.375 | 194 | 0,03 | 14.375 | 194 | 0,03 | 14.375 | 194 | 0,03 | 14.375 | 194 | 0,03 |
| M 5 X 0,8 | 4 | 15.915 | 1.910 | 0,3 | 12.732 | 1.528 | 0,3 | 15.915 | 255 | 0,04 | 12.732 | 204 | 0,04 | 15.915 | 255 | 0,04 | 12.732 | 204 | 0,04 |
| M 6 X 1 | 4,6 | 15.224 | 2.842 | 0,4 | 11.072 | 2.067 | 0,4 | 15.224 | 284 | 0,04 | 11.072 | 207 | 0,04 | 15.224 | 284 | 0,04 | 11.072 | 207 | 0,04 |
| M 8 X 1,25 | 6,2 | 12.322 | 2.218 | 0,4 | 8.214 | 1.479 | 0,4 | 12.322 | 277 | 0,05 | 8.214 | 185 | 0,05 | 12.322 | 277 | 0,05 | 8.214 | 185 | 0,05 |
| M 10 X 1,5 | 7,5 | 10.186 | 2.037 | 0,4 | 6.791 | 1.358 | 0,4 | 10.186 | 255 | 0,05 | 6.791 | 170 | 0,05 | 10.186 | 255 | 0,05 | 6.791 | 170 | 0,05 |
| M 12 X 1,75 | 9 | 8.488 | 1.698 | 0,4 | 5.659 | 1.132 | 0,4 | 8.488 | 212 | 0,05 | 5.659 | 141 | 0,05 | 8.488 | 212 | 0,05 | 5.659 | 141 | 0,05 |

1. AT-2 R-SPEC is only for milling internal threads.
2. This cutting condition table shows standard values. When machining, it is recommended to use the program created by the NC code generator software ThreadPro.
3. Please select "Single-feed" for the path type in ThreadPro. Please adjust the cutting conditions depending on the rigidity of machine, tool holders, and workpiece clamping.
4. Tool vibrations should be kept at a minimum level for maximum accuracy.
5. When machining magnesium alloy materials, please use the coolant oil recommended by the coolant oil manufacturer. Please also properly dispose the cutting chips to prevent fire hazards.
6. Spindle rotation must be counterclockwise due to the left-hand cut configuration.

**Note:** Bottom shape of finished hole is as depicted in the right picture. Please make sure that it is acceptable based on the cutting instruction in advance.

# CUTTING CONDITIONS



## WXO-ST-PNC

| Work Material | | Vc (m/min) | F (mm/tooth) |
|---|---|---|---|
| Low Tensile Strength Steel | C~0,25% | 80~120 | 0,04~0,1 |
| Medium Tensile Strength Steel | C~0,25% ~ 0,45% | 80~120 | 0,04~0,1 |
| High Tensile Strength Steel | C~0,45% | 80~120 | 0,04~0,1 |
| Alloy Steel | SCM | 80~120 | 0,02~0,08 |
| Hardened Steel | 25~45 HRC | 60~100 | 0,02~0,08 |
| | 45~55 HRC | - | - |
| | 50~60 HRC | - | - |
| Stainless Steel | SUS | 40~80 | 0,02~0,06 |
| Tool Steel | SKD | - | - |
| Cast Steel | SC | 40~65 | 0,02~0,09 |
| Cast Iron | FC | 50~100 | 0,03~0,1 |
| Ductile Cast Iron | FCD | 50~65 | 0,03~0,1 |
| Copper | Cu | 65~130 | 0,03~0,1 |
| Brass | Bs | 65~130 | 0,03~0,1 |
| Brass Casting | BsC | 65~130 | 0,03~0,1 |
| Bronze | PB | 65~130 | 0,03~0,1 |
| Aluminium Rolled Steel | AL | 50~70 | 0,03~0,1 |
| Aluminium Alloy Casting | AC, ADC | 65~130 | 0,03~0,1 |
| Magnesium Alloy Casting | MC | 65~130 | 0,03~0,1 |
| Zinc Alloy Casting | ZDC | 65~130 | 0,03~0,1 |
| Titanium Alloy | Ti-6AL-4V | 20~60 | 0,02~0,06 |
| Nickel Alloy | Inconel® | 20~60 | 0,01~0,03 |
| Thermosetting plastic | - | 65~130 | 0,03~0,13 |
| Thermoplastic | - | 65~130 | 0,03~0,13 |

## WX-PNC

| Work Material | | Vc (m/min) | F (mm/tooth) |
|---|---|---|---|
| Low Tensile Strength Steel | C~0,25% | 50~75 | 0,01~0,11 |
| Medium Tensile Strength Steel | C~0,25% ~ 0,45% | 40~70 | 0,01~0,11 |
| High Tensile Strength Steel | C~0,45% | 40~70 | 0,01~0,01 |
| Alloy Steel | SCM | 15~30 | 0,01~0,03 |
| Hardened Steel | 25~45 HRC | 15~30 | 0,01~0,03 |
| | 45~55 HRC | - | - |
| | 50~60 HRC | - | - |
| Stainless Steel | SUS | 20~40 | 0,01~0,06 |
| Tool Steel | SKD | - | - |
| Cast Steel | SC | 40~65 | 0,02~0,09 |
| Cast Iron | FC | 50~100 | 0,03~0,1 |
| Ductile Cast Iron | FCD | 50~65 | 0,03~0,1 |
| Copper | Cu | 65~130 | 0,03~0,1 |
| Brass | Bs | 65~130 | 0,03~0,1 |
| Brass Casting | BsC | 65~130 | 0,03~0,1 |
| Bronze | PB | 65~130 | 0,03~0,1 |
| Aluminium Rolled Steel | AL | 50~70 | 0,03~0,1 |
| Aluminium Alloy Casting | AC, ADC | 65~130 | 0,03~0,1 |
| Magnesium Alloy Casting | MC | 65~130 | 0,03~0,1 |
| Zinc Alloy Casting | ZDC | 65~130 | 0,03~0,1 |
| Titanium Alloy | Ti-6AL-4V | 20~60 | 0,02~0,06 |
| Nickel Alloy | Inconel® | 20~60 | 0,01~0,03 |
| Thermosetting plastic | - | 65~130 | 0,03~0,13 |
| Thermoplastic | - | 65~130 | 0,03~0,13 |

# DRILLING

# ICONS LEGEND



## Tool material

- CARBIDE — Carbide
- HSS-Co — HSS Cobalt (Co8)
- XPM — High grade powder metallurgy HSS (XPM) (Co10+V5)
- CPM — Powder Metallurgy HSS (PM-T15) (Co5 + V5)
- SPH — Super premium HSS
- HSSE — High vanadium HSS-E V3
- HSS — HSS

## Coating / surface treatment

- FX — Multilayer coating TiAlN
- WX — Multilayer composite TiAlN
- CrN — Chromium nitride
- SC — Smooth coating
- TiN — Coating TiN
- WDI — Multilayer coating WDI
- TiAlN — Multilayer coating TiAlN
- V — Multilayer coating TiCN
- OX — Steam oxide
- WXS — Multilayer coating WXS
- WXL — Multilayer coating WXL
- EgiAs — EgiAs coating
- DIA — Diamond coating
- IchAda — Ichada coating
- KeptA — KeptA coating
- DLC — DLC coating
- AlCrN — AlCrN coating

## Angle

- 30° — Helix angle

## Tool tolerance

- h8 — Tool tolerance
- 0~+0.005 — Tool tolerance for reamer

## Shank

- h7 — Shank diameter tolerance
- SHRINK FIT — Suitable for Shrink fit system
- Straight shank
- Tang
- Weldon
- Whistle notch

## Drilling depth

- 5D — Drilling depth <5D

## Coolant

- Internal coolant
- Coolant

# ICONS LEGEND



## Point angle

Point angle

## Recommendation

Steel
Full recommendation

Steel
Suitable

Non-ferrous materials
Full recommendation

Non-ferrous materials
Suitable

Stainless steel
Full recommendation

Stainless steel
Suitable

Super alloys
Full recommendation

Super alloys
Suitable

Cast iron
Full recommendation

Cast iron
Suitable

Hardened material
Full recommendation

Hardened material
Suitable

## A-Brand

A-Brand product

## Page reference

Cutting conditions page reference

Body page reference

Inserts page reference

## Application

Chamfering

Chamfering

Chamfering

Boring

Plunging

Plunging

## Product group symbol

Solid drills

Indexable drills

Reamers

# MATERIAL OVERVIEW

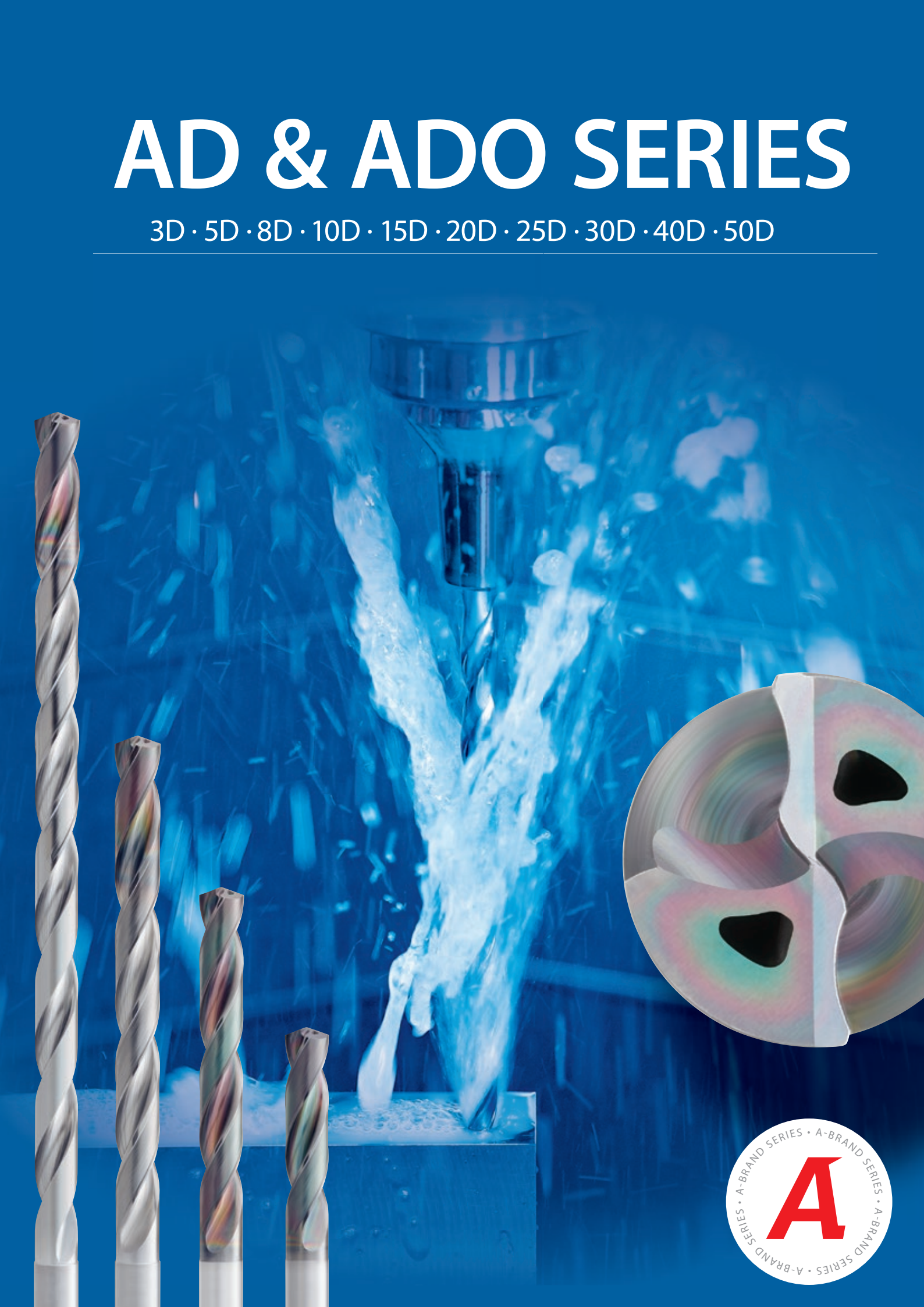
**Drilling | Overview DIN ISO 513**

| | | Work Material | DIN |
|---|---|---|---|
| P | C: ≤0,2% | Low carbon steel | **1.0116** (S235J2G3)<br>**1.0401** (C15) |
| | C: 0,25-0,45% | Medium carbon steel | **1.0501** (C35) |
| | C: ≥0,45% | High carbon steel | **1.0535** (C55)<br>**1.0553** (S355J0) |
| | SCM | Alloy steel | **1.7225** (42CrMo4) |
| M | INOX | Stainless steel | **1.4301** (X5CrNi18-10) |
| K | GG | Cast iron | **0.6025** (EN-GJL-250/GG25) |
| | GGG | Ductile cast iron | **0.7040** (EN-GJS-400-15/GGG-40) |
| N | Al | Aluminium | **3.0205** (Al99) |
| | AC, ADC | Cast aluminium alloys | **3.2581** (G-AlSi12) |
| S | Ti | Titanium | **3.7164** (Ti6Al4V) |
| | Ni | Nickel alloys | **2.4816** (NiCr15Fe/Inconel® 600) |
| H | 25-35HRC | Hardened steel | |
| | 35-45HRC | | |
| | 45-52HRC | | |
| | 52-62HRC | | |

| | |
|---|---|
| **CFRP** | CFRP |
| **Honeycomb** | Honeycomb |
| **Graphite** | Graphite |

# AD & ADO SERIES

3D · 5D · 8D · 10D · 15D · 20D · 25D · 30D · 40D · 50D



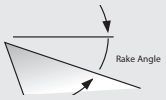
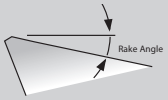
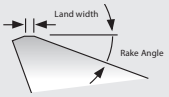
# GRADE & CHIPBREAKER

Indexable | Drilling

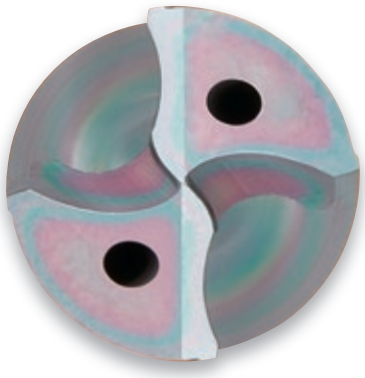
## Grades for drilling

| Material | Grades | Coolant/ Dry | Coating | Hardness (HRA) | Surface main component | Surface coating thickness | Features |
|---|---|---|---|---|---|---|---|
| P | XP3425 | Dry | PVD | 91,8 | Composite multilayer | 7 µm | For steel. Thick film-coating, wear resistant, for PXD operation |
| | XP9020 | Dry | PVD | 91,9 | TiAlN | 3 µm | For steel and stainless steel. Wide range of applicationd and areas, well-balanced wear resistance and defect resistance, for drilling operation |
| | XP9040 | Dry | PVD | 91,9 | TiAlN | 3 µm | For machining steel and stainless steel<br>A grade for hole drilling. A tough carbide grade with an anti-chipping and wear-resistant coating |
| M | XP9020 | Coolant | PVD | 91,9 | TiAlN | 3 µm | For steel and stainless steel. Wide range of applicationd and areas, well-balanced wear resistance and defect resistance, for drilling operation |
| | XP9040 | Coolant | PVD | 91,9 | TiAlN | 3 µm | For machining steel and stainless steel<br>A grade for hole drilling. A tough carbide grade with an anti-chipping and wear-resistant coating |
| K | XP1010 | Dry | PVD | 91,4 | TiAlN | 6 µm | For cast iron. High rigidity of cutting edge is acquired by optimal land width and rake angle. |
| | XP1425 | Dry | PVD | 91,8 | Composite multilayer | 7 µm | For cast iron<br>Fine grain hard metal with high strength and toughness, specifically for PXD operation |
| | XC9025 | Dry | CVD | 90,8 | TiCN-$Al_2O_3$ | 6 µm | A grade for hole drilling in cast-iron. Tough, high-strength carbide grade with an anti-chipping and wear-resistant coating |
| N | CK110 | Coolant | - | 92 | - | - | For aluminium alloys and non-ferrous material<br>Sharp cutting edge with polish treatment |
| | CF225 | Coolant | - | 91,8 | - | - | For non-ferrous materials<br>High strength and tough non-coat fine grain hard metal for PXD operation |

## Chipbreakers for drilling

| Chipbreaker | Material | Cutting edge | Rake angle | Features |
|---|---|---|---|---|
| DN | N |  | 10° | For drilling non-ferrous material: a chipbreaker with sharp cutting edge and polish treatment for excellent chip evacuation |
| DM | P M H |  | 10° | For drilling various materials (steel, stainless steel, cast iron).<br>A general-purpose chipbreaker with an ideal rake angle. |
| DR | K |  | 9° | For drilling cast iron: a breaker with high rigidity acquired by optimal land width and rake angle. |

# ALLOY STEELS



A EgiAs CARBIDE

## ADOX Series

First choice in quality and performance

Innovative coolant hole geometry: "MEGA COOLER"

EgiAs coating, unique R Gash geometry enables super low cutting resistance and exceptional chip control

Up to 30xD

For general purpose steels and cast iron

174 sizes

| 3D | 5D | 8D | 10D | 15D |
|---|---|---|---|---|
| B.385 | B.386 | B.387 | B.388 | B.389 |
| **20D** | **25D** | **30D** | | |
| B.390 | B.391 | B.392 | | |

A EgiAs CARBIDE

## ADO Series

First choice in quality and performance

Carbide drill with internal coolant,

EgiAs coating, unique R Gash geometry enables super low cutting resistance and exceptional chip control

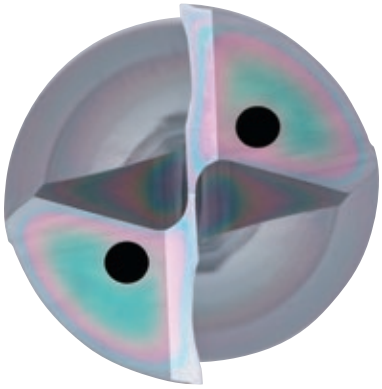
Up to 50xD

For general purpose steels and cast iron

1.676 sizes

| 3D | 5D | PLT | 10D | 15D |
|---|---|---|---|---|
| B.364 | B.366 | B.374 | B.375 | B.377 |
| **20D** | **25D** | **30D** | **40D** | **50D** |
| B.379 | B.381 | B.382 | B.383 | B.384 |

# MULTI FUNCTION



A EgiAs CARBIDE

## ADF Series

First choice in quality and performance

Carbide flat drill with EgiAs coating

Up to 3xD

For general purpose steel, **stainless steel** and **cast iron**

491 sizes

2D B.346

3D B.350

# VERSATILITY

A WXL CARBIDE

## ADO-SUS Series

First choice in quality and performance

Carbide drill with internal coolant, WXL coating

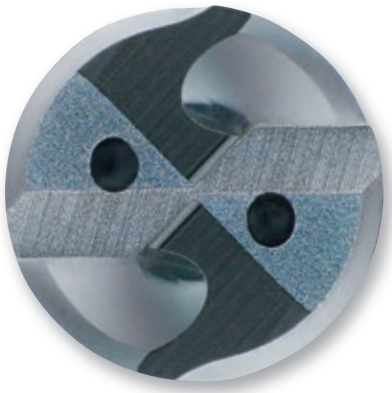
Up to 8xD

Designed for **stainless steel** and **titanium alloys** application

480 sizes

3D B.356
5D B.359
8D B.362

# MICRO



A KeptA CARBIDE

## AD-MICRO Series

First choice in quality and performance

Micro carbide drill with KEPTA coating

Up to 10xD

For general steels, **stainless steels and titanium alloys**

502 sizes

4D B.329

10D B.332

A IchAda CARBIDE

## ADO-MICRO Series

First choice in quality and performance

Micro carbide drill with internal coolant, IchAda coating

Up to 30xD

For general purpose steel and **stainless steel**

71 sizes

2D B.335

5D B.336

12D B.337

15D B.338

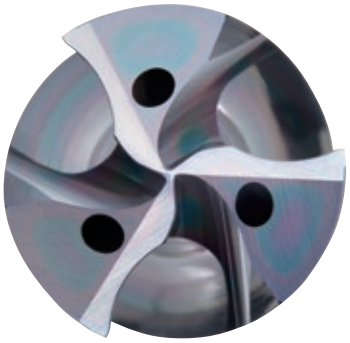
20D B.339

25D B.340

30D B.341

Product map

# HIGH FEED / PRODUCTIVITY



A | EgiAs | CARBIDE

## ADO-TRS Series

First choice in quality and performance

3 flute carbide drill with internal coolant, EgiAs coating

Up to 5xD

Allows **high feed 1.000mm/min** process in steel and cast iron

224 sizes

3D B.369

5D B.371

A | WDI | CARBIDE

## TRS Series

First choice in quality and performance

3 flute carbide drill with internal coolant, WDI coating

10xD

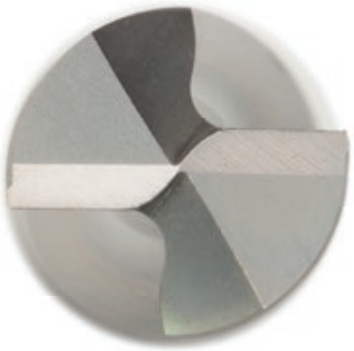
Allows **high feed 1.000mm/min** process in steel and cast iron

11 sizes

10D B.373

Product map

# HARDENED MATERIALS



DUROREY CARBIDE

## WH55

Carbide drill with DUROREY coating

Up to 5xD

For hardened material up to **55HRC**

36 sizes

5D

B.421

DUROREY CARBIDE

## WHO55

Carbide drill with internal coolant, DUROREY coating

Up to 5xD

For hardened material up to **55HRC** including **Inconel**

54 sizes

5D

B.422

DUROREY CARBIDE

## WH70

Carbide drill with DUROREY coating

Up to 3xD

With low helix for high rigidity, up to **70HRC** material

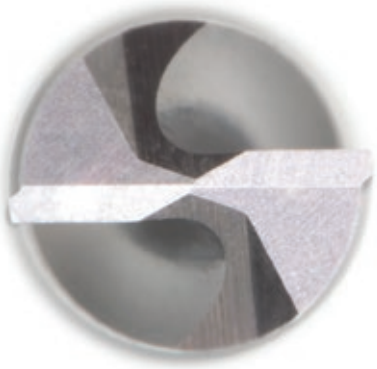
101 sizes

3D

B.423

Product map

# IMPRESSIVE SIZE RANGE



WX CARBIDE

## WX-MS-GDS

Micro carbide drill with multilayer WX coating

Small sizes for **precision** operation

241 sizes

5D

B.342

TiN HSSE

## EX-SUS Series

HSSE drill with TiN coating

Up to 5xD

For **stainless steel**, low carbon steel and cast aluminium

635 sizes from Ø 0,5-6 mm in 0,01 mm increments (EX-SUS-GDS)

3D 5D

B.435 B.442

WDI PM

## VPH-GDS

Powder metal drill with WDI coating

Up to 3xD

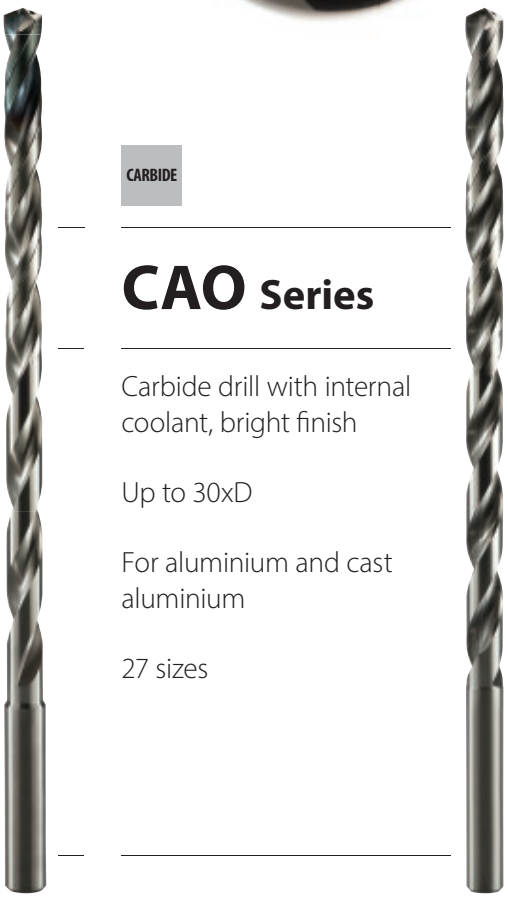
For cast iron, **exotic material** and **hardened steel**

126 sizes

3D

B.426

# NON STEP DEEP HOLE DRILLING



EgiAs CARBIDE

## ADO Series

First choice in quality and performance

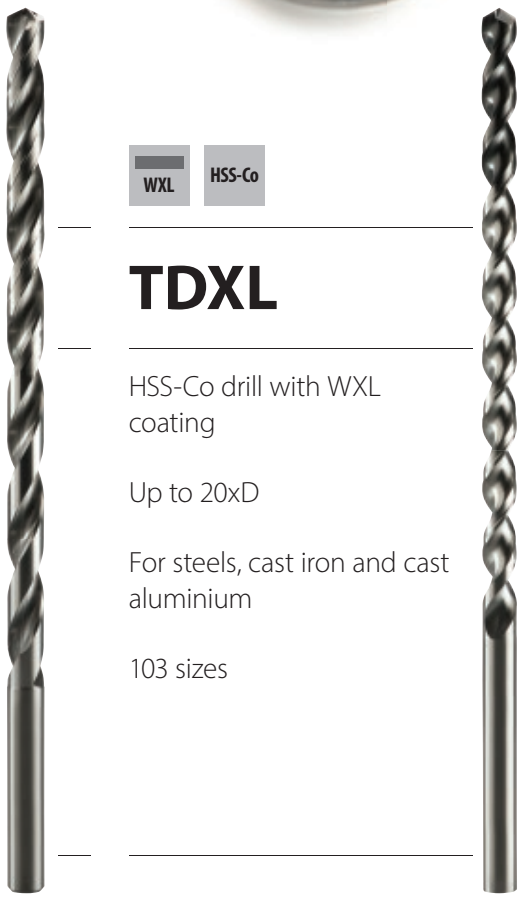
Carbide drill with internal coolant, EgiAs coating

Up to 50xD

For general purpose steels and cast iron

863 sizes

3D B.364 | 5D B.366 | 10D B.375 | 15D B.377 | 20D B.379
25D B.381 | 30D B.382 | 40D B.383 | 50D B.384



CARBIDE

## CAO Series

Carbide drill with internal coolant, bright finish

Up to 30xD

For aluminium and cast aluminium

27 sizes

15D B.393 | 20D B.393 | 30D B.393

WXL HSS-Co

## TDXL

HSS-Co drill with WXL coating

Up to 20xD

For steels, cast iron and cast aluminium

103 sizes

10D B.456 | 15D B.458 | 20D B.459

# SELECTION CHART



## Micro drills

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | -0.004 - 0 | h4 | KeptA | A | AD-MICRO-4D NEW | B.329 | 0,5 - 3 | 251 |
| Carbide | | 2 | 140 | -0.004 - 0 | h4 | KeptA | A | AD-MICRO-10D NEW | B.332 | 0,5 - 3 | 251 |
| Carbide | | 2 | 140 | 0.001 - 0.010 | h6 | IchAda | A | ADO-MICRO-2D | B.335 | 0,7 - 2 | 17 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-5D | B.336 | 0,7 - 2 | 19 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-12D | B.337 | 1 - 2 | 11 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-15D | B.338 | 2 | 1 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-20D | B.339 | 1 - 2 | 11 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-25D | B.340 | 2 | 1 |
| Carbide | | 2 | 135 | -0.009 - 0 | h6 | IchAda | A | ADO-MICRO-30D | B.341 | 1 - 2 | 11 |
| Carbide | - | 2 | 130 - 140 | 0 - 0.01 | h6 | WX | | WX-MS-GDS | B.342 | 0,2 - 5 | 241 |
| Carbide | - | 2 | 120 | 0 - 0.008 | h6 | SC | | MRS-GDL | B.345 | 0,5 - 3 | 75 |

## Up to ≤2D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | 2 | - | h8 | h6 | EgiAs | A | ADF-2D | B.346 | 0,2 - 20 | 253 |
| Carbide | - | 2 | - | h8 | h6 | EgiAs | A | ADFLS-2D | B.349 | 3 - 20 | 78 |
| Carbide | - | 2 | 140 | h8 | h6 | EgiAs | A | AD-2D | B.352 | 2 - 20 | 160 |
| Indexable | | 2 | - | - | - | - | | P2D | B.526 | 12 - 63 | 77 |
| Indexable | | 2 | - | | - | - | - | PDZ | B.531 | 16 - 43 | 33 |

## Up to ≤3D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | A | ADO-3D | B.364 | 2 - 20 | 167 |
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | A | ADOX-3D NEW | B.385 | 2 - 6 | 34 |
| Carbide | | 2 | 140 | h8 | h6 | WXL | A | ADO-SUS-3D | B.356 | 2 - 20 | 179 |
| Carbide | | 2 | - | h8 | h6 | EgiAs | A | ADFO-3D | B.350 | 3 - 20 | 160 |
| Carbide | - | 2 | TRIPLE | 0-0,02 | h6 | DIA | | D-STAD | B.418 | 4 - 8 | 4 |
| Carbide | - | 2 | - | 0-0,02 | h6 | DIA | | D-DAD | B.419 | 2,5 - 9,5 | 6 |
| Carbide | - | 2 | - | 0-0,02 | h6 | DIA | | D-GDN90 | B.420 | 2,5 - 9,5 | 6 |
| Carbide | | **3** | 140 | h8 | h6 | EgiAs | A | ADO-TRS-3D | B.369 | 3 - 20 | 112 |

# SELECTION CHART

**Drilling | Selection chart | By material**

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| AD-MICRO-4D NEW | B.329 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ● | | ● | ◎ | ◎ | | |
| AD-MICRO-10D NEW | B.332 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ● | | ● | ◎ | ◎ | | |
| ADO-MICRO-2D | B.335 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-5D | B.336 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-12D | B.337 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-15D | B.338 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-20D | B.339 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-25D | B.340 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-MICRO-30D | B.341 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| WX-MS-GDS | B.342 | ● | ● | ◎ | ◎ | ◎ | ◎ | | ● | ◎ | ◎ | | | | | | |
| MRS-GDL | B.345 | ● | ● | ◎ | ◎ | ● | | | | | | | | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADF-2D | B.346 | ● | ● | ● | ● | | ● | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| ADFLS-2D | B.349 | ◎ | ◎ | ◎ | ◎ | | ◎ | ◎ | ◎ | | | | ◎ | ◎ | | | |
| AD-2D | B.352 | ● | ● | ● | ● | | ◎ | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| P2D | B.526 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| PDZ | B.531 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-3D | B.364 | ● | ● | ● | ● | ◎ | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADOX-3D NEW | B.385 | ● | ● | ● | ● | ◎ | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-SUS-3D | B.356 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ● | | ● | ◎ | ◎ | | |
| ADFO-3D | B.350 | ● | ● | ● | ● | ● | ● | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| D-STAD | B.418 | | | | | | | | | | | | | | | | ● |
| D-DAD | B.419 | | | | | | | | | | | | | | | | ● |
| D-GDN90 | B.420 | | | | | | | | | | | | | | | | ● |
| ADO-TRS-3D | B.369 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | | ● | ◎ | ◎ | | |

# SELECTION CHART



## Up to ≤3D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | 2 | 140 | m7 | h6 | EgiAs | | HYP-HP-3D | B.394 | 1 - 20 | 154 |
| Carbide | - | 2 | 140 | h8 | h6 | EgiAs | | HYP-HP-SC-3D | B.396 | 6 - 14 | 7 |
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | | HYP-HPO-SC-3D | B.405 | 6 - 14 | 6 |
| Carbide | | 2 | 140 | m7 | h6 | EgiAs | | HYP-HPO-3D | B.399 | 3 - 20 | 136 |
| Carbide | | 2 | 140 | m7 | HE | EgiAs | | HYP-HPO-3D-HE | B.401 | 3 - 20 | 134 |
| Carbide | | 2 | 140 | m7 | HB | EgiAs | | HYP-HPO-3D-HB | B.403 | 3 - 20 | 136 |
| Carbide | - | 2 | 130 | m7 | - | - | | HYP-AL-3D | B.414 | 1 - 12,7 | 137 |
| Carbide | - | 2 | 120 | h8 | h6 | DUROREY | | WH70-DRL | B.423 | 2 - 12 | 101 |
| HSSE | - | 2 | 120-150 | h8 | h7 | TiN | | EX-SUS-GDS | B.435 | 0,5 - 20 | **635** |
| HSSE | - | 2 | 120-130 | h8 | h7 | TiN | | EX-GDS | B.448 | 1 - 13 | 193 |
| HSSE | - | 2 | 120-140 | h8 | h7 | WDI | | NEXUS-GDS | B.430 | 1 - 12 | 106 |
| PM | - | 2 | 130 | h8 | h7 | WDI | | VPH-GDS | B.426 | 0,5 - 13 | 126 |
| Indexable | | 2 | - | - | - | - | | P3D | B.529 | 12 - 63 | 88 |
| Indexable | | 2 | - | - | - | - | | PDZ (3D) | B.531 | 16 - 43 | 33 |
| Top solid | | 2 | 140 | - | - | - | | PXD 3D | B.536 | 14 - 25,99 | 13 |
| Indexable | | 2 | - | - | - | - | | PHP | B.538 | 14 - 40 | 40 |

## Up to ≤4D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | 2 | 140 | h8 | h6 | EgiAs | A | AD-4D | B.354 | 2 - 20 | 149 |
| Indexable | | 2 | - | - | - | - | | P4D | B.532 | 12 - 63 | 77 |

## Up to ≤5D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | A | ADO-5D | B.366 | 2 - 20 | 191 |
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | A | ADOX-5D NEW | B.386 | 2 - 6 | 31 |
| Carbide | | 2 | 140 | h8 | h6 | WXL | A | ADO-SUS-5D | B.359 | 2 - 20 | 198 |
| Carbide | | **3** | 140 | h8 | h6 | EgiAs | A | ADO-TRS-5D | B.371 | 3 - 20 | 112 |
| Carbide | - | 2 | 140 | m7 | h6 | EgiAs | | HYP-HP-5D | B.397 | 1 - 20 | 154 |
| Carbide | | 2 | 140 | m7 | h6 | EgiAs | | HYP-HPO-5D | B.406 | 1 - 20 | 156 |

# SELECTION CHART

Drilling | Selection chart | By material

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HYP-HP-3D | B.394 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HP-SC-3D | B.396 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HPO-SC-3D | B.405 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HPO-3D | B.399 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HPO-3D-HE | B.401 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HPO-3D-HB | B.403 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-AL-3D | B.414 | | | | | | | | ● | ● | | | | | | | |
| WH70-DRL | B.423 | | | | | | | | | | | | | | | ● | |
| EX-SUS-GDS | B.435 | ● | ○ | | | ● | | | ● | ○ | | | | | | | |
| EX-GDS | B.448 | ○ | ● | ● | ● | | ● | ○ | | ○ | | ○ | ● | ● | | | |
| NEXUS-GDS | B.430 | ● | ○ | | | ● | | | ● | ● | ● | | | | | | |
| VPH-GDS | B.426 | ○ | ○ | ○ | ○ | | ● | ● | | | ● | ● | ● | ● | ● | | |
| P3D | B.529 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| PDZ (3D) | B.531 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| PXD 3D | B.536 | ● | ● | ● | ● | | ● | ● | ● | ● | | | | | | | |
| PHP | B.538 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ○ | ○ | | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| AD-4D | B.354 | ● | ● | ● | ● | | ○ | ● | ○ | ○ | | | ● | ○ | | | |
| P4D | B.532 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-5D | B.366 | ● | ● | ● | ● | ○ | ● | ● | | ○ | ○ | | ● | ○ | ○ | | |
| ADOX-5D NEW | B.386 | ● | ● | ● | ● | ○ | ● | ● | | ○ | ○ | | ● | ○ | ○ | | |
| ADO-SUS-5D | B.359 | ● | ● | ● | ● | ● | ● | ● | | ○ | ● | | ● | ○ | ○ | | |
| ADO-TRS-5D | B.371 | ● | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | | | | |
| HYP-HP-5D | B.397 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |
| HYP-HPO-5D | B.406 | ○ | ● | ● | ● | ○ | ● | ● | ○ | ○ | | | ● | ○ | ○ | | |

# SELECTION CHART



## Up to ≤5D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | m7 | HE | EgiAs | | HYP-HPO-5D-HE | B.408 | 3 - 20 | 134 |
| Carbide | | 2 | 140 | m7 | HB | EgiAs | | HYP-HPO-5D-HB | B.410 | 3 - 20 | 136 |
| Carbide | | | 130 | m7 | | - | | HYP-ALO-5D | B.416 | 3 - 12,7 | 119 |
| Carbide | - | 2 | 140 | h8 | h6 | DUROREY | | WH55-5D | B.421 | 2 - 12 | 36 |
| Carbide | | 2 | 140 | h8 | h6 | DUROREY | | WHO55-5D | B.422 | 3,3 - 12 | 54 |
| Carbide | - | 2 | 118 | 0/-0.013 | h6 | - | | JOBBER DRILL | B.467 | 1 - 12,7 | 125 |
| HSSE | - | 2 | 120-130 | h8 | h7 | TiN | | EX-SUS-GDR | B.442 | 2 - 20 | 485 |
| HSSE | - | 2 | 120-130 | h8 | h7 | TiN | | EX-GDR | B.451 | 2 - 32 | 249 |
| HSSE | - | 2 | 120-130 | h8 | h7 | WDI | | NEXUS-GDR | B.432 | 2 - 12 | 32 |
| HSSE | - | 2 | 120 | h8 | h7 | V | | V-SDR | B.433 | 2 - 13 | 111 |
| HSS-Co | | 2 | 130 | h8 | h6-h7 | V | | V-HDO-GDR | B.454 | 6 - 32 | 96 |
| SPH | - | 2 | 120 | h8 | h7 | V | | VP-GDR | B.428 | 2 - 32 | 144 |
| Indexable | | 2 | - | - | - | - | | P5D | B.534 | 12 - 63 | 77 |
| Top solid | | 2 | 140 | - | - | - | | PXD 5D | B.537 | 14 - 25,99 | 13 |

## Pilot drills

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 160 | h8 | h6 | EgiAs | A | ADO-PLT | B.374 | 3,03 - 12,03 | 15 |

## Up to ≤8D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | h8 | h6 | EgiAs | A | ADOX-8D NEW | B.387 | 2 - 6 | 13 |
| Carbide | | 2 | 135 | h8 | h6 | WXL | A | ADO-SUS-8D | B.362 | 2 - 12 | 101 |
| Carbide | | 2 | 140 | m7 | h6 | EgiAs | | HYP-HPO-8D | B.412 | 3 - 20 | 134 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-8D | B.460 | 11 - 13 | 21 |

# SELECTION CHART

Drilling | Selection chart | By material

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| HYP-HPO-5D-HE | B.408 | ◎ | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| HYP-HPO-5D-HB | B.410 | ◎ | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| HYP-ALO-5D | B.416 | | | | | | | | ● | ● | | | | | | | |
| WH55-5D | B.421 | | | | | | | | | | | | | ● | ● | ◎ | |
| WHO55-5D | B.422 | | | | | | | | | | | ● | | ● | ● | ◎ | |
| JOBBER DRILL | B.467 | ◎ | ◎ | ◎ | ◎ | | ◎ | | ◎ | ◎ | | | ◎ | | | | |
| EX-SUS-GDR | B.442 | ● | ◎ | | | ● | | | ● | ◎ | | | | | | | |
| EX-GDR | B.451 | ◎ | ● | ● | ● | | ● | ◎ | ◎ | ◎ | | | ◎ | | | | |
| NEXUS-GDR | B.432 | ● | ◎ | | | ● | | | ● | ● | ● | | | | | | |
| V-SDR | B.433 | ● | ● | ◎ | ● | | ◎ | ◎ | ◎ | ◎ | | | | | | | |
| V-HDO-GDR | B.454 | ● | ● | ● | ● | ● | ◎ | ◎ | ◎ | ● | ◎ | ◎ | ● | | | | |
| VP-GDR | B.428 | ● | ● | ● | ● | | ● | ● | ◎ | ● | ◎ | ◎ | ● | | | | |
| P5D | B.534 | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | | | |
| PXD 5D | B.537 | ● | ● | ● | ● | | ● | ● | ● | ● | | | | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-PLT | B.374 | ◎ | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | | | ● | ● | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADOX-8D NEW | B.387 | ● | ● | ● | ● | ◎ | ● | ● | | ◎ | ◎ | | ● | ◎ | ◎ | | |
| ADO-SUS-8D | B.362 | ● | ● | ● | ● | ● | ● | ● | | ◎ | ● | | ● | ◎ | ◎ | | |
| HYP-HPO-8D | B.412 | ◎ | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | | | ● | ◎ | ◎ | | |
| EX-GDXL-8D | B.460 | ◎ | ● | ● | ● | | ● | ● | | ◎ | | | ◎ | | | | |

# SELECTION CHART



## Up to ≤10D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-10D | B.375 | 2 - 12,5 | 102 |
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADOX-10D NEW | B.388 | 2,4 - 6 | 22 |
| Carbide | | **3** | 140 | h8 | h6 | WDI | A | TRS-HO-10D | B.373 | 5 - 12 | 11 |
| HSS-Co | - | 2 | 120 | h8 | h7 | WXL | | TDXL-10D | B.456 | 1,6 - 12 | 103 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-10D | B.461 | 3,6 - 13 | 89 |

## Up to ≤15D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-15D | B.377 | 2 - 12,5 | 102 |
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADOX-15D NEW | B.389 | 2,3 - 6 | 24 |
| Carbide | | 2 | 140 | h8 | h6 | - | | CAO-GDXL | B.393 | 3 - 10 | 9 |
| HSS-Co | - | 2 | 120 | h8 | h7 | WXL | | TDXL-15D | B.458 | 1,6 - 12 | 68 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-15D | B.462 | 2 - 13 | 104 |

## Up to ≤20D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-20D | B.379 | 2 - 12,5 | 102 |
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADOX-20D NEW | B.390 | 2,3 - 6 | 22 |
| Carbide | | 2 | 140 | h8 | h6 | - | | CAO-GDXL-20D | B.393 | 4 - 10 | 9 |
| HSS-Co | - | 2 | 120 | h8 | h7 | WXL | | TDXL-20D | B.459 | 1,6 - 12 | 48 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-20D | B.464 | 2 - 10,9 | 72 |

## Up to ≤25D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-25D | B.381 | 2,5 - 12 | 92 |
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADOX-25D NEW | B.391 | 2,3 - 6 | 11 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-25D | B.465 | 3,3- 8,1 | 36 |

# SELECTION CHART

Drilling | Selection chart | By material

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-10D | B.375 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| ADOX-10D NEW | B.388 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| TRS-HO-10D | B.373 | ● | ● | ● | ● | | ● | ● | | | | | | | | | |
| TDXL-10D | B.456 | ◎ | ● | ● | ● | | ● | ● | | ● | | | | | | | |
| EX-GDXL-10D | B.461 | ◎ | ● | ● | ● | | ● | ● | | ◎ | | | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-15D | B.377 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| ADOX-15D NEW | B.389 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| CAO-GDXL | B.393 | | | | | | | | ◎ | ● | | | | | | | |
| TDXL-15D | B.458 | ◎ | ● | ● | ● | | ● | ● | | ● | | | | | | | |
| EX-GDXL-15D | B.462 | ◎ | ● | ● | ● | | ● | ● | | ◎ | | | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-20D | B.379 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| ADOX-20D NEW | B.390 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| CAO-GDXL | B.393 | | | | | | | | ◎ | ● | | | | | | | |
| TDXL-20D | B.459 | ◎ | ● | ● | ● | | ● | ● | | ● | | | | | | | |
| EX-GDXL-20D | B.464 | ◎ | ● | ● | ● | | ● | ● | | ◎ | | | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | AI | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-25D | B.381 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| ADOX-25D NEW | B.391 | ● | ● | ● | ● | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| EX-GDXL-25D | B.465 | ◎ | ● | ● | ● | | ● | ● | | ◎ | | | ◎ | | | | |

# SELECTION CHART



## Up to ≤30D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-30D | B.382 | 2 - 10 | 81 |
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADOX-30D NEW | B.392 | 2,3 - 6 | 11 |
| Carbide | | 2 | 140 | h8 | h6 | - | | CAO-GDXL-30D | B.393 | 5 - 8 | 5 |
| HSS-Co | - | 2 | 130 | h8 | h7 | TiN | | EX-GDXL-30D | B.466 | 3 - 6,3 | 10 |

## Up to ≤40D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-40D | B.383 | 3 - 10 | 23 |

## Up to ≤50D

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | | 2 | 140 | e8 | h6 | EgiAs | A | ADO-50D | B.384 | 3 - 8,5 | 26 |

## Spotting, Chamfering, Counterboring

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | 2 | 60 / 90 / 120 / 140 | - | h7 | EgiAs | A | AD-LDS | B.469 | 0,5 - 12 | 30 |
| Carbide | - | 2 | 90 | - | h7 | EgiAs | A | AD-LS-LDS | B.470 | 3 - 12 | 6 |
| Carbide | - | 2 | 90 / 120 / 142 | - | h6 | - | | HYP-LDS | B.471 | 3 - 20 | 24 |
| HSS | - | 2 | 60 / 90 / 120 | - | h7 | TiN | | TIN-NC-LDS | B.472 | 3 - 25 | 21 |
| HSS | - | 2 | 60 / 90 / 120 | - | h7 | - | | NC-LDS | B.473 | 3 - 25 | 27 |
| Indexable | - | - | 60 / 90 / 118 / 120 | - | - | - | | HY-PRO-CARB | B.548 | 8 - 40 | 12 |
| Indexable | - | - | - | - | - | - | | PZAG BORE | B.541 | 54 - 82 | 7 |
| Indexable | - | - | - | - | - | - | | PZAG SS | B.540 | 14 - 48 | 11 |
| Indexable | | - | 90 / 120 | - | - | - | | PLDS SS | B.542 | 14,4 - 17,3 | 4 |
| Indexable | | - | 90 / 120 | - | - | - | | PLDS SF | B.543 | 14,4 - 17,3 | 2 |
| Indexable | | 1/3 | - | - | - | - | | PMEN SS NEW | B.544 | 8,5 - 35,6 | 10 |
| Indexable | | 4/5 | - | - | - | - | | PMEN BORE NEW | B.545 | 40,5 - 63,6 | 6 |
| Indexable | | 1/3 | - | - | - | - | | PMEN SF NEW | B.546 | 8,5 - 35,6 | 10 |

# SELECTION CHART

Drilling | Selection chart | By material

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-30D | B.382 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| ADOX-30D NEW | B.392 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |
| CAO-GDXL-30D | B.393 | | | | | | | | ◎ | ◉ | | | | | | | |
| EX-GDXL-30D | B.466 | ◎ | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◎ | | | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-40D | B.383 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| ADO-50D | B.384 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | ◎ | | | | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| AD-LDS | B.469 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◉ | ◎ | ◎ | ◉ | ◉ | | | |
| AD-LS-LDS | B.470 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◎ | ◉ | ◎ | ◎ | ◉ | ◉ | | | |
| HYP-LDS | B.471 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◎ | ◎ | ◎ | ◉ | ◎ | | | |
| TIN-NC-LDS | B.472 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◎ | | | | |
| NC-LDS | B.473 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◎ | | | | |
| HY-PRO-CARB | B.548 | ◉ | ◉ | | | ◉ | ◉ | | ◉ | | | | ◉ | | | | |
| PZAG BORE | B.541 | ◉ | ◉ | | | ◉ | ◉ | ◉ | ◎ | | ◎ | | ◎ | | | | |
| PZAG SS | B.540 | ◉ | ◉ | | | ◉ | ◉ | ◉ | ◎ | | ◎ | | ◎ | | | | |
| PLDS SS | B.542 | ◉ | ◉ | | | ◉ | ◉ | ◉ | ◎ | | ◎ | | ◎ | | | | |
| PLDS SF | B.543 | ◉ | ◉ | | | ◉ | ◉ | ◉ | ◎ | | ◎ | | ◎ | | | | |
| PMEN SS NEW | B.544 | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | |
| PMEN BORE NEW | B.545 | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | |
| PMEN SF NEW | B.546 | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | |

# SELECTION CHART



## Drill for removing broken tap

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | - | - | - | h7 | - | | EX-H-DRL | B.425 | 2 - 12 | 11 |

## Reamer

| Tool material | | Flutes | Point angle | Tolerance | Shank tolerance | | A-Brand | Product series | Page | Size range Ø | No. of sizes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbide | - | 4 / 6 | - | 0/+0.005 | h6 | - | | CRM | B.474 | 0,3 - 13,05 | **1276** |
| Carbide | | 5 | - | 0/+0.005 | h6 | AlCrN | | HS-OIL-CRM NEW | B.488 | 2,97 - 12,03 | 86 |
| Carbide | | 4 / 6 | - | 0/+0.005 | h6 | DLC | | AL-CRM NEW | B.489 | 1,97 - 12,03 | 98 |
| Carbide | | 4 | - | 0/+0.005 | h6 | FX | | H-CRM NEW | B.491 | 1,97 - 12,03 | 98 |

# SELECTION CHART

Drilling | Selection chart | By material

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| EX-H-DRL | B.425 | | | | | | | | | | | | | | | ◉ | |

| Product series | Page | P | | | | M | K | | N | | S | | H | | | | CFRP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C: ≤0,2% | C: 0,25-0,4% | C: ≥0,45% | SCM | INOX | GG | GGG | Al | AC,ADC | Ti | Ni | 25-35 HRC | 35-45 HRC | 45-50 HRC | 50-70 HRC | |
| CRM | B.474 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | | |
| HS-OIL-CRM NEW | B.488 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| AL-CRM NEW | B.489 | | | | | | | | ◉ | ◉ | | | | | | | |
| H-CRM NEW | B.491 | | | | ◉ | ◉ | | | | | ◉ | | ◉ | ◉ | ◉ | ◉ | |

# SELECTION CHART SIZE

## Drilling | Selection chart | By size | Micro

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

NEW NEW

| Product series | | AD-MICRO-4D | AD-MICRO-10D | ADO-MICRO-2D | ADO-MICRO-5D | ADO-MICRO-12D | ADO-MICRO-15D | ADO-MICRO-20D | ADO-MICRO-25D | ADO-MICRO-30D |
|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | A | A | A | A | A | A | A | A |
| Total # of sizes | | 251 sizes | 251 sizes | 17 sizes | 19 sizes | 11 sizes | 1 size | 11 sizes | 1 size | 11 sizes |
| Incremental step | Diameter | B.329 | B.332 | B.335 | B.336 | B.337 | B.338 | B.339 | B.340 | B.341 |
| 0,1 | 0,50 ~ 0,59 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,60 ~ 0,69 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,70 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,71 ~ 0,74 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,75 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,76 ~ 0,79 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,80 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,81 ~ 0,84 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,85 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,86 ~ 0,89 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,90 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,91 ~ 0,94 | ◉ | ◉ | | | | | | | |
| 0,1 | 0,95 | ◉ | ◉ | ◉ | ◉ | | | | | |
| 0,1 | 0,96 ~ 0,99 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,00 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,01 ~ 1,09 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,10 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,11 ~ 1,19 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,20 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,21 ~ 1,29 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,30 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,31 ~ 1,39 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,40 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,41 ~ 1,49 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,50 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,51 ~ 1,54 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,55 | ◉ | ◉ | | ◉ | | | | | |
| 0,1 | 1,56 ~ 1,59 | ◉ | ◉ | | | | | | | |
| 0,1 | 1,60 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| 0,1 | 1,61 ~ 1,69 | ◉ | ◉ | | | | | | | |
| | 1,70 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| | 1,71 ~ 1,79 | ◉ | ◉ | | | | | | | |
| | 1,80 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| | 1,81 ~ 1,83 | ◉ | ◉ | | | | | | | |
| | 1,84 | ◉ | ◉ | | ◉ | | | | | |
| | 1,85 ~ 1,89 | ◉ | ◉ | | | | | | | |
| | 1,90 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◉ |
| | 1,91 ~ 1,99 | ◉ | ◉ | | | | | | | |
| | 2,00 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2,01 ~ 2,10 | ◉ | ◉ | | | | | | | |
| | 2,11 ~ 2,20 | ◉ | ◉ | | | | | | | |
| | 2,21 ~ 2,30 | ◉ | ◉ | | | | | | | |
| | 2,31 ~ 2,40 | ◉ | ◉ | | | | | | | |
| | 2,41 ~ 2,50 | ◉ | ◉ | | | | | | | |
| | 2,51 ~ 2,60 | ◉ | ◉ | | | | | | | |
| | 2,61 ~ 2,70 | ◉ | ◉ | | | | | | | |
| | 2,71 ~ 2,80 | ◉ | ◉ | | | | | | | |
| | 2,81 ~ 2,90 | ◉ | ◉ | | | | | | | |
| | 2,91 ~ 3,00 | ◉ | ◉ | | | | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | Micro**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | WX-MS-GDS | EX-SUS-GDS | EX-SUS-GDR | VPH-GDS |
|---|---|---|---|---|---|
| Tool material | | Carbide | HSS | HSS | PM |
| Incremental | | 0,01 mm incremental from Ø0,2 to Ø2 | 0,01 mm incremental from Ø0,5 to Ø6 | 0,01 mm incremental from Ø2 to Ø6 | 0,1 mm incremental from Ø0,5 to Ø13 |
| Total # of sizes | | 241 sizes | 635 sizes | 485 sizes | 126 sizes |
| Incremental step | Diameter | B.342 | B.435 | B.442 | B.426 |
| 0,01 | 0,2 ~ 0,49 | ◉ | | | |
| 0,01 | 0,50 ~ 0,59 | ◉ | ◉ | | 0,5 |
| 0,01 | 0,60 ~ 0,69 | ◉ | ◉ | | 0,6 |
| 0,01 | 0,70 ~ 0,79 | ◉ | ◉ | | 0,7 |
| 0,01 | 0,80 ~ 0,89 | ◉ | ◉ | | 0,8 |
| 0,01 | 0,90 ~ 0,99 | ◉ | ◉ | | 0,9 |
| 0,01 | 1,00 ~1,09 | ◉ | ◉ | | 1,0 |
| 0,01 | 1,10 ~ 1,19 | ◉ | ◉ | | 1,1 |
| 0,01 | 1,20 ~ 1,29 | ◉ | ◉ | | 1,2 |
| 0,01 | 1,30 ~ 1,39 | ◉ | ◉ | | 1,3 |
| 0,01 | 1,40 ~ 1,49 | ◉ | ◉ | | 1,4 |
| 0,01 | 1,50 ~ 1,59 | ◉ | ◉ | | 1,5 |
| 0,01 | 1,60 ~ 1,69 | ◉ | ◉ | | 1,6 |
| 0,01 | 1,70 ~ 1,79 | ◉ | ◉ | | 1,7 |
| 0,01 | 1,80 ~ 1,89 | ◉ | ◉ | | 1,8 |
| 0,01 | 1,90 ~ 1,99 | ◉ | ◉ | | 1,9 |
| 0,01 | 2,00 ~ 2,09 | 2,0 / 2,05 | ◉ | ◉ | 2,0 |
| 0,01 | 2,10 ~ 2,19 | 2,1 / 2,15 | ◉ | ◉ | 2,1 |
| 0,01 | 2,20 ~ 2,29 | 2,2 /2,25 | ◉ | ◉ | 2,2 |
| 0,01 | 2,30 ~ 2,39 | 2,3 / 2,35 | ◉ | ◉ | 2,3 |
| 0,01 | 2,40 ~ 2,49 | 2,4 / 2,45 | ◉ | ◉ | 2,4 |
| 0,01 | 2,50 ~ 2,59 | 2,5 / 2,55 | ◉ | ◉ | 2,5 |
| 0,01 | 2,60 ~ 2,69 | 2,6 / 2,65 | ◉ | ◉ | 2,6 |
| 0,01 | 2,70 ~ 2,79 | 2,7 / 2,75 | ◉ | ◉ | 2,7 |
| 0,01 | 2,80 ~ 2,89 | 2,8 / 2,85 | ◉ | ◉ | 2,8 |
| 0,01 | 2,90 ~ 2,99 | 2,9 / 2,95 | ◉ | ◉ | 2,9 |
| 0,01 | 3,00 ~ 3,09 | 3,0 / 3,05 | ◉ | ◉ | 3,0 |
| 0,01 | 3,10 ~ 3,19 | 3,1 /3,15 | ◉ | ◉ | 3,1 |
| 0,01 | 3,20 ~ 3,29 | 3,2 / 3,25 | ◉ | ◉ | 3,2 |
| 0,01 | 3,30 ~ 3,39 | 3,3 / 3,35 | ◉ | ◉ | 3,3 |
| 0,01 | 3,40 ~ 3,49 | 3,4 / 3,45 | ◉ | ◉ | 3,4 |
| 0,01 | 3,50 ~ 3,59 | 3,5 / 3,55 | ◉ | ◉ | 3,5 |
| 0,01 | 3,60 ~ 3,69 | 3,6 / 3,65 | ◉ | ◉ | 3,6 |
| 0,01 | 3,70 ~ 3,79 | 3,7 / 3,75 | ◉ | ◉ | 3,7 |
| 0,01 | 3,80 ~ 3,89 | 3,8 / 3,85 | ◉ | ◉ | 3,8 |
| 0,01 | 3,90 ~ 3,99 | 3,9 / 3,95 | ◉ | ◉ | 3,9 |
| 0,01 | 4,00 ~ 4,09 | 4,0 / 4,05 | ◉ | ◉ | 4,0 |
| 0,01 | 4,10 ~ 4,19 | 4,1 / 4,15 | ◉ | ◉ | 4,1 |
| 0,01 | 4,20 ~ 4,29 | 4,2 / 4,25 | ◉ | ◉ | 4,2 |
| 0,01 | 4,30 ~ 4,39 | 4,3 / 4,35 | ◉ | ◉ | 4,3 |
| 0,01 | 4,40 ~ 4,49 | 4,4 / 4,45 | ◉ | ◉ | 4,4 |
| 0,01 | 4,50 ~ 4,59 | 4,5 / 4,55 | ◉ | ◉ | 4,5 |
| 0,01 | 4,60 ~ 4,69 | 4,6 / 4,65 | ◉ | ◉ | 4,6 |
| 0,01 | 4,70 ~ 4,79 | 4,7 / 4,75 | ◉ | ◉ | 4,7 |
| 0,01 | 4,80 ~ 4,89 | 4,8 / 4,85 | ◉ | ◉ | 4,8 |
| 0,01 | 4,90 ~ 4,99 | 4,9 / 4,95 | ◉ | ◉ | 4,9 |
| 0,01 | 5,00 ~ 5,09 | 5 | ◉ | ◉ | 5,0 |
| 0,01 | 5,10 ~ 5,19 | | ◉ | ◉ | 5,1 |
| 0,01 | 5,20 ~ 5,29 | | ◉ | ◉ | 5,2 |
| 0,01 | 5,30 ~ 5,39 | | ◉ | ◉ | 5,3 |
| 0,01 | 5,40 ~ 5,49 | | ◉ | ◉ | 5,4 |
| 0,01 | 5,50 ~ 5,59 | | ◉ | ◉ | 5,5 |
| 0,01 | 5,60 ~ 5,69 | | ◉ | ◉ | 5,6 |
| 0,01 | 5,70 ~ 5,79 | | ◉ | ◉ | 5,7 |
| 0,01 | 5,80 ~ 5,89 | | ◉ | ◉ | 5,8 |
| 0,01 | 5,90 ~ 5,99 | | ◉ | ◉ | 5,9 |
| 0,1 | 6,0 ~ 6,9 | | ◉ | ◉ | ◉ |
| 0,1 | 7,0 ~ 7,9 | | ◉ | ◉ | ◉ |
| 0,1 | 8,0 ~ 8,9 | | ◉ | ◉ | ◉ |
| 0,1 | 9,0 ~ 9,9 | | ◉ | ◉ | ◉ |
| 0,1 | 10,0 ~ 10,9 | | ◉ | ◉ | ◉ |
| 0,1 | 11,0 ~ 11,9 | | ◉ | ◉ | ◉ |
| 0,1 | 12,0 ~ 12,9 | | ◉ | ◉ | ◉ |
| 0,5 | 13 | | ◉ | ◉ | ◉ |
| 0,5 | 13,5 ~ 20 | | ◉ | ◉ | |
| | | | | | |
| | 1/8 - (3,17) | | ◉ | ◉ | |
| | 9/64 - (3,57) | | ◉ | ◉ | |
| | 5/32 - (3,97) | | ◉ | ◉ | |
| | 11/64 - (4,37) | | ◉ | ◉ | |
| | 3/16 - (4,76) | | ◉ | ◉ | |
| | 13/64 - (5,16) | | ◉ | ◉ | |
| | 7/32 - (5,56) | | ◉ | ◉ | |
| | 15/64 - (5,95) | | ◉ | ◉ | |
| | 31/64 - (12,3) | | ◉ | ◉ | ◉ |
| | 1/2 - (12,7) | | ◉ | ◉ | ◉ |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | Carbide up to 5D**

● = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | ADF-2D | ADFLS-2D | AD-2D | ADFO-3D | ADO-3D | ADOX-3D NEW | ADO-SUS-3D NEW SIZES | D-STAD | D-DAD | D-GDN90 | ADO-TRS-3D | HYP-HP-3D | HYP-HPO-3D | HYP-HPO-3D-HE | HYP-HPO-3D-HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | A | A | A | A | A | A | | | | A | | | | |
| Total # of sizes | | 253 | 78 | 160 | 160 | 167 | 34 | 179 | 4 | 6 | 6 | 112 | 154 | 136 | 134 | 136 |
| Incremental step | Diameter | B.346 | B.349 | B.352 | B.350 | B.364 | B.385 | B.356 | B.418 | B.419 | B.420 | B.369 | B.394 | B.399 | B.401 | B.403 |
| 0,05 | 0,2 ~ 0,95 | ● | | | | | | | | | | | | | | |
| 0,1 | 1,0 ~ 1,9 | ● | | | | | | | | | | | ● | | | |
| 0,1 | 2,0 ~ 2,9 | ● | | ● | | ● | ◎ | ● | | ◎ | ◎ | | ● | | | |
| 0,1 | 3,0 ~ 3,9 | ● | ● | ● | ● | ● | ◎ | ● | | ◎ | ◎ | ◎ | ● | ● | ● | ● |
| 0,1 | 4,0 ~ 4,9 | ● | ● | ● | ● | ● | ◎ | ● | ◎ | ◎ | ◎ | ◎ | ● | ● | ● | ● |
| 0,1 | 5,0 ~ 5,9 | ● | ● | ● | ● | ● | ◎ | ● | | | | ● | ● | ● | ● | ● |
| 0,1 | 6,0 ~ 6,9 | ● | ◎ | ● | ● | ● | ◎ | ● | ◎ | ◎ | ◎ | ● | ● | ● | ● | ● |
| 0,1 | 7,0 ~ 7,9 | ● | ◎ | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| 0,1 | 8,0 ~ 8,9 | ● | ◎ | ● | ● | ● | | ● | ◎ | | | ● | ● | ● | ● | ● |
| 0,1 | 9,0 ~ 9,9 | ● | ◎ | ● | ● | ● | | ● | | ◎ | ◎ | ● | ● | ● | ● | ● |
| 0,1 | 10,0 ~ 10,9 | ● | ◎ | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| 0,1 | 11,0 ~ 11,9 | ● | ◎ | ● | ● | ● | | ◎ | | | | ● | ● | ● | ● | ● |
| 0,1 | 12,0 ~ 12,9 | ● | ◎ | ● | ● | ● | | ● | | | | ◎ | ◎ | ◎ | ◎ | ◎ |
| | 13 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 13,1 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 13,2 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 13,3 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 13,35 | | | | | | | ● | | | | | | | | |
| | 13,4 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 13,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 13,6 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 13,7 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 13,8 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 13,9 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 14 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 14,1 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 14,2 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 14,3 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 14,4 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 14,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 14,6 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 14,7 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 14,8 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 14,9 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 15,1 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15,2 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 15,3 | ● | | ● | ● | ● | | ● | | | | ● | | | | |
| | 15,35 | | | | | | | ● | | | | | | | | |
| | 15,4 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 15,6 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15,7 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15,8 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 15,9 | ● | | ● | ● | ● | | ● | | | | | | | | |
| | 16 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 16,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 16,7 | | | | | | | ● | | | | | | | | |
| | 17 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 17,3 | | | | | | | ● | | | | | | | | |
| | 17,35 | | | | | | | ● | | | | | | | | |
| | 17,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 17,8 | | | | | | | ● | | | | | | | | |
| | 18 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 18,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 18,7 | | | | | | | ● | | | | | | | | |
| | 18,8 | | | | | | | ● | | | | | | | | |
| | 19 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 19,3 | | | | | | | ● | | | | | | | | |
| | 19,35 | | | | | | | ● | | | | | | | | |
| | 19,5 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 20 | ● | ● | ● | ● | ● | | ● | | | | ● | ● | ● | ● | ● |
| | 3/32 - (2,38) | | | | | | | | | | | | | | | |
| | 7/64 - (2,78) | ● | | ● | | | | | | | | | | | | |
| | 1/8 - (3,17) | | | | | | | | | | | | ● | ● | ● | ● |
| | 9/64 - (3,57) | | | | | | | | | | | | ● | ● | ● | ● |
| | 5/32 - (3,97) | | | | | | | | | | | | ● | ● | ● | ● |
| | 11/64 - (4,37) | | | | | | | | | | | | ● | ● | ● | ● |
| | 3/16 - (4,76) | | | | | | | | | | | | ● | ● | ● | ● |
| | 13/64 - (5,16) | | | | | | | | | | | | ● | ● | ● | ● |
| | 7/32 - (5,56) | | | | | | | | | | | | ● | ● | ● | ● |
| | 15/64 - (5,95) | | | | | | | | | | | | ● | ● | ● | ● |
| | 1/4 - (6,35) | | | | | | | | ● | | | | ● | ● | ● | ● |
| | 17/64 - (6,75) | | | | | | | | | | | | ● | ● | ● | ● |
| | 9/32 - (7,14) | | | | | | | | | | | | ● | ● | ● | ● |
| | 19/64 - (7,54) | | | ● | | | | | | | | | ● | ● | ● | ● |
| | 5/16 - (7,94) | | | | | | | | | | | | ● | ● | ● | ● |
| | 21/64 - (8,33) | | | | | | | | | | | | ● | ● | ● | ● |
| | 11/32 - (8,73) | | | | | | | | | | | | ● | ● | ● | ● |
| | 23/64 - (9,13) | | | | | | | | | | | | ● | ● | ● | ● |
| | 3/8 - (9,52) | | | | | | | | | | | | ● | ● | ● | ● |
| | 25/64 - (9,92) | | | | | | | | | | | | ● | ● | ● | ● |
| | 13/32 - (10,32) | | | | | | | | | | | | ● | ● | ● | ● |
| | 27/64 - (10,72) | | | | | | | | | | | | ● | ● | ● | ● |
| | 7/16 - (11,11) | | | | | | | | | | | | ● | ● | ● | ● |
| | 29/64 - (11,51) | | | | | | | | | | | | ● | ● | ● | ● |
| | 15/32 - (11,91) | | | | | | | | | | | | ● | ● | ● | ● |
| | 31/64 - (12,3) | ● | | | | | | ● | | | | | ● | ● | ● | ● |
| | 1/2 - (12,7) | ● | | | | | | ● | | | | | ● | ● | ● | ● |
| | 9/16 - (14,29) | | | | | | | | | | | | ● | ● | ● | ● |

# SELECTION CHART SIZE

## Drilling | Selection chart | By size | Carbide up to 5D

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

NEW

| Product series | | HYP-AL-3D | WH70-DRL | AD-4D | ADO-5D | ADOX-5D | ADO-SUS-5D | ADO-TRS-5D | HYP-HP-5D | HYP-HPO-5D | HYP-HPO-5D-HE | HYP-HPO-5D-HB | HYP-ALO-5D | WH55-5D | WHO55-5D | JOBBER DRILL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | A | A | A | A | A | | | | | | | | |
| Total # of sizes | | 137 | 101 | 149 | 191 | 31 | 198 | 112 | 154 | 156 | 134 | 136 | 119 | 36 | 54 | 125 |
| Incremental step | Diameter | B.414 | B.423 | B.354 | B.366 | B.386 | B.359 | B.371 | B.397 | B.406 | B.408 | B.410 | B.416 | B.421 | B.422 | B.467 |
| 0,05 | 0,2 ~ 0,95 | | | | | | | | | | | | | | | |
| 0,1 | 1,0 ~ 1,9 | ◉ | | | | | | | ◉ | ◉ | | | | | | ◉ |
| 0,1 | 2,0 ~ 2,9 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ | ◉ | | | | ◎ | | ◉ |
| 0,1 | 3,0 ~ 3,9 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◎ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 4,0 ~ 4,9 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◎ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ |
| 0,1 | 5,0 ~ 5,9 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ |
| 0,1 | 6,0 ~ 6,9 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 7,0 ~ 7,9 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 8,0 ~ 8,9 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 9,0 ~ 9,9 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 10,0 ~ 10,9 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 11,0 ~ 11,9 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | ◉ |
| 0,1 | 12,0 ~ 12,9 | ◉ | ◎ | ◉ | ◉ | | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | ◉ | ◎ | ◎ | ◎ |
| | 13 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 13,1 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,2 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,3 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 13,4 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 13,6 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,7 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,8 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 13,9 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 14 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 14,1 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 14,2 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 14,3 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 14,4 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 14,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 14,6 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 14,7 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 14,8 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 14,9 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 15,1 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15,2 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 15,3 | | | ◉ | ◉ | | ◉ | ◉ | | | | | | | | |
| | 15,4 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 15,6 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15,7 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15,8 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 15,9 | | | ◉ | ◉ | | ◉ | | | | | | | | | |
| | 16 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 16,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 16,7 | | | | | | ◉ | | | | | | | | | |
| | 17 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 17,3 | | | | | | ◉ | | | | | | | | | |
| | 17,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 18 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 18,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 18,7 | | | | | | ◉ | | | | | | | | | |
| | 19 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 19,3 | | | | | | ◉ | | | | | | | | | |
| | 19,5 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 20 | | | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | | |
| | 3/32 - (2,38) | | | | | | | | | | | | | | | ◉ |
| | 7/64 - (2,78) | | | | ◉ | | ◉ | | | | | | | | | ◉ |
| | '1/8 - (3,17) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 9/64 - (3,57) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 5/32 - (3,97) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 11/64 - (4,37) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | '3/16 - (4,76) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | '13/64 - (5,16) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 7/32 - (5,56) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | |
| | '15/64 - (5,95) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 1/4 - (6,35) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 17/64 - (6,75) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 9/32 - (7,14) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 19/64 - (7,54) | | | | | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 5/16 - (7,94) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 21/64 - (8,33) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 11/32 - (8,73) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 23/64 - (9,13) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 3/8 - (9,52) | | | | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 25/64 - (9,92) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 13/32 - (10,32) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 27/64 - (10,72) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 7/16 - (11,11) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 29/64 - (11,51) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 15/32 - (11,91) | | | | | | | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 31/64 - (12,3) | | | | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| | 1/2 - (12,7) | | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | | | ◉ |
| | 9/16 - (14,29) | | | | | | | | ◉ | ◉ | ◉ | ◉ | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | Carbide up to 5D | Tap pilot hole**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | ADF-2D | AD-2D | ADOX-3D | ADO-SUS-3D | ADO-TRS-3D | HYP-HP-3D | HYP-HPO-3D | HYP-HPO-3D-HE | HYP-HPO-3D-HB | HYP-AL-3D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | A | A | A | A | | | | | |
| Total # of sizes | | 34 | 9 | 34 | 19 | 12 | 1 | 3 | 1 | 3 | - |
| Incremental step | Diameter | B.346 | B.352 | B.385 | B.356 | B.369 | B.394 | B.399 | B.401 | B.403 | B.414 |
| | 0,37 | ◉ | | | | | | | | | |
| | 0,46 | ◉ | | | | | | | | | |
| | 0,62 | ◉ | | | | | | | | | |
| | 1,04 | ◉ | | | | | | | | | |
| | 1,05 | ◉ | | | | | | | | | |
| | 1,32 | ◉ | | | | | | | | | |
| | 1,33 | ◉ | | | | | | | | | |
| | 1,43 | ◉ | | | | | | | | | |
| | 2,00 | | | ◉ | | | | | | | |
| | 2,30 | | | ◉ | | | | | | | |
| | 2,32 | ◉ | | | | | | | | | |
| | 2,42 | ◉ | | | | | | | | | |
| | 2,50 | | | ◉ | | | | | | | |
| | 2,54 | ◉ | | | | | | | | | |
| | 2,58 | ◉ | | | | | | | | | |
| | 2,60 | | | ◉ | | | | | | | |
| | 2,76 | ◉ | ◉ | ◉ | | | | | | | |
| | 2,78 | | | ◉ | | | | | | | |
| | 2,80 | | | ◉ | | | | | | | |
| | 2,83 | | | | ◉ | | | | | | |
| | 2,87 | | | | ◉ | | | | | | |
| | 2,90 | | | ◉ | | | | | | | |
| | 3,00 | | | ◉ | | | | | | | |
| | 3,03 | ◉ | | | | | | | | | |
| | 3,15 | ◉ | | | ◉ | | | | | | |
| | 3,20 | | | ◉ | | | | | | | |
| | 3,30 | | | ◉ | | | | | | | |
| | 3,4 | | | ◉ | | | | | | | |
| | 3,49 | | | | | | | | | | |
| | 3,50 | | | ◉ | | | | | | | |
| | 3,53 | ◉ | | | | | | | | | |
| | 3,60 | | | ◉ | | | | | | | |
| | 3,66 | ◉ | ◉ | ◉ | | ◉ | | | | | |
| | 3,68 | ◉ | ◉ | ◉ | | | | | | | |
| | 3,70 | | | ◉ | | | | | | | |
| | 3,73 | | | | ◉ | | | | | | |
| | 3,75 | | | ◉ | | | | | | | |
| | 3,90 | | | ◉ | | | | | | | |
| | 4,03 | ◉ | | | | | | | | | |
| | 4,15 | | | | | | | | | | |
| | 4,20 | | | ◉ | | | | | | | |
| | 4,30 | | | ◉ | | | | | | | |
| | 4,45 | | | | ◉ | | | | | | |
| | 4,50 | | | ◉ | | | | | | | |
| | 4,53 | ◉ | | | | | | | | | |
| | 4,60 | | | ◉ | | | | | | | |
| | 4,62 | ◉ | ◉ | ◉ | | | | | | | |
| | 4,64 | ◉ | ◉ | ◉ | | | | | | | |
| | 4,65 | | | | ◉ | | | ◉ | | ◉ | |
| | 4,90 | | | ◉ | | | | | | | |
| | 5,00 | | | ◉ | | | | | | | |
| | 5,03 | ◉ | | | | | | | | | |
| | 5,10 | | | ◉ | | | | | | | |
| | 5,20 | | | ◉ | | | | | | | |
| | 5,25 | | | ◉ | | | | | | | |
| | 5,52 | ◉ | ◉ | ◉ | | | | | | | |
| | 5,54 | ◉ | ◉ | ◉ | | | | | | | |
| | 5,55 | | | | ◉ | ◉ | | ◉ | | ◉ | |
| | 5,60 | | | ◉ | | | | | | | |
| | 6,00 | | | ◉ | | | | | | | |
| | 6,03 | ◉ | | | | | | | | | |
| | 6,53 | ◉ | | | | | | | | | |
| | 7,03 | ◉ | | | | | | | | | |
| | 7,36 | | ◉ | | | | | | | | |
| | 7,38 | | ◉ | | | ◉ | | | | | |
| | 7,45 | | | | ◉ | ◉ | | | | | |
| | 7,55 | | | | ◉ | | | | | | |
| | 8,03 | ◉ | | | | | | | | | |
| | 8,53 | ◉ | | | | | | | | | |
| | 8,58 | | | | | | | | | | |
| | 9,03 | ◉ | | | | | | | | | |
| | 9,25 | | | | ◉ | ◉ | | | | | |
| | 9,26 | | | | | | | | | | |
| | 9,38 | | | | | ◉ | | | | | |
| | 9,54 | | | | | | | | | | |
| | 9,55 | | | | ◉ | | | | | | |
| | 9,97 | | | | | | | | | | |
| | 10,03 | ◉ | | | | | | | | | |
| | 11,03 | ◉ | | | | | | | | | |
| | 11,24 | | | | | | | | | | |
| | 11,25 | | | | | ◉ | | | | | |
| | 11,38 | | | | | ◉ | | | | | |
| | 11,56 | | | | | | | | | | |
| | 12,03 | ◉ | | | | | | | | | |
| | 13,25 | | | | | ◉ | | | | | |
| | 13,38 | | | | | ◉ | | | | | |
| | 13,43 | | | | ◉ | | | | | | |
| | 13,55 | | | | ◉ | | | | | | |
| | 15,25 | | | | | | | | | | |
| | 15,55 | | | | ◉ | | | | | | |
| | 15,87 | | | | | | ◉ | ◉ | ◉ | ◉ | |
| | 16,1 | | | | ◉ | | | | | | |
| | 17,25 | | | | | ◉ | | | | | |
| | 17,55 | | | | ◉ | | | | | | |
| | 17,8 | | | | ◉ | | | | | | |
| | 18,1 | | | | ◉ | | | | | | |
| | 19,25 | | | | | ◉ | | | | | |
| | 19,55 | | | | ◉ | | | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | Carbide up to 5D | Tap pilot hole**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

NEW

| Product series | | ADO-5D | ADOX-5D | ADO-SUS-5D | ADO-TRS-5D | HYP-HP-5D | HYP-HPO-5D | HYP-HPO-5D-HE | HYP-HPO-5D-HB | HYP-ALO-5D | WHO55-5D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | A | A | A | | | | | | |
| Total # of sizes | | 18 | 31 | 27 | 12 | 1 | 3 | 1 | 3 | 2 | 5 |
| Incremental step | Diameter | B.366 | B.386 | B.359 | B.371 | B.397 | B.406 | B.408 | B.410 | B.416 | B.421 |
| | 2,00 | | ◉ | | | | | | | | |
| | 2,15 | | | ◉ | | | | | | | |
| | 2,25 | | | ◉ | | | | | | | |
| | 2,30 | | ◉ | | | | | | | | |
| | 2,32 | | | | | | | | | | |
| | 2,35 | | | ◉ | | | | | | | |
| | 2,42 | | | | | | | | | | |
| | 2,50 | | ◉ | | | | | | | | |
| | 2,54 | | | | | | | | | | |
| | 2,55 | | | ◉ | | | | | | | |
| | 2,58 | | | | | | | | | | |
| | 2,60 | | ◉ | | | | | | | | |
| | 2,70 | | ◉ | | | | | | | | |
| | 2,76 | ◉ | | ◉ | | | | | | | |
| | 2,80 | | ◉ | | | | | | | | |
| | 2,83 | | | ◉ | | | | | | | |
| | 2,87 | | | ◉ | | | | | | | |
| | 2,90 | | ◉ | | | | | | | | |
| | 3,00 | | ◉ | | | | | | | | |
| | 3,03 | | | | | | | | | | |
| | 3,15 | ◉ | | ◉ | | | | | | | |
| | 3,20 | | ◉ | | | | | | | | |
| | 3,30 | | ◉ | | | | | | | | |
| | 3,35 | | | ◉ | | | | | | | |
| | 3,40 | | ◉ | | | | | | | | |
| | 3,49 | | | | | | | | | | ◉ |
| | 3,50 | | ◉ | | | | | | | | |
| | 3,53 | | | | | | | | | | |
| | 3,60 | | ◉ | | | | | | | | |
| | 3,66 | ◉ | | ◉ | ◉ | | | | | | |
| | 3,68 | ◉ | | ◉ | | | | | | | |
| | 3,73 | | | | | | | | | | |
| | 3,80 | | ◉ | | | | | | | | |
| | 3,90 | | ◉ | | | | | | | | |
| | 4,00 | | ◉ | | | | | | | | |
| | 4,03 | | | | | | | | | | |
| | 4,10 | | ◉ | | | | | | | | |
| | 4,15 | | | | | | | | | | ◉ |
| | 4,20 | | ◉ | | | | | | | | |
| | 4,30 | | ◉ | | | | | | | | |
| | 4,45 | | | ◉ | | | | | | | |
| | 4,50 | | ◉ | | | | | | | | |
| | 4,53 | | | | | | | | | | |
| | 4,60 | | ◉ | | | | | | | | |
| | 4,62 | ◉ | | | | | | | | | |
| | 4,64 | ◉ | | ◉ | | | | | | | |
| | 4,65 | | | | | | ◉ | | ◉ | ◉ | |
| | 4,80 | | ◉ | | | | | | | | |
| | 4,90 | | ◉ | | | | | | | | |
| | 5,00 | | ◉ | | | | | | | | |
| | 5,03 | | | | | | | | | | |
| | 5,10 | | ◉ | | | | | | | | |
| | 5,20 | | ◉ | | | | | | | | |
| | 5,30 | | ◉ | | | | | | | | |
| | 5,50 | | ◉ | | | | | | | | |
| | 5,52 | ◉ | | ◉ | | | | | | | |
| | 5,54 | ◉ | | ◉ | | | | | | | |
| | 5,55 | | | | ◉ | | ◉ | | ◉ | ◉ | |
| | 5,60 | | ◉ | | | | | | | | |
| | 5,80 | | ◉ | | | | | | | | |
| | 6,00 | | ◉ | | | | | | | | |
| | 6,03 | | | | | | | | | | |
| | 6,53 | | | | | | | | | | |
| | 7,03 | | | | | | | | | | |
| | 7,36 | ◉ | | ◉ | | | | | | | |
| | 7,38 | ◉ | | ◉ | ◉ | | | | | | |
| | 7,45 | | | ◉ | ◉ | | | | | | |
| | 7,55 | | | | | | | | | | |
| | 8,03 | | | | | | | | | | |
| | 8,53 | | | | | | | | | | |
| | 8,58 | | | | | | | | | | ◉ |
| | 9,03 | | | | | | | | | | |
| | 9,25 | ◉ | | ◉ | ◉ | | | | | | |
| | 9,26 | ◉ | | ◉ | | | | | | | |
| | 9,38 | ◉ | | ◉ | ◉ | | | | | | |
| | 9,54 | ◉ | | ◉ | | | | | | | |
| | 9,55 | | | | | | | | | | |
| | 9,97 | | | | | | | | | | ◉ |
| | 10,03 | | | | | | | | | | |
| | 11,03 | | | | | | | | | | |
| | 11,24 | ◉ | | ◉ | | | | | | | |
| | 11,25 | | | | ◉ | | | | | | |
| | 11,38 | ◉ | | ◉ | ◉ | | | | | | |
| | 11,56 | | | | | | | | | | ◉ |
| | 12,03 | | | | | | | | | | |
| | 13,25 | ◉ | | ◉ | ◉ | | | | | | |
| | 13,38 | | | | ◉ | | | | | | |
| | 13,43 | | | ◉ | | | | | | | |
| | 13,55 | | | ◉ | | | | | | | |
| | 15,25 | ◉ | | ◉ | | | | | | | |
| | 15,55 | | | ◉ | | | | | | | |
| | 15,87 | ◉ | | | | ◉ | ◉ | ◉ | ◉ | | |
| | 17,55 | | | ◉ | ◉ | | | | | | |
| | 19,25 | | | | | | | | | | |
| | 19,55 | | | ◉ | ◉ | | | | | | |

# SELECTION CHART SIZE

## Drilling | Selection chart | By size | Carbide up to 50D

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

NEW NEW NEW

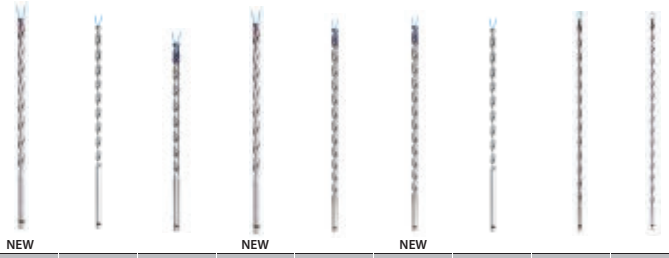
| Product series | | ADO-SUS-8D | ADOX-8D | HYP-HPO-8D | ADO-10D | ADOX-10D | TRS-HO-10D | ADO-15D | ADOX-15D | CAO-GDXL-15D | ADO-20D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | A | | A | A | A | A | A | | A |
| Total # of sizes | | 101 | 13 | 134 | 102 | 22 | 11 | 102 | 24 | 9 | 102 |
| Incremental step | Diameter | B.362 | B.387 | B.412 | B.375 | B.388 | B.373 | B.377 | B.389 | B.393 | B.379 |
| | 2,0 | ◉ | ◉ | | ◉ | | | ◉ | | | ◉ |
| 0,1 | 2,1 ~ 2,9 | ◉ | ◎ | | ◉ | ◎ | | ◉ | ◎ | | ◉ |
| | 3,0 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 3,1 ~ 3,9 | ◉ | ◎ | ◉ | ◉ | ◎ | | ◉ | ◎ | | ◉ |
| | 4,0 | ◉ | | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 4,1 ~4,9 | ◉ | | ◉ | ◉ | ◎ | | ◉ | ◎ | | ◉ |
| | 5,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 5,1 ~ 5,9 | ◉ | ◎ | ◉ | ◉ | ◎ | ◎ | ◉ | ◎ | | ◉ |
| | 6,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 6,1 ~ 6,9 | ◉ | | ◉ | ◉ | | ◎ | ◉ | | ◎ | ◉ |
| | 7,0 | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 7,1 ~ 7,9 | ◉ | | ◉ | ◉ | | ◎ | ◉ | | | ◉ |
| | 8,0 | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 8,1 ~ 8,9 | ◉ | | ◉ | ◉ | | ◎ | ◉ | | | ◉ |
| | 9,0 | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 9,1 ~ 9,9 | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ |
| | 10,0 | ◉ | | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 10,1 ~ 10,9 | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ |
| | 11,0 | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ |
| 0,1 | 11,1 ~ 11,9 | ◉ | | ◉ | ◉ | | | ◉ | | | ◉ |
| | 12,0 | ◉ | | ◉ | ◉ | | ◉ | ◉ | | | ◉ |
| | 12,5 | | | ◉ | ◉ | | | ◉ | | | ◉ |
| | 13,0 | | | ◉ | | | | | | | |
| | 13,5 | | | ◉ | | | | | | | |
| | 14,0 | | | ◉ | | | | | | | |
| | 14,5 | | | ◉ | | | | | | | |
| | 15,0 | | | ◉ | | | | | | | |
| | 15,5 | | | ◉ | | | | | | | |
| | 16,0 | | | ◉ | | | | | | | |
| | 16,5 | | | ◉ | | | | | | | |
| | 17,0 | | | ◉ | | | | | | | |
| | 17,5 | | | ◉ | | | | | | | |
| | 18,0 | | | ◉ | | | | | | | |
| | 18,5 | | | ◉ | | | | | | | |
| | 19,0 | | | ◉ | | | | | | | |
| | 19,5 | | | ◉ | | | | | | | |
| | 20,0 | | | ◉ | | | | | | | |
| | | | | | | | | | | | |
| | 1/8 - (3,17) | | | ◉ | | | | | | | |
| | 9/64 - (3,57) | | | ◉ | | | | | | | |
| | 5/32 - (3,97) | | | ◉ | | | | | | | |
| | 11/64 - (4,37) | | | ◉ | | | | | | | |
| | 3/16 - (4,76) | | | ◉ | | | | | | | |
| | 13/64 - (5,16) | | | ◉ | | | | | | | |
| | 7/32 - (5,56) | | | ◉ | | | | | | | |
| | 15/64 - (5,95) | | | ◉ | | | | | | | |
| | 1/4 - (6,35) | | | ◉ | | | | | | | |
| | 17/64 - (6,75) | | | ◉ | | | | | | | |
| | 9/32 - (7,14) | | | ◉ | | | | | | | |
| | 19/64 - (7,54) | | | ◉ | | | | | | | |
| | 5/16 - (7,94) | | | ◉ | | | | | | | |
| | 21/64 - (8,33) | | | ◉ | | | | | | | |
| | 11/32 - (8,73) | | | ◉ | | | | | | | |
| | 23/64 - (9,13) | | | ◉ | | | | | | | |
| | 3/8 - (9,52) | | | ◉ | | | | | | | |
| | 25/64 - (9,92) | | | ◉ | | | | | | | |
| | 13/32 - (10,32) | | | ◉ | | | | | | | |
| | 27/64 - (10,72) | | | ◉ | | | | | | | |
| | 7/16 - (11,11) | | | ◉ | | | | | | | |
| | 29/64 - (11,51) | | | ◉ | | | | | | | |
| | 15/32 - (11,91) | | | ◉ | | | | | | | |
| | 31/64 - (12,3) | | | ◉ | | | | | | | |
| | 1/2 - (12,7) | | | ◉ | | | | | | | |
| | 9/16 - (14,29) | | | ◉ | | | | | | | |
| | 5/8 - (15,87) | | | ◉ | | | | | | | |

# SELECTION CHART SIZE

## Drilling | Selection chart | By size | Carbide up to 50D

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval



NEW NEW NEW

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | ADOX-20D | CAO-GDXL-20D | ADO-25D | ADOX-25D | ADO-30D | ADOX-30D | CAO-GDXL-30D | ADO-40D | ADO-50D | Product series | | ADO-PLT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | A | | A | A | A | A | | A | A | A-Brand | | A |
| Total # of sizes | | 22 | 9 | 92 | 11 | 81 | 11 | 5 | 6 | 5 | Total # of sizes | | 15 |
| Incremental step | Diameter | B.390 | B.393 | B.381 | B.391 | B.382 | B.392 | B.393 | B.383 | B.384 | Incremental step | Diameter | B.374 |
| | 2,0 | | | | | ◉ | | | | | | 3,03 | ◉ |
| 0,1 | 2,1 ~ 2,9 | ◎ | | ◎ | ◎ | ◉ | ◎ | | | | | 3,53 | ◉ |
| | 3,0 | ◉ | | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | | 4,03 | ◉ |
| 0,1 | 3,1 ~ 3,9 | ◎ | | ◉ | ◎ | ◉ | ◎ | | ◎ | ◎ | | 4,53 | ◉ |
| | 4,0 | ◉ | ◉ | ◉ | | ◉ | ◉ | | ◉ | ◉ | | 5,03 | ◉ |
| 0,1 | 4,1 ~4,9 | ◎ | ◎ | ◉ | | ◉ | ◎ | | ◎ | ◎ | | 5,53 | ◉ |
| | 5,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | 6,03 | ◉ |
| 0,1 | 5,1 ~ 5,9 | ◎ | ◎ | ◉ | | ◉ | | ◎ | ◎ | ◎ | | 6,53 | ◉ |
| | 6,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | 7,03 | ◉ |
| 0,1 | 6,1 ~ 6,9 | | | ◉ | | ◉ | | | ◎ | ◎ | | 8,03 | ◉ |
| | 7,0 | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | | 8,53 | ◉ |
| 0,1 | 7,1 ~ 7,9 | | | ◉ | | ◉ | | | ◎ | ◎ | | 9,03 | ◉ |
| | 8,0 | | ◉ | ◉ | | ◉ | | ◉ | ◉ | ◉ | | 10,03 | ◉ |
| 0,1 | 8,1 ~ 8,9 | | | ◉ | | ◉ | | | ◎ | ◎ | | 11,03 | ◉ |
| | 9,0 | | ◉ | ◉ | | ◉ | | | ◉ | | | 12,03 | ◉ |
| 0,1 | 9,1 ~ 9,9 | | | ◉ | | ◉ | | | | | | | |
| | 10,0 | | ◉ | ◉ | | ◉ | | | ◉ | | | | |
| 0,1 | 10,1 ~ 10,9 | | | ◉ | | | | | | | | | |
| | 11,0 | | | ◉ | | | | | | | | | |
| 0,1 | 11,1 ~ 11,9 | | | ◉ | | | | | | | | | |
| | 12,0 | | | ◉ | | | | | | | | | |
| | 12,5 | | | | | | | | | | | | |
| | 13,0 | | | | | | | | | | | | |
| | 13,5 | | | | | | | | | | | | |
| | 14,0 | | | | | | | | | | | | |
| | 14,5 | | | | | | | | | | | | |
| | 15,0 | | | | | | | | | | | | |
| | 15,5 | | | | | | | | | | | | |
| | 16,0 | | | | | | | | | | | | |
| | 16,5 | | | | | | | | | | | | |
| | 17,0 | | | | | | | | | | | | |
| | 17,5 | | | | | | | | | | | | |
| | 18,0 | | | | | | | | | | | | |
| | 18,5 | | | | | | | | | | | | |
| | 19,0 | | | | | | | | | | | | |
| | 19,5 | | | | | | | | | | | | |
| | 20,0 | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 1/8 - (3,17) | | | | | | | | | | | | |
| | 9/64 - (3,57) | | | | | | | | | | | | |
| | 5/32 - (3,97) | | | | | | | | | | | | |
| | 11/64 - (4,37) | | | | | | | | | | | | |
| | 3/16 - (4,76) | | | | | | | | | | | | |
| | 13/64 - (5,16) | | | | | | | | | | | | |
| | 7/32 - (5,56) | | | | | | | | | | | | |
| | 15/64 - (5,95) | | | | | | | | | | | | |
| | 1/4 - (6,35) | | | | | | | | | | | | |
| | 17/64 - (6,75) | | | | | | | | | | | | |
| | 9/32 - (7,14) | | | | | | | | | | | | |
| | 19/64 - (7,54) | | | | | | | | | | | | |
| | 5/16 - (7,94) | | | | | | | | | | | | |
| | 21/64 - (8,33) | | | | | | | | | | | | |
| | 11/32 - (8,73) | | | | | | | | | | | | |
| | 23/64 - (9,13) | | | | | | | | | | | | |
| | 3/8 - (9,52) | | | | | | | | | | | | |
| | 25/64 - (9,92) | | | | | | | | | | | | |
| | 13/32 - (10,32) | | | | | | | | | | | | |
| | 27/64 - (10,72) | | | | | | | | | | | | |
| | 7/16 - (11,11) | | | | | | | | | | | | |
| | 29/64 - (11,51) | | | | | | | | | | | | |
| | 15/32 - (11,91) | | | | | | | | | | | | |
| | 31/64 - (12,3) | | | | | | | | | | | | |
| | 1/2 - (12,7) | | | | | | | | | | | | |
| | 9/16 - (14,29) | | | | | | | | | | | | |
| | 5/8 - (15,87) | | | | | | | | | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | HSS up to 5D**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | EX-GDS | NEXUS-GDS | EX-GDR | NEXUS-GDR | V-SDR | V-HDO-GDR | VP-GDR |
|---|---|---|---|---|---|---|---|---|
| Incremental | | 0,05 mm incremental from Ø1 to Ø6 | | 0,05 mm incremental from Ø2 to Ø12 | | | | |
| Total # of sizes | | 193 | 106 | 249 | 32 | 111 | 96 | 144 |
| Incremental step | Diameter | B.448 | B.430 | B.451 | B.432 | B.434 | B.454 | B.428 |
| 0,1 | 1,0 ~ 1,9 | ◉ | ◉ | | | | | |
| | 2,0 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ |
| 0,1 | 2,1 ~ 2,9 | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ |
| | 3,0 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ |
| 0,1 | 3,1 ~ 3,9 | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ |
| | 4,0 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ |
| 0,1 | 4,1 ~ 4,9 | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ |
| | 5,0 | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ |
| 0,1 | 5,1 ~ 5,9 | ◉ | ◉ | ◉ | ◎ | ◉ | | ◉ |
| | 6,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 6,1 ~ 6,9 | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◉ |
| | 7,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 7,1 ~ 7,9 | ◉ | ◎ | ◉ | | ◉ | ◉ | ◉ |
| | 8,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 8,1 ~ 8,9 | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | ◉ |
| | 9,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 9,1 ~ 9,9 | ◉ | ◎ | ◉ | | ◉ | ◉ | ◉ |
| | 10,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 10,1 ~ 10,9 | ◉ | ◎ | ◉ | ◎ | ◉ | ◉ | ◉ |
| | 11,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 11,1 ~ 11,9 | ◉ | ◎ | ◉ | | ◉ | ◉ | ◉ |
| | 12,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 12,1 ~ 12,9 | ◉ | | ◉ | | ◉ | ◎ | ◉ |
| | 13,0 | ◉ | | ◉ | | ◉ | ◉ | ◉ |
| | 13,5 | | | ◉ | | | ◉ | ◉ |
| | 14,0 | | | ◉ | | | ◉ | ◉ |
| | 14,1 | | | ◉ | | | | |
| | 14,5 | | | ◉ | | | ◉ | ◉ |
| | 15,0 | | | ◉ | | | ◉ | ◉ |
| | 15,5 | | | ◉ | | | ◉ | ◉ |
| | 15,6 | | | ◉ | | | | |
| | 16,0 | | | ◉ | | | ◉ | ◉ |
| | 16,5 | | | ◉ | | | ◉ | ◉ |
| | 17,0 | | | ◉ | | | ◉ | ◉ |
| | 17,5 | | | ◉ | | | ◉ | ◉ |
| | 17,6 | | | ◉ | | | | |
| | 18,0 | | | ◉ | | | ◉ | ◉ |
| | 18,5 | | | ◉ | | | ◉ | ◉ |
| | 19,0 | | | ◉ | | | ◉ | ◉ |
| | 19,5 | | | ◉ | | | ◉ | ◉ |
| | 19,6 | | | ◉ | | | | |
| | 20,0 | | | ◉ | | | ◉ | ◉ |
| | 20,5 | | | ◉ | | | ◉ | ◉ |
| | 21,0 | | | ◉ | | | ◉ | ◉ |
| | 21,1 | | | ◉ | | | | |
| | 21,5 | | | ◉ | | | ◉ | ◉ |
| | 22,0 | | | ◉ | | | ◉ | ◉ |
| | 22,5 | | | ◉ | | | ◉ | ◉ |
| | 23,0 | | | ◉ | | | ◉ | ◉ |
| | 23,5 | | | ◉ | | | ◉ | ◉ |
| | 24,0 | | | ◉ | | | ◉ | ◉ |
| | 24,5 | | | ◉ | | | ◉ | ◉ |
| | 25,0 | | | ◉ | | | ◉ | ◉ |
| | 25,5 | | | ◉ | | | ◉ | ◉ |
| | 26,0 | | | ◉ | | | ◉ | ◉ |
| | 26,5 | | | ◉ | | | ◉ | ◉ |
| | 27,0 | | | ◉ | | | ◉ | ◉ |
| | 28,0 | | | ◉ | | | ◉ | ◉ |
| | 29,0 | | | ◉ | | | ◉ | ◉ |
| | 30,0 | | | ◉ | | | ◉ | ◉ |
| | 31,0 | | | ◉ | | | ◉ | ◉ |
| | 32,0 | | | ◉ | | | ◉ | ◉ |
| | | | | | | | | |
| | 5,95 - (15/64) | ◉ | | ◉ | | | | |
| | 6,35 - (1/4) | | | ◉ | | | | |
| | 6,75 - (17/64) | | | ◉ | | | | |
| | 12,3 - (31/64) | ◉ | | ◉ | | ◉ | | ◉ |
| | 12,7 - (1/2) | ◉ | | ◉ | | ◉ | | ◉ |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | HSS up to 5D | Tap pilot hole**

● = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | EX-GDS | NEXUS-GDS | EX-GDR | NEXUS-GDR | V-SDR | V-HDO-GDR | VP-GDR |
|---|---|---|---|---|---|---|---|---|
| Incremental | | 0,05 mm incremental from Ø1 to Ø6 | | 0,05 mm incremental from Ø2 to Ø12 | | | | |
| Total # of sizes | | 28 | 20 | 29 | | | | |
| Incremental step | Diameter | B.448 | B.430 | B.451 | B.432 | B.434 | B.454 | B.428 |
| | 1,81 | | ● | | | | | |
| | 1,83 | | ● | | | | | |
| | 2,11 | | ● | | | | | |
| | 2,13 | | ● | | | | | |
| | 2,28 | | ● | | | | | |
| | 2,38 | | ● | | | | | |
| | 2,76 | | ● | | | | | |
| | 2,78 | | ● | | | | | |
| | 3,25 | ● | ● | ● | | | | |
| | 3,65 | ● | ● | ● | | | | |
| | 3,67 | | ● | | | | | |
| | 4,15 | ● | | ● | | | | |
| | 4,45 | ● | | ● | | | | |
| | 4,59 | | ● | | | | | |
| | 4,63 | | ● | | | | | |
| | 4,65 | ● | | ● | | | | |
| | 5,48 | | ● | | | | | |
| | 5,55 | ● | | ● | | | | |
| | 6,55 | ● | | ● | | | | |
| | 6,65 | ● | | ● | | | | |
| | 7,34 | | ● | | | | | |
| | 7,35 | ● | | ● | | | | |
| | 7,38 | | ● | | | | | |
| | 7,45 | | | ● | | | | |
| | 7,55 | ● | | ● | | | | |
| | 7,65 | ● | | ● | | | | |
| | 8,35 | ● | | ● | | | | |
| | 8,55 | ● | | ● | | | | |
| | 8,65 | ● | | ● | | | | |
| | 9,18 | | ● | | | | | |
| | 9,24 | | ● | | | | | |
| | 9,25 | ● | | ● | | | | |
| | 9,34 | | ● | | | | | |
| | 9,35 | ● | | ● | | | | |
| | 9,36 | | ● | | | | | |
| | 9,45 | ● | | ● | | | | |
| | 9,55 | ● | | ● | | | | |
| | 9,65 | ● | | ● | | | | |
| | 9,95 | ● | | ● | | | | |
| | 10,25 | ● | | ● | | | | |
| | 10,35 | ● | | ● | | | | |
| | 10,55 | ● | | ● | | | | |
| | 10,65 | ● | | ● | | | | |
| | 10,95 | ● | | ● | | | | |
| | 11,25 | ● | | ● | | | | |
| | 11,35 | ● | | ● | | | | |
| | 11,55 | ● | | ● | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | HSS up to 30D**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | EX-GDXL 8D | TDXL 10D | EX-GDXL 10D | TDXL 15D | EX-GDXL 15D | TDXL 20D | EX-GDXL 20D | EX-GDXL 25D | EX-GDXL 30D |
|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | |
| Total # of sizes | | 21 | 103 | 89 | 68 | 104 | 48 | 72 | 36 | 10 |
| Incremental step | Diameter | B.460 | B.456 | B.461 | B.458 | B.462 | B.459 | B.464 | B.465 | B.466 |
| | 1,6 | | ◉ | | ◉ | | ◉ | | | |
| | 1,8 | | ◉ | | ◉ | | ◉ | | | |
| | 2,0 | | ◉ | | ◉ | ◉ | ◉ | ◉ | | |
| 0,1 | 2,1 ~ 2,9 | | ◉ | | ◉ | ◉ | ◉ | ◎ | | |
| | 3,0 | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 3,1 ~ 3,9 | | ◉ | ◎ | ◉ | ◎ | ◎ | ◎ | ◎ | ◎ |
| | 4,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | |
| 0,1 | 4,1 ~ 4,9 | | ◉ | ◎ | ◉ | ◉ | ◎ | ◉ | | |
| | 5,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| 0,1 | 5,1 ~ 5,9 | | ◉ | ◎ | ◎ | ◉ | ◎ | ◉ | ◎ | ◎ |
| | 6,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ |
| 0,1 | 6,1 ~ 6,9 | | ◉ | ◉ | ◎ | ◉ | ◎ | ◎ | ◎ | ◎ |
| | 7,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| 0,1 | 7,1 ~ 7,9 | | ◉ | ◉ | ◎ | ◎ | ◎ | ◉ | ◉ | |
| | 8,0 | | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | |
| 0,1 | 8,1 ~ 8,9 | | ◉ | ◉ | ◎ | ◎ | ◎ | ◉ | ◎ | |
| | 9,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | |
| 0,1 | 9,1 ~ 9,9 | | ◉ | ◉ | ◎ | ◉ | | ◉ | | |
| | 10,0 | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | |
| 0,1 | 10,1 ~ 10,9 | | ◉ | ◉ | ◎ | ◉ | | ◉ | | |
| | 11,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| 0,1 | 11,1 ~ 11,9 | ◉ | ◉ | ◉ | ◎ | ◉ | | | | |
| | 12,0 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | | | |
| 0,1 | 12,1 ~ 12,9 | ◉ | | ◉ | | ◉ | | | | |
| | | | | | | | | | | |
| | 12,3 (31/64) | ◉ | | ◉ | | ◉ | | | | |
| | 12,7 (1/2) | ◉ | | ◉ | | ◉ | | | | |

# SELECTION CHART SIZE

**Drilling | Selection chart | By size | Indexables up to 5D**

◉ = All sizes available within interval

◎ = Limited number of sizes available within interval

| Product series | | P2D | PDZ | P3D | PDZ (3D) | PXD 3D | PHP | P4D | P5D | PXD-5D | PZAG SS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A-Brand | | | | | | | | | | | |
| Total # of sizes | | 77 | 33 | 88 | 33 | 13 | 40 | 77 | 77 | 13 | 11 |
| Incremental step | Diameter | B.526 | B.528 | B.529 | B.531 | B.536 | B.538 | B.532 | B.534 | B.537 | B.540 |
| | 12 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 12,5 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 12,7 | | | ◉ | | | | | | | |
| | 13 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 13,5 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 14 | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 14,5 | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 15 | ◉ | | ◉ | | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 15,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 16 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 16,5 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 17 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 17,5 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 18 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 18,5 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 19 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 19,5 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 20 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 20,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 21 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 21,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 22 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 22,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 23 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 23,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 24 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 24,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 25 | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ | |
| | 25,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 26 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 26,5 | ◉ | | ◉ | | | ◉ | ◉ | ◉ | | |
| | 27 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 27,5 | | | ◉ | | | | | | | |
| | 28 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 28,5 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 29 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 29,5 | | | ◉ | | | | | | | |
| | 30 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 30,5 | | | ◉ | | | | | | | |
| | 31 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 31,5 | | | ◉ | | | | | | | |
| | 32 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 32,5 | | | ◉ | | | | | | | |
| | 33 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 33,5 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 34 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 34,5 | | | ◉ | | | | | | | |
| | 35 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 35,5 | | | ◉ | | | | | | | |
| | 36 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 37 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 37,5 | | | ◉ | | | | | | | |
| | 38 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 39 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | ◉ |
| | 40 | ◉ | ◉ | ◉ | ◉ | | ◉ | ◉ | ◉ | | |
| | 40,5 | | | ◉ | | | | | | | |
| | 41 | ◉ | ◉ | ◉ | ◉ | | | ◉ | ◉ | | |
| | 42 | ◉ | ◉ | ◉ | ◉ | | | ◉ | ◉ | | |
| | 43 | ◉ | ◉ | ◉ | ◉ | | | ◉ | ◉ | | ◉ |
| | 44 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 45 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 46 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 47 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 48 | ◉ | | ◉ | | | | ◉ | ◉ | | ◉ |
| | 49 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 50 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 50,5 | | | ◉ | | | | | | | |
| | 51 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 52 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 53 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 54 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 55 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 56 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 57 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 58 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 59 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 60 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 61 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 62 | ◉ | | ◉ | | | | ◉ | ◉ | | |
| | 63 | ◉ | | ◉ | | | | ◉ | ◉ | | |

# INDEX

Drilling

## Micro

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| AD-MICRO-4D NEW | KeptA | A | Micro carbide drill with KeptA coating<br>For general steels, stainless steels and titanium alloys | 0,5 - 3 | 251 | B.329 |
| AD-MICRO-10D NEW | KeptA | A | Micro carbide drill with KeptA coating<br>For general steels, stainless steels and titanium alloys | 0,5 - 3 | 251 | B.332 |
| ADO-MICRO-2D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 0.7 - 2 | 17 | B.335 |
| ADO-MICRO-5D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 0.7 - 2 | 19 | B.336 |
| ADO-MICRO-12D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 1 - 2 | 11 | B.337 |
| ADO-MICRO-15D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 2 | 1 | B.338 |
| ADO-MICRO-20D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 1 - 2 | 11 | B.339 |
| ADO-MICRO-25D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 2 | 1 | B.340 |
| ADO-MICRO-30D | IchAda | A | Micro carbide drill with internal coolant, IchAda coating<br>Small sizes for precision operation | 1 - 2 | 11 | B.341 |
| WX-MS-GDS | WX | | Micro carbide drill with multilayer TiAlN coating<br>Small sizes for precision operation | 0,2 - 5 | 241 | B.342 |
| MRS-GDL | SC | | Micro carbide drill with SC coating<br>For deep micro drilling in stainless steel | 0,5 - 3 | 75 | B.345 |

## ≤2D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADF-2D | EgiAs | A | Carbide drill with EgiAs coating<br>Flat drilling application | 0,2 - 20 | 253 | B.346 |
| ADFLS-2D | EgiAs | A | Carbide drill with EgiAs coating<br>For deep reach flat drilling application | 3 - 20 | 78 | B.349 |
| AD-2D | EgiAs | A | Carbide drill with EgiAs coating<br>For general purpose steels and cast iron | 2 - 20 | 160 | B.352 |

## ≤3D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-3D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2 - 20 | 167 | B.364 |
| ADOX-3D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2 - 6 | 34 | B.385 |

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## Drilling

## ≤3D

### Solid carbide

| | Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|---|
| | ADO-SUS-3D NEW SIZES | WXL | A | Carbide drill with internal coolant, WXL coating<br>Designed for stainless steel and titanium alloys | 2 - 20 | 179 | B.356 |
| | ADFO-3D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>Flat drilling application | 3 - 20 | 160 | B.350 |
| | D-STAD | DIA | | Triple angle carbide drill with diamond coating<br>For CFRP | 4 - 8 | 4 | B.418 |
| | D-DAD | DIA | | Double angle drill<br>For CFRP | 2,5 - 9,5 | 6 | B.419 |
| | D-GDN90 | DIA | | Diamond coated 90° point angle drill<br>For CFRP | 2,5 - 9,5 | 6 | B.420 |
| | ADO-TRS-3D | EgiAs | A | 3 flute carbide drill with internal coolant, EgiAs coating<br>Allows high feed 1.000mm/min process in steel and cast iron | 3 - 20 | 112 | B.369 |
| | HYP-HP-3D | EgiAs | | Carbide drill with EgiAs coating<br>General purpose | 1 - 20 | 154 | B.394 |
| | HYP-HPO-3D | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>General purpose | 3 - 20 | 136 | B.399 |
| | HYP-HPO-3D-HE | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>With Whistle Notch shank for general purpose | 3 - 20 | 134 | B.401 |
| | HYP-HPO-3D-HB | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>With Weldon shank for general purpose | 3 - 20 | 136 | B.403 |
| | HYP-HP-SC-3D | EgiAs | | Carbide step drill with EgiAs coating<br>General purpose, for tap drill holes | 6 -14 | 7 | B.396 |
| | HYP-HPO-SC-3D | EgiAs | | Carbide step drill with internal coolant, EgiAs coating<br>General purpose, for tap drill holes | 6 -14 | 6 | B.405 |
| | HYP-AL-3D | | | Carbide drill, bright finish<br>Up to 3xD<br>For Aluminium and cast Aluminium | 1 -12,7 | 137 | B.414 |
| | WH70-DRL | DUROREY | | Carbide drill with DUROREY coating<br>With low helix for high rigidity, up to 70HRC material | 2 - 12 | 101 | B.423 |

## ≤4D

### Solid carbide

| | Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|---|
| | AD-4D | EgiAs | A | Carbide drill with EgiAs coating<br>For general purpose steels and cast iron | 2 - 20 | 149 | B.354 |

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## Drilling

## ≤5D

### Solid carbide

| | Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|---|
| | ADO-5D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2 - 20 | 191 | B.366 |
| | ADOX-5D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2 - 6 | 31 | B.386 |
| | ADO-SUS-5D | WXL | A | Carbide drill with internal coolant, WXL coating<br>Designed for stainless steel and titanium alloys | 2 - 20 | 198 | B.359 |
| | ADO-TRS-5D | EgiAs | A | 3 flute carbide drill with internal coolant, EgiAs coating<br>Allows high feed 1.000mm/min process in steel and cast iron | 3 - 20 | 112 | B.371 |
| | HYP-HP-5D | EgiAs | | Carbide drill with EgiAs coating<br>General purpose | 1 - 20 | 154 | B.397 |
| | HYP-HPO-5D | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>General purpose | 1 - 20 | 156 | B.406 |
| | HYP-HPO-5D-HE | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>With Whistle Notch shank for general purpose | 3 - 20 | 134 | B.408 |
| | HYP-HPO-5D-HB | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>With Weldon shank for general purpose | 3 - 20 | 136 | B.410 |
| | HYP-ALO-5D | | | Carbide drill with internal coolant, bright finish<br>Up to 5xD<br>For Aluminium and cast Aluminium | 3 - 12,7 | 119 | B.416 |
| | WH55-5D | DUROREY | | Carbide drill with DUROREY coating<br>For hardened material up to 55HRC | 2 - 12 | 36 | B.421 |
| | WHO55-5D | DUROREY | | Carbide drill with internal coolant, DUROREY coating<br>For hardened material up to 55HRC including Inconel | 3,3 -12 | 54 | B.422 |
| | JOBBER DRILL | | | Carbide drill bright finish<br>General purpose | 1 - 12,7 | 125 | B.467 |

## Pilot

### Solid carbide

| | Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|---|
| | ADO-PLT | EgiAs | A | Carbide pilot drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 3,03 - 12,03 | 15 | B.374 |

## ≤8D

### Solid carbide

| | Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|---|
| | ADO-SUS-8D | WXL | A | Carbide drill with internal coolant, WXL coating<br>Designed for stainless steel and titanium alloys | 2 - 12 | 101 | B.362 |
| | ADOX-8D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2 - 6 | 13 | B.387 |
| | HYP-HPO-8D | EgiAs | | Carbide drill with internal coolant, EgiAs coating<br>General purpose | 3 - 20 | 134 | B.412 |

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## Drilling

## ≤10D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-10D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 2 - 12,5 | 102 | B.375 |
| ADOX-10D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2,4 - 6 | 22 | B.388 |
| TRS-HO-10D | WDI | A | 3 flute carbide drill with internal coolant, WDI coating<br>Allows high feed 1.000mm/min process in steel and cast iron | 5 - 12 | 11 | B.373 |

## ≤15D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-15D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 2 - 12,5 | 102 | B.377 |
| ADOX-15D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2,3 - 6 | 24 | B.389 |
| CAO-GDXL-15D | | | Carbide drill with internal coolant, bright finish<br>For aluminium and cast aluminium | 3 - 10 | 9 | B.393 |

## ≤20D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-20D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 2 - 12,5 | 102 | B.379 |
| ADOX-20D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2,3 - 6 | 22 | B.390 |
| CAO-GDXL-20D | | | Carbide drill with internal coolant, bright finish<br>For aluminium and cast aluminium | 4 - 10 | 9 | B.393 |

## ≤25D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-25D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 2,5 - 12 | 92 | B.381 |
| ADOX-25D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2,3 - 6 | 11 | B.391 |

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## Drilling

## ≤30D

### Solid carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-30D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 2 - 10 | 81 | B.382 |
| ADOX-30D NEW | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron | 2,3 - 6 | 11 | B.392 |
| CAO-GDXL-30D | | | Carbide drill with internal coolant, bright finish<br>For aluminium and cast aluminium | 5 - 8 | 5 | B.393 |

## ≤40D

### Solid carbide



| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-40D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 3 - 10 | 23 | B.383 |

## ≤50D

### Solid carbide



| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| ADO-50D | EgiAs | A | Carbide drill with internal coolant, EgiAs coating<br>For general purpose steels and cast iron<br>Double margin | 3 - 8,5 | 26 | B.384 |

# INDEX

## Drilling

### ≤3D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-SUS-GDS | TiN | | HSSE drill with TiN coating<br>For stainless steel, low carbon steel and cast aluminium<br>From Ø 0,5 - 6 mm in 0,01 mm increments | 0,5 - 20 | 635 | B.435 |
| EX-GDS | TiN | | HSSE drill with TiN coating<br>General purpose | 1 - 13 | 193 | B.448 |
| NEXUS-GDS | WDI | | HSSE drill with WDI coating<br>For stainless steel and non-ferrous materials | 1 - 12 | 106 | B.430 |

### ≤5D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-SUS-GDR | TiN | | HSSE drill with TiN coating<br>For stainless steel, low carbon steel and cast aluminium<br>From Ø 2 - 6 mm in 0,01 mm increments | 2 - 20 | 485 | B.442 |
| EX-GDR | TiN | | HSSE drill with TiN coating<br>General purpose | 2 - 32 | 249 | B.451 |
| NEXUS-GDR | WDI | | HSSE drill with WDI coating<br>For stainless steel and non-ferrous materials | 2 - 12 | 32 | B.432 |
| V-SDR | V | | HSSE drill with TiCN coating<br>General purpose | 2 - 13 | 111 | B.433 |
| V-HDO-GDR | V | | HSS-Co drill with internal coolant, TiCN coating<br>General purpose | 6 - 32 | 96 | B.454 |

### ≤8D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-GDXL-8D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 11 - 13 | 21 | B.460 |

### ≤10D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| TDXL-10D | WXL | | HSS-Co drill with WXL coating<br>For steels, cast iron and cast aluminium | 1,6 - 12 | 103 | B.456 |
| EX-GDXL-10D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 3,6 - 13 | 89 | B.461 |

# INDEX

## Drilling

### ≤15D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| TDXL-15D | WXL | | HSS-Co drill with WXL coating<br>For steels, cast iron and cast aluminium | 1,6 - 12 | 68 | B.458 |
| EX-GDXL-15D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 2 - 13 | 104 | B.462 |

### ≤20D

#### HSS

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| TDXL-20D | WXL | | HSS-Co drill with WXL coating<br>For steels, cast iron and cast aluminium | 1,6 - 12 | 48 | B.459 |
| EX-GDXL-20D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 2 - 10,9 | 72 | B.464 |

### ≤25D

#### HSS



| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-GDXL-25D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 3,3 - 8,1 | 36 | B.465 |

### ≤30D

#### HSS



| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-GDXL-30D | TiN | | HSS-Co drill with TiN coating<br>For general purpose steels and cast iron | 3 - 6,3 | 10 | B.466 |

# INDEX

## Drilling

### ≤3D
#### Powder metal

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| VPH-GDS | WDI | | Powder metal drill with WDI coating<br>For cast iron, exotic material and hardened steel | 0,5 - 13 | 126 | B.426 |

### ≤5D
#### Powder metal

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| VP-GDR | V | | Powder metal drill with TiCN coating<br>For steel, cast iron and non-ferrous material | 2 - 32 | 144 | B.428 |

### ≤2D
#### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| P2D | | | Indexable drill with internal coolant<br>3 different insert grades available | 12 - 63 | 77 | B.526 |
| PDZ | | | Indexable flat drill with internal coolant | 16 - 43 | 33 | B.531 |

### ≤3D
#### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| P3D | | | Indexable drill with internal coolant<br>3 different insert grades available | 12 - 63 | 88 | B.529 |
| PDZ (3D) | | | Indexable flat drill with internal coolant<br>Up to 3xD | 16 - 43 | 33 | B.531 |
| PXD-3D | | | Exchangeable head drill with internal coolant<br>3 different solid carbide head types based on work material | 14 - 25,99 | 13 | B.536 |
| PHP | | | Indexable drill with internal coolant<br>2 different insert grades available | 14 - 40 | 40 | B.538 |

### ≤4D
#### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| P4D | | | Indexable drill with internal coolant<br>3 different insert grades available | 12 - 63 | 77 | B.532 |

# INDEX

## Drilling

### ≤5D

#### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| P5D | | | Indexable drill with internal coolant<br>3 different insert grades available | 12 - 63 | 77 | B.534 |
| PXD-5D | | | Exchangeable head drill with internal coolant<br>3 different solid carbide head types based on work material | 14,99 - 25,99 | 13 | B.537 |

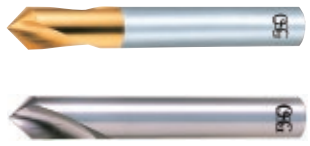
### Spot/Chamfer/Centring

#### Carbide

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| AD-LDS | EgiAs | A | Carbide drill with EgiAs coating<br>Carbide starter drill | 0,5 - 12 | 30 | B.469 |
| AD-LS-LDS | EgiAs | A | Carbide drill with EgiAs coating<br>Carbide long shank starter drill | 3 - 12 | 6 | B.470 |
| HYP-LDS | | | Carbide drill for centring and chamfering, bright finish<br>For steels and cast iron<br>With 90º, 120º or 142º point angle | 3 - 20 | 24 | B.471 |

### Spot/Chamfer

#### HSS



| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| TiN-NC-LDS | TiN | | HSS drill for centering and chamfering with TiN coating<br>For steels and cast iron<br>With 60º, 90º or 120º point angle | 3 - 25 | 21 | B.472 |
| NC-LDS | | | HSS drill for centering and chamfering, bright finish<br>For steels and cast iron<br>With 90º, 120º or 130º point angle | 3 - 25 | 27 | B.473 |

### Spot/Chamfer

#### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| PLDS SS | | | Indexable multi purpose centering and chamfering tool<br>Straight shank type<br>With 90º or 120º point angle | 14,4-17,3 | 4 | B.542 |
| PLDS SF | | | Indexable multi purpose centering and chamfering tool<br>Screw fit type<br>With 90º or 120º point angle | 14,4-17,3 | 2 | B.543 |
| PMEN SS NEW | | | Chamfering Cutter<br>Body compatible with chamfer angles (KAPR1) 45°,30° and 60° | 8,5 - 35,6 | 10 | B.544 |
| PMEN BORE NEW | | | Chamfering Cutter<br>Body compatible with chamfer angles (KAPR1) 45°,30° and 60° | 40,5 - 63,6 | 6 | B.545 |
| PMEN SF NEW | | | Chamfering Cutter<br>Body compatible with chamfer angles (KAPR1) 45°,30° and 60° | 8,5 - 35,6 | 10 | B.546 |

# INDEX

Drilling

## Spot/Chamfer

### Indexable

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| HY-PRO-CARB | | | Indexable multi purpose centering and chamfering tool | 9 - 29,4 | 12 | B.548 |
| HY-PRO-CARB | | | Boring tool<br>For boring pre-drilled and precast holes<br>Steel shank, Weldon flat, DIN 1835B | 9,8 - 21,8 | 13 | B.553 |
| HY-PRO-CARB | | | Counterbore mono<br>To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc<br>Straight shank with Weldon flat, DIN 1835B | 8 - 20 | 13 | B.554 |
| HY-PRO-CARB | | | Counterbore mono<br>To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc.<br>Straight shank with Weldon flat, DIN 1835B<br>With internal coolant supply | 10 - 30 | 21 | B.555 |
| HY-PRO-CARB | | | Counterbore multi<br>To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc.<br>Straight shank with Weldon flat, DIN 1835B<br>With internal coolant supply | 15 - 40 | 11 | B.556 |
| HY-PRO-CARB | | | Chamfering and face milling<br>For chamfering, countersinking, facing, etc.<br>Straight shank with Weldon flat, DIN 1835B | 13 - 40 | 10 | B.557 |

## Others

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| EX-H-DRL | | | Carbide drill for removing broken taps, bright finish<br>For hardened material up to 70HRC | 2 - 12 | 11 | B.425 |

## Carbide Reamers

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| CRM | | | Carbide straight reamer, bright finish<br>From Ø 0,3 - 13,05 mm in 0,01 mm increments | 0,3 - 13,05 | 1276 | B.474 |
| HS-OIL-CRM NEW | AlCrN | | Carbide low right-hand helix reamer<br>Multilayer AlCrN coating<br>For high speed reaming in various materials | 2,97 - 12,03 | 86 | B.488 |
| AL-CRM NEW | DLC | | Carbide straight-fluted reamer<br>DLC coating<br>For non-ferrous materials | 1,97 - 12,03 | 98 | B.489 |
| H-CRM NEW | FX | | Carbide low right-hand helix reamer<br>FX coating<br>For stainless steel, Titanium alloys and hardened materials up to 60 HRCs | 1,97 - 12,03 | 98 | B.491 |

## Counterboring

| Product series | | A-Brand | Features | Range | No. of sizes | Page |
|---|---|---|---|---|---|---|
| PZAG BORE | | | Counterboring cutter<br>Bore type | 54 - 82 | 7 | B.541 |
| PZAG SS | | | Counterboring cutter straight shank<br>Cylindrical type | 14 - 48 | 11 | B.540 |

# ISO 13399 LEGEND



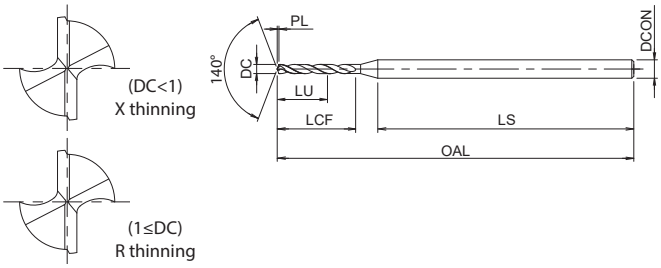
| ISO code | Description |
|---|---|
| ae | Maximum depth plunging |
| AN | Clearance angle major |
| APMX | Depth of cut maximum |
| b | Keyway depth |
| CBDP | Connection bore depth |
| CRKS | Connection retention knob thread size |
| DC | Cutting diameter |
| DC_INCH | Cutting diameter Inch size |
| DCN | Cutting diameter minimum |
| DCON | Connection diameter |
| DCSFMS | Contact surface diameter machine side |
| DCX | Cutting diameter maximum |
| IC | Inscribed circle diameter |
| KAPR | Tool cutting edge angle |
| KWW | Keyway width |
| L | Cutting edge length |
| LCF | Length chip flute |
| LF | Functional length |
| LH | Head length |
| LPR | Protruding length |
| LS | Shank length |
| LU | Usable length |
| OAL | Overall length |
| PHD | Premachined hole diameter |
| PL | Point length |
| RE | Corner radius |
| S | Insert thickness |
| SIG | Point angle |
| TCL | Tap chamfer length |
| W1 | Insert width |
| ZEFP | Peripheral effective cutting edge count |

# AD-MICRO-4D

**Drilling | Solid carbide | Micro drills**

INDEX

**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 4xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | 140°

B.513

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750050 | 0,5 | 2 | 3 | 38 | 3 | 30,1 | 0,09 |
| 8750051 | 0,51 | 2,1 | 3 | 38 | 3 | 30,2 | 0,09 |
| 8750052 | 0,52 | 2,1 | 3 | 38 | 3 | 30,2 | 0,10 |
| 8750053 | 0,53 | 2,2 | 3 | 38 | 3 | 30,2 | 0,10 |
| 8750054 | 0,54 | 2,2 | 3,5 | 38 | 3 | 29,7 | 0,10 |
| 8750055 | 0,55 | 2,2 | 3,5 | 38 | 3 | 29,7 | 0,10 |
| 8750056 | 0,56 | 2,3 | 3,5 | 38 | 3 | 29,7 | 0,10 |
| 8750057 | 0,57 | 2,3 | 3,5 | 38 | 3 | 29,8 | 0,10 |
| 8750058 | 0,58 | 2,4 | 3,5 | 38 | 3 | 29,8 | 0,11 |
| 8750059 | 0,59 | 2,4 | 3,5 | 38 | 3 | 29,8 | 0,11 |
| 8750060 | 0,6 | 2,4 | 3,5 | 38 | 3 | 29,8 | 0,11 |
| 8750061 | 0,61 | 2,5 | 4 | 38 | 3 | 29,3 | 0,11 |
| 8750062 | 0,62 | 2,5 | 4 | 38 | 3 | 29,4 | 0,11 |
| 8750063 | 0,63 | 2,6 | 4 | 38 | 3 | 29,4 | 0,12 |
| 8750064 | 0,64 | 2,6 | 4 | 38 | 3 | 29,4 | 0,12 |
| 8750065 | 0,65 | 2,6 | 4 | 38 | 3 | 29,4 | 0,12 |
| 8750066 | 0,66 | 2,7 | 4 | 38 | 3 | 29,4 | 0,12 |
| 8750067 | 0,67 | 2,7 | 4 | 38 | 3 | 29,5 | 0,12 |
| 8750068 | 0,68 | 2,8 | 4,5 | 38 | 3 | 29 | 0,12 |
| 8750069 | 0,69 | 2,8 | 4,5 | 38 | 3 | 29 | 0,13 |
| 8750070 | 0,7 | 2,8 | 4,5 | 38 | 3 | 29 | 0,13 |
| 8750071 | 0,71 | 2,9 | 4,5 | 38 | 3 | 29 | 0,13 |
| 8750072 | 0,72 | 2,9 | 4,5 | 38 | 3 | 29 | 0,13 |
| 8750073 | 0,73 | 3 | 4,5 | 38 | 3 | 29,1 | 0,13 |
| 8750074 | 0,74 | 3 | 4,5 | 38 | 3 | 29,1 | 0,14 |
| 8750075 | 0,75 | 3 | 4,5 | 38 | 3 | 29,1 | 0,14 |
| 8750076 | 0,76 | 3,1 | 5 | 38 | 3 | 28,6 | 0,14 |
| 8750077 | 0,77 | 3,1 | 5 | 38 | 3 | 28,6 | 0,14 |
| 8750078 | 0,78 | 3,2 | 5 | 38 | 3 | 28,7 | 0,14 |
| 8750079 | 0,79 | 3,2 | 5 | 38 | 3 | 28,7 | 0,14 |
| 8750080 | 0,8 | 3,2 | 5 | 38 | 3 | 28,6 | 0,15 |
| 8750081 | 0,81 | 3,3 | 5 | 38 | 3 | 28,6 | 0,15 |
| 8750082 | 0,82 | 3,3 | 5 | 38 | 3 | 28,6 | 0,15 |
| 8750083 | 0,83 | 3,4 | 5 | 38 | 3 | 28,7 | 0,15 |
| 8750084 | 0,84 | 3,4 | 5 | 38 | 3 | 28,7 | 0,15 |
| 8750085 | 0,85 | 3,4 | 5 | 38 | 3 | 28,7 | 0,16 |
| 8750086 | 0,86 | 3,5 | 5,5 | 38 | 3 | 28,2 | 0,16 |
| 8750087 | 0,87 | 3,5 | 5,5 | 38 | 3 | 28,2 | 0,16 |
| 8750088 | 0,88 | 3,6 | 5,5 | 38 | 3 | 28,2 | 0,16 |
| 8750089 | 0,89 | 3,6 | 5,5 | 38 | 3 | 28,3 | 0,16 |
| 8750090 | 0,9 | 3,6 | 5,5 | 38 | 3 | 28,3 | 0,16 |
| 8750091 | 0,91 | 3,7 | 5,5 | 38 | 3 | 28,3 | 0,17 |
| 8750092 | 0,92 | 3,7 | 5,5 | 38 | 3 | 28,3 | 0,17 |
| 8750093 | 0,93 | 3,8 | 5,5 | 38 | 3 | 28,3 | 0,17 |
| 8750094 | 0,94 | 3,8 | 5,5 | 38 | 3 | 28,4 | 0,17 |
| 8750095 | 0,95 | 3,8 | 5,5 | 38 | 3 | 28,4 | 0,17 |

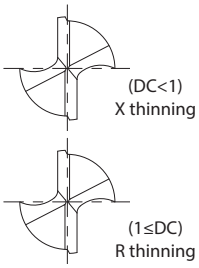
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750096 | 0,96 | 3,9 | 6 | 42 | 3 | 31,9 | 0,18 |
| 8750097 | 0,97 | 3,9 | 6 | 42 | 3 | 31,9 | 0,18 |
| 8750098 | 0,98 | 4 | 6 | 42 | 3 | 31,9 | 0,18 |
| 8750099 | 0,99 | 4 | 6 | 42 | 3 | 31,9 | 0,18 |
| 8750100 | 1 | 4 | 6 | 42 | 3 | 31,8 | 0,18 |
| 8750101 | 1,01 | 4,1 | 6 | 42 | 3 | 31,8 | 0,18 |
| 8750102 | 1,02 | 4,1 | 6 | 42 | 3 | 31,8 | 0,19 |
| 8750103 | 1,03 | 4,2 | 6 | 42 | 3 | 31,8 | 0,19 |
| 8750104 | 1,04 | 4,2 | 6 | 42 | 3 | 31,8 | 0,19 |
| 8750105 | 1,05 | 4,2 | 6 | 42 | 3 | 31,9 | 0,19 |
| 8750106 | 1,06 | 4,3 | 6 | 42 | 3 | 31,9 | 0,19 |
| 8750107 | 1,07 | 4,3 | 7 | 42 | 3 | 30,9 | 0,20 |
| 8750108 | 1,08 | 4,4 | 7 | 42 | 3 | 30,9 | 0,20 |
| 8750109 | 1,09 | 4,4 | 7 | 42 | 3 | 30,9 | 0,20 |
| 8750110 | 1,1 | 4,4 | 7 | 42 | 3 | 31 | 0,20 |
| 8750111 | 1,11 | 4,5 | 7 | 42 | 3 | 31 | 0,20 |
| 8750112 | 1,12 | 4,5 | 7 | 42 | 3 | 31 | 0,20 |
| 8750113 | 1,13 | 4,6 | 7 | 42 | 3 | 31 | 0,21 |
| 8750114 | 1,14 | 4,6 | 7 | 42 | 3 | 31 | 0,21 |
| 8750115 | 1,15 | 4,6 | 7 | 42 | 3 | 31 | 0,21 |
| 8750116 | 1,16 | 4,7 | 7 | 42 | 3 | 31,1 | 0,21 |
| 8750117 | 1,17 | 4,7 | 7 | 42 | 3 | 31,1 | 0,21 |
| 8750118 | 1,18 | 4,8 | 7 | 42 | 3 | 31,1 | 0,22 |
| 8750119 | 1,19 | 4,8 | 8 | 42 | 3 | 30,1 | 0,22 |
| 8750120 | 1,2 | 4,8 | 8 | 42 | 3 | 30,1 | 0,22 |
| 8750121 | 1,21 | 4,9 | 8 | 42 | 3 | 30,2 | 0,22 |
| 8750122 | 1,22 | 4,9 | 8 | 42 | 3 | 30,2 | 0,22 |
| 8750123 | 1,23 | 5 | 8 | 42 | 3 | 30,2 | 0,22 |
| 8750124 | 1,24 | 5 | 8 | 42 | 3 | 30,2 | 0,23 |
| 8750125 | 1,25 | 5 | 8 | 42 | 3 | 30,2 | 0,23 |
| 8750126 | 1,26 | 5,1 | 8 | 42 | 3 | 30,3 | 0,23 |
| 8750127 | 1,27 | 5,1 | 8 | 42 | 3 | 30,3 | 0,23 |
| 8750128 | 1,28 | 5,2 | 8 | 42 | 3 | 30,3 | 0,23 |
| 8750129 | 1,29 | 5,2 | 8 | 42 | 3 | 30,3 | 0,24 |
| 8750130 | 1,3 | 5,2 | 8 | 42 | 3 | 30,3 | 0,24 |
| 8750131 | 1,31 | 5,3 | 8 | 42 | 3 | 30,3 | 0,24 |
| 8750132 | 1,32 | 5,3 | 8 | 42 | 3 | 30,4 | 0,24 |
| 8750133 | 1,33 | 5,4 | 9 | 42 | 3 | 29,4 | 0,24 |
| 8750134 | 1,34 | 5,4 | 9 | 42 | 3 | 29,4 | 0,24 |
| 8750135 | 1,35 | 5,4 | 9 | 42 | 3 | 29,4 | 0,25 |
| 8750136 | 1,36 | 5,5 | 9 | 42 | 3 | 29,4 | 0,25 |
| 8750137 | 1,37 | 5,5 | 9 | 42 | 3 | 29,5 | 0,25 |
| 8750138 | 1,38 | 5,6 | 9 | 42 | 3 | 29,5 | 0,25 |
| 8750139 | 1,39 | 5,6 | 9 | 42 | 3 | 29,5 | 0,25 |
| 8750140 | 1,4 | 5,6 | 9 | 42 | 3 | 29,5 | 0,26 |
| 8750141 | 1,41 | 5,7 | 9 | 42 | 3 | 29,5 | 0,26 |

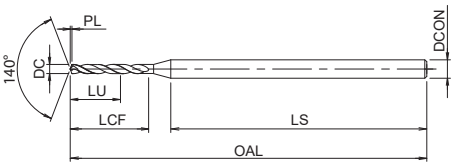
# AD-MICRO-4D

**Drilling | Solid carbide | Micro drills**

INDEX

**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 4xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | 140°

B.513

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750142 | 1,42 | 5,7 | 9 | 42 | 3 | 29,6 | 0,26 |
| 8750143 | 1,43 | 5,8 | 9 | 42 | 3 | 29,6 | 0,26 |
| 8750144 | 1,44 | 5,8 | 9 | 42 | 3 | 29,6 | 0,26 |
| 8750145 | 1,45 | 5,8 | 9 | 42 | 3 | 29,6 | 0,26 |
| 8750146 | 1,46 | 5,9 | 9 | 42 | 3 | 29,6 | 0,27 |
| 8750147 | 1,47 | 5,9 | 9 | 42 | 3 | 29,6 | 0,27 |
| 8750148 | 1,48 | 6 | 9 | 42 | 3 | 29,7 | 0,27 |
| 8750149 | 1,49 | 6 | 9 | 42 | 3 | 29,7 | 0,27 |
| 8750150 | 1,5 | 6 | 9 | 42 | 3 | 29,7 | 0,27 |
| 8750151 | 1,51 | 6,1 | 10 | 42 | 3 | 28,7 | 0,28 |
| 8750152 | 1,52 | 6,1 | 10 | 42 | 3 | 28,7 | 0,28 |
| 8750153 | 1,53 | 6,2 | 10 | 42 | 3 | 28,8 | 0,28 |
| 8750154 | 1,54 | 6,2 | 10 | 42 | 3 | 28,8 | 0,28 |
| 8750155 | 1,55 | 6,2 | 10 | 42 | 3 | 28,8 | 0,28 |
| 8750156 | 1,56 | 6,3 | 10 | 42 | 3 | 28,8 | 0,28 |
| 8750157 | 1,57 | 6,3 | 10 | 42 | 3 | 28,8 | 0,29 |
| 8750158 | 1,58 | 6,4 | 10 | 42 | 3 | 28,9 | 0,29 |
| 8750159 | 1,59 | 6,4 | 10 | 42 | 3 | 28,9 | 0,29 |
| 8750160 | 1,6 | 6,4 | 10 | 42 | 3 | 28,9 | 0,29 |
| 8750161 | 1,61 | 6,5 | 10 | 42 | 3 | 28,9 | 0,29 |
| 8750162 | 1,62 | 6,5 | 10 | 42 | 3 | 28,9 | 0,30 |
| 8750163 | 1,63 | 6,6 | 10 | 42 | 3 | 28,9 | 0,30 |
| 8750164 | 1,64 | 6,6 | 10 | 42 | 3 | 29 | 0,30 |
| 8750165 | 1,65 | 6,6 | 10 | 42 | 3 | 29 | 0,30 |
| 8750166 | 1,66 | 6,7 | 10 | 42 | 3 | 29 | 0,30 |
| 8750167 | 1,67 | 6,7 | 10 | 42 | 3 | 29 | 0,30 |
| 8750168 | 1,68 | 6,8 | 10 | 42 | 3 | 29 | 0,31 |
| 8750169 | 1,69 | 6,8 | 10 | 42 | 3 | 29,1 | 0,31 |
| 8750170 | 1,7 | 6,8 | 10 | 42 | 3 | 29,1 | 0,31 |
| 8750171 | 1,71 | 6,9 | 11 | 42 | 3 | 28,1 | 0,31 |
| 8750172 | 1,72 | 6,9 | 11 | 42 | 3 | 28,1 | 0,31 |
| 8750173 | 1,73 | 7 | 11 | 42 | 3 | 28,1 | 0,32 |
| 8750174 | 1,74 | 7 | 11 | 42 | 3 | 28,1 | 0,32 |
| 8750175 | 1,75 | 7 | 11 | 42 | 3 | 28,2 | 0,32 |
| 8750176 | 1,76 | 7,1 | 11 | 42 | 3 | 28,2 | 0,32 |
| 8750177 | 1,77 | 7,1 | 11 | 42 | 3 | 28,2 | 0,32 |
| 8750178 | 1,78 | 7,2 | 11 | 42 | 3 | 28,2 | 0,32 |
| 8750179 | 1,79 | 7,2 | 11 | 42 | 3 | 28,2 | 0,33 |
| 8750180 | 1,8 | 7,2 | 11 | 42 | 3 | 28,3 | 0,33 |
| 8750181 | 1,81 | 7,3 | 11 | 42 | 3 | 28,3 | 0,33 |
| 8750182 | 1,82 | 7,3 | 11 | 42 | 3 | 28,3 | 0,33 |
| 8750183 | 1,83 | 7,4 | 11 | 42 | 3 | 28,3 | 0,33 |
| 8750184 | 1,84 | 7,4 | 11 | 42 | 3 | 28,3 | 0,34 |
| 8750185 | 1,85 | 7,4 | 11 | 42 | 3 | 28,4 | 0,34 |
| 8750186 | 1,86 | 7,5 | 11 | 42 | 3 | 28,4 | 0,34 |
| 8750187 | 1,87 | 7,5 | 11 | 42 | 3 | 28,4 | 0,34 |

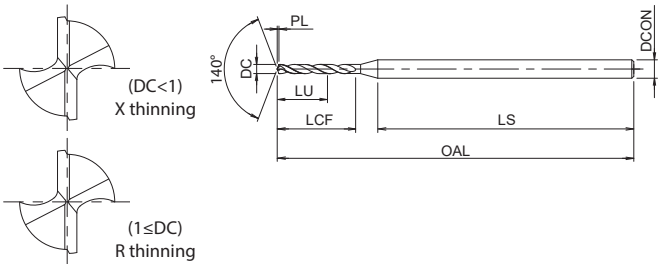
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750188 | 1,88 | 7,6 | 11 | 42 | 3 | 28,4 | 0,34 |
| 8750189 | 1,89 | 7,6 | 11 | 42 | 3 | 28,4 | 0,34 |
| 8750190 | 1,9 | 7,6 | 11 | 42 | 3 | 28,4 | 0,35 |
| 8750191 | 1,91 | 7,7 | 12 | 46 | 3 | 31,5 | 0,35 |
| 8750192 | 1,92 | 7,7 | 12 | 46 | 3 | 31,5 | 0,35 |
| 8750193 | 1,93 | 7,8 | 12 | 46 | 3 | 31,5 | 0,35 |
| 8750194 | 1,94 | 7,8 | 12 | 46 | 3 | 31,5 | 0,35 |
| 8750195 | 1,95 | 7,8 | 12 | 46 | 3 | 31,5 | 0,36 |
| 8750196 | 1,96 | 7,9 | 12 | 46 | 3 | 31,6 | 0,36 |
| 8750197 | 1,97 | 7,9 | 12 | 46 | 3 | 31,6 | 0,36 |
| 8750198 | 1,98 | 8 | 12 | 46 | 3 | 31,6 | 0,36 |
| 8750199 | 1,99 | 8 | 12 | 46 | 3 | 31,6 | 0,36 |
| 8750200 | 2 | 8 | 12 | 46 | 3 | 31,6 | 0,36 |
| 8750201 | 2,01 | 8,1 | 12 | 46 | 3 | 31,7 | 0,37 |
| 8750202 | 2,02 | 8,1 | 12 | 46 | 3 | 31,7 | 0,37 |
| 8750203 | 2,03 | 8,2 | 12 | 46 | 3 | 31,7 | 0,37 |
| 8750204 | 2,04 | 8,2 | 12 | 46 | 3 | 31,7 | 0,37 |
| 8750205 | 2,05 | 8,2 | 12 | 46 | 3 | 31,7 | 0,37 |
| 8750206 | 2,06 | 8,3 | 12 | 46 | 3 | 31,7 | 0,38 |
| 8750207 | 2,07 | 8,3 | 12 | 46 | 3 | 31,8 | 0,38 |
| 8750208 | 2,08 | 8,4 | 12 | 46 | 3 | 31,8 | 0,38 |
| 8750209 | 2,09 | 8,4 | 12 | 46 | 3 | 31,8 | 0,38 |
| 8750210 | 2,1 | 8,4 | 12 | 46 | 3 | 31,8 | 0,38 |
| 8750211 | 2,11 | 8,5 | 13 | 46 | 3 | 30,8 | 0,38 |
| 8750212 | 2,12 | 8,5 | 13 | 46 | 3 | 30,9 | 0,39 |
| 8750213 | 2,13 | 8,6 | 13 | 46 | 3 | 30,9 | 0,39 |
| 8750214 | 2,14 | 8,6 | 13 | 46 | 3 | 30,9 | 0,39 |
| 8750215 | 2,15 | 8,6 | 13 | 46 | 3 | 30,9 | 0,39 |
| 8750216 | 2,16 | 8,7 | 13 | 46 | 3 | 30,9 | 0,39 |
| 8750217 | 2,17 | 8,7 | 13 | 46 | 3 | 31 | 0,40 |
| 8750218 | 2,18 | 8,8 | 13 | 46 | 3 | 31 | 0,40 |
| 8750219 | 2,19 | 8,8 | 13 | 46 | 3 | 31 | 0,40 |
| 8750220 | 2,2 | 8,8 | 13 | 46 | 3 | 31 | 0,40 |
| 8750221 | 2,21 | 8,9 | 13 | 46 | 3 | 31 | 0,40 |
| 8750222 | 2,22 | 8,9 | 13 | 46 | 3 | 31 | 0,40 |
| 8750223 | 2,23 | 9 | 13 | 46 | 3 | 31,1 | 0,41 |
| 8750224 | 2,24 | 9 | 13 | 46 | 3 | 31,1 | 0,41 |
| 8750225 | 2,25 | 9 | 13 | 46 | 3 | 31,1 | 0,41 |
| 8750226 | 2,26 | 9,1 | 13 | 46 | 3 | 31,1 | 0,41 |
| 8750227 | 2,27 | 9,1 | 13 | 46 | 3 | 31,1 | 0,41 |
| 8750228 | 2,28 | 9,2 | 13 | 46 | 3 | 31,2 | 0,42 |
| 8750229 | 2,29 | 9,2 | 13 | 46 | 3 | 31,2 | 0,42 |
| 8750230 | 2,3 | 9,2 | 13 | 46 | 3 | 31,2 | 0,42 |
| 8750231 | 2,31 | 9,3 | 13 | 46 | 3 | 31,2 | 0,42 |
| 8750232 | 2,32 | 9,3 | 13 | 46 | 3 | 31,2 | 0,42 |
| 8750233 | 2,33 | 9,4 | 13 | 46 | 3 | 31,2 | 0,42 |

# AD-MICRO-4D

**Drilling | Solid carbide | Micro drills**

INDEX

**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 4xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

P ● C <0,2% | P ● 0,25<C<0,4 | P ● C ≥ 0,45% | P ● SCM | M ● INOX | K ● GG | K ● GGG | N ○ AC, ADC | S ● Ti | H ● 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | 140°

B.513

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750234 | 2,34 | 9,4 | 13 | 46 | 3 | 31,3 | 0,43 |
| 8750235 | 2,35 | 9,4 | 13 | 46 | 3 | 31,3 | 0,43 |
| 8750236 | 2,36 | 9,5 | 13 | 46 | 3 | 31,3 | 0,43 |
| 8750237 | 2,37 | 9,5 | 13 | 46 | 3 | 31,3 | 0,43 |
| 8750238 | 2,38 | 9,6 | 13 | 46 | 3 | 31,3 | 0,43 |
| 8750239 | 2,39 | 9,6 | 13 | 46 | 3 | 31,4 | 0,44 |
| 8750240 | 2,4 | 9,6 | 14 | 46 | 3 | 30,4 | 0,44 |
| 8750241 | 2,41 | 9,7 | 14 | 46 | 3 | 30,4 | 0,44 |
| 8750242 | 2,42 | 9,7 | 14 | 46 | 3 | 30,4 | 0,44 |
| 8750243 | 2,43 | 9,8 | 14 | 46 | 3 | 30,4 | 0,44 |
| 8750244 | 2,44 | 9,8 | 14 | 46 | 3 | 30,5 | 0,44 |
| 8750245 | 2,45 | 9,8 | 14 | 46 | 3 | 30,5 | 0,45 |
| 8750246 | 2,46 | 9,9 | 14 | 46 | 3 | 30,5 | 0,45 |
| 8750247 | 2,47 | 9,9 | 14 | 46 | 3 | 30,5 | 0,45 |
| 8750248 | 2,48 | 10 | 14 | 46 | 3 | 30,5 | 0,45 |
| 8750249 | 2,49 | 10 | 14 | 46 | 3 | 30,5 | 0,45 |
| 8750250 | 2,5 | 10 | 14 | 46 | 3 | 30,6 | 0,46 |
| 8750251 | 2,51 | 10,1 | 14 | 46 | 3 | 30,6 | 0,46 |
| 8750252 | 2,52 | 10,1 | 14 | 46 | 3 | 30,6 | 0,46 |
| 8750253 | 2,53 | 10,2 | 14 | 46 | 3 | 30,6 | 0,46 |
| 8750254 | 2,54 | 10,2 | 14 | 46 | 3 | 30,6 | 0,46 |
| 8750255 | 2,55 | 10,2 | 14 | 46 | 3 | 30,7 | 0,46 |
| 8750256 | 2,56 | 10,3 | 14 | 46 | 3 | 30,7 | 0,47 |
| 8750257 | 2,57 | 10,3 | 14 | 46 | 3 | 30,7 | 0,47 |
| 8750258 | 2,58 | 10,4 | 14 | 46 | 3 | 30,7 | 0,47 |
| 8750259 | 2,59 | 10,4 | 14 | 46 | 3 | 30,7 | 0,47 |
| 8750260 | 2,6 | 10,4 | 14 | 46 | 3 | 30,8 | 0,47 |
| 8750261 | 2,61 | 10,5 | 14 | 46 | 3 | 30,8 | 0,48 |
| 8750262 | 2,62 | 10,5 | 14 | 46 | 3 | 30,8 | 0,48 |
| 8750263 | 2,63 | 10,6 | 14 | 46 | 3 | 30,8 | 0,48 |
| 8750264 | 2,64 | 10,6 | 14 | 46 | 3 | 30,8 | 0,48 |
| 8750265 | 2,65 | 10,6 | 14 | 46 | 3 | 30,8 | 0,48 |
| 8750266 | 2,66 | 10,7 | 16 | 46 | 3 | 28,9 | 0,48 |
| 8750267 | 2,67 | 10,7 | 16 | 46 | 3 | 28,9 | 0,49 |
| 8750268 | 2,68 | 10,8 | 16 | 46 | 3 | 28,9 | 0,49 |
| 8750269 | 2,69 | 10,8 | 16 | 46 | 3 | 28,9 | 0,49 |
| 8750270 | 2,7 | 10,8 | 16 | 46 | 3 | 28,9 | 0,49 |
| 8750271 | 2,71 | 10,9 | 16 | 46 | 3 | 29 | 0,49 |
| 8750272 | 2,72 | 10,9 | 16 | 46 | 3 | 29 | 0,50 |
| 8750273 | 2,73 | 11 | 16 | 46 | 3 | 29 | 0,50 |
| 8750274 | 2,74 | 11 | 16 | 46 | 3 | 29 | 0,50 |
| 8750275 | 2,75 | 11 | 16 | 46 | 3 | 29 | 0,50 |
| 8750276 | 2,76 | 11,1 | 16 | 46 | 3 | 29,1 | 0,50 |
| 8750277 | 2,77 | 11,1 | 16 | 46 | 3 | 29,1 | 0,50 |
| 8750278 | 2,78 | 11,2 | 16 | 46 | 3 | 29,1 | 0,51 |
| 8750279 | 2,79 | 11,2 | 16 | 46 | 3 | 29,1 | 0,51 |

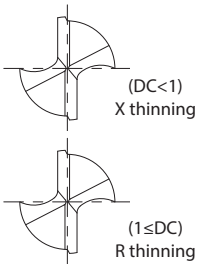
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8750280 | 2,8 | 11,2 | 16 | 46 | 3 | 29,1 | 0,51 |
| 8750281 | 2,81 | 11,3 | 16 | 46 | 3 | 29,1 | 0,51 |
| 8750282 | 2,82 | 11,3 | 16 | 46 | 3 | 29,2 | 0,51 |
| 8750283 | 2,83 | 11,4 | 16 | 46 | 3 | 29,2 | 0,52 |
| 8750284 | 2,84 | 11,4 | 16 | 46 | 3 | 29,2 | 0,52 |
| 8750285 | 2,85 | 11,4 | 16 | 46 | 3 | 29,2 | 0,52 |
| 8750286 | 2,86 | 11,5 | 16 | 46 | 3 | 29,2 | 0,52 |
| 8750287 | 2,87 | 11,5 | 16 | 46 | 3 | 29,3 | 0,52 |
| 8750288 | 2,88 | 11,6 | 16 | 46 | 3 | 29,3 | 0,52 |
| 8750289 | 2,89 | 11,6 | 16 | 46 | 3 | 29,3 | 0,53 |
| 8750290 | 2,9 | 11,6 | 16 | 46 | 3 | 29,3 | 0,53 |
| 8750291 | 2,91 | 11,7 | 16 | 46 | 3 | 29,3 | 0,53 |
| 8750292 | 2,92 | 11,7 | 16 | 46 | 3 | 29,4 | 0,53 |
| 8750293 | 2,93 | 11,8 | 16 | 46 | 3 | 29,4 | 0,53 |
| 8750294 | 2,94 | 11,8 | 16 | 46 | 3 | 29,4 | 0,54 |
| 8750295 | 2,95 | 11,8 | 16 | 46 | 3 | 29,4 | 0,54 |
| 8750296 | 2,96 | 11,9 | 16 | 46 | 3 | 29,4 | 0,54 |
| 8750297 | 2,97 | 11,9 | 16 | 46 | 3 | 29,4 | 0,54 |
| 8750298 | 2,98 | 12 | 16 | 46 | 3 | 29,5 | 0,54 |
| 8750299 | 2,99 | 12 | 16 | 46 | 3 | 29,5 | 0,54 |
| 8750300 | 3 | 12 | 16 | 46 | 3 | 29,5 | 0,55 |

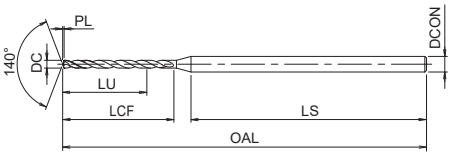
# AD-MICRO-10D

**Drilling | Solid carbide | Micro drills**

INDEX

**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 10xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | 140°

B.513

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760050 | 0,5 | 5 | 5,8 | 42 | 3 | 31,3 | 0,09 |
| 8760051 | 0,51 | 5,1 | 5,8 | 42 | 3 | 31,4 | 0,09 |
| 8760052 | 0,52 | 5,2 | 5,8 | 42 | 3 | 31,4 | 0,10 |
| 8760053 | 0,53 | 5,3 | 5,8 | 42 | 3 | 31,4 | 0,10 |
| 8760054 | 0,54 | 5,4 | 6,5 | 42 | 3 | 30,7 | 0,10 |
| 8760055 | 0,55 | 5,5 | 6,5 | 42 | 3 | 30,7 | 0,10 |
| 8760056 | 0,56 | 5,6 | 6,5 | 42 | 3 | 30,7 | 0,10 |
| 8760057 | 0,57 | 5,7 | 6,5 | 42 | 3 | 30,8 | 0,10 |
| 8760058 | 0,58 | 5,8 | 6,5 | 42 | 3 | 30,8 | 0,11 |
| 8760059 | 0,59 | 5,9 | 6,5 | 42 | 3 | 30,8 | 0,11 |
| 8760060 | 0,6 | 6 | 6,5 | 42 | 3 | 30,8 | 0,11 |
| 8760061 | 0,61 | 6,1 | 7 | 42 | 3 | 30,3 | 0,11 |
| 8760062 | 0,62 | 6,2 | 7 | 42 | 3 | 30,4 | 0,11 |
| 8760063 | 0,63 | 6,3 | 7 | 42 | 3 | 30,4 | 0,12 |
| 8760064 | 0,64 | 6,4 | 7 | 42 | 3 | 30,4 | 0,12 |
| 8760065 | 0,65 | 6,5 | 7 | 42 | 3 | 30,4 | 0,12 |
| 8760066 | 0,66 | 6,6 | 7 | 42 | 3 | 30,4 | 0,12 |
| 8760067 | 0,67 | 6,7 | 7 | 42 | 3 | 30,5 | 0,12 |
| 8760068 | 0,68 | 6,8 | 8 | 42 | 3 | 29,5 | 0,12 |
| 8760069 | 0,69 | 6,9 | 8 | 42 | 3 | 29,5 | 0,13 |
| 8760070 | 0,7 | 7 | 8 | 42 | 3 | 29,5 | 0,13 |
| 8760071 | 0,71 | 7,1 | 8 | 42 | 3 | 29,5 | 0,13 |
| 8760072 | 0,72 | 7,2 | 8 | 42 | 3 | 29,5 | 0,13 |
| 8760073 | 0,73 | 7,3 | 8 | 42 | 3 | 29,6 | 0,13 |
| 8760074 | 0,74 | 7,4 | 8 | 42 | 3 | 29,6 | 0,14 |
| 8760075 | 0,75 | 7,5 | 8 | 42 | 3 | 29,6 | 0,14 |
| 8760076 | 0,76 | 7,6 | 9 | 42 | 3 | 28,6 | 0,14 |
| 8760077 | 0,77 | 7,7 | 9 | 42 | 3 | 28,6 | 0,14 |
| 8760078 | 0,78 | 7,8 | 9 | 42 | 3 | 28,7 | 0,14 |
| 8760079 | 0,79 | 7,9 | 9 | 42 | 3 | 28,7 | 0,14 |
| 8760080 | 0,8 | 8 | 9 | 42 | 3 | 28,6 | 0,15 |
| 8760081 | 0,81 | 8,1 | 9 | 42 | 3 | 28,6 | 0,15 |
| 8760082 | 0,82 | 8,2 | 9 | 42 | 3 | 28,6 | 0,15 |
| 8760083 | 0,83 | 8,3 | 9 | 42 | 3 | 28,7 | 0,15 |
| 8760084 | 0,84 | 8,4 | 9 | 42 | 3 | 28,7 | 0,15 |
| 8760085 | 0,85 | 8,5 | 9 | 42 | 3 | 28,7 | 0,16 |
| 8760086 | 0,86 | 8,6 | 10,5 | 46 | 3 | 31,2 | 0,16 |
| 8760087 | 0,87 | 8,7 | 10,5 | 46 | 3 | 31,2 | 0,16 |
| 8760088 | 0,88 | 8,8 | 10,5 | 46 | 3 | 31,2 | 0,16 |
| 8760089 | 0,89 | 8,9 | 10,5 | 46 | 3 | 31,3 | 0,16 |
| 8760090 | 0,9 | 9 | 10,5 | 46 | 3 | 31,3 | 0,16 |
| 8760091 | 0,91 | 9,1 | 10,5 | 46 | 3 | 31,3 | 0,17 |
| 8760092 | 0,92 | 9,2 | 10,5 | 46 | 3 | 31,3 | 0,17 |
| 8760093 | 0,93 | 9,3 | 10,5 | 46 | 3 | 31,3 | 0,17 |
| 8760094 | 0,94 | 9,4 | 10,5 | 46 | 3 | 31,4 | 0,17 |
| 8760095 | 0,95 | 9,5 | 10,5 | 46 | 3 | 31,4 | 0,17 |

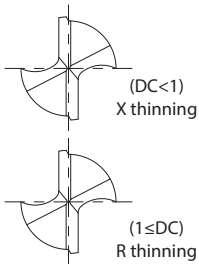
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760096 | 0,96 | 9,6 | 11,5 | 46 | 3 | 30,4 | 0,18 |
| 8760097 | 0,97 | 9,7 | 11,5 | 46 | 3 | 30,4 | 0,18 |
| 8760098 | 0,98 | 9,8 | 11,5 | 46 | 3 | 30,4 | 0,18 |
| 8760099 | 0,99 | 9,9 | 11,5 | 46 | 3 | 30,4 | 0,18 |
| 8760100 | 1 | 10 | 11,5 | 46 | 3 | 30,3 | 0,18 |
| 8760101 | 1,01 | 10,1 | 11,5 | 46 | 3 | 30,3 | 0,18 |
| 8760102 | 1,02 | 10,2 | 11,5 | 46 | 3 | 30,3 | 0,19 |
| 8760103 | 1,03 | 10,3 | 11,5 | 46 | 3 | 30,3 | 0,19 |
| 8760104 | 1,04 | 10,4 | 11,5 | 46 | 3 | 30,3 | 0,19 |
| 8760105 | 1,05 | 10,5 | 11,5 | 46 | 3 | 30,4 | 0,19 |
| 8760106 | 1,06 | 10,6 | 11,5 | 46 | 3 | 30,4 | 0,19 |
| 8760107 | 1,07 | 10,7 | 13 | 46 | 3 | 28,9 | 0,20 |
| 8760108 | 1,08 | 10,8 | 13 | 46 | 3 | 28,9 | 0,20 |
| 8760109 | 1,09 | 10,9 | 13 | 46 | 3 | 28,9 | 0,20 |
| 8760110 | 1,1 | 11 | 13 | 46 | 3 | 29 | 0,20 |
| 8760111 | 1,11 | 11,1 | 13 | 50 | 3 | 33 | 0,20 |
| 8760112 | 1,12 | 11,2 | 13 | 50 | 3 | 33 | 0,20 |
| 8760113 | 1,13 | 11,3 | 13 | 50 | 3 | 33 | 0,21 |
| 8760114 | 1,14 | 11,4 | 13 | 50 | 3 | 33 | 0,21 |
| 8760115 | 1,15 | 11,5 | 13 | 50 | 3 | 33 | 0,21 |
| 8760116 | 1,16 | 11,6 | 13 | 50 | 3 | 33,1 | 0,21 |
| 8760117 | 1,17 | 11,7 | 13 | 50 | 3 | 33,1 | 0,21 |
| 8760118 | 1,18 | 11,8 | 13 | 50 | 3 | 33,1 | 0,22 |
| 8760119 | 1,19 | 11,9 | 14 | 50 | 3 | 32,1 | 0,22 |
| 8760120 | 1,2 | 12 | 14 | 50 | 3 | 32,1 | 0,22 |
| 8760121 | 1,21 | 12,1 | 14 | 50 | 3 | 32,2 | 0,22 |
| 8760122 | 1,22 | 12,2 | 14 | 50 | 3 | 32,2 | 0,22 |
| 8760123 | 1,23 | 12,3 | 14 | 50 | 3 | 32,2 | 0,22 |
| 8760124 | 1,24 | 12,4 | 14 | 50 | 3 | 32,2 | 0,23 |
| 8760125 | 1,25 | 12,5 | 14 | 50 | 3 | 32,2 | 0,23 |
| 8760126 | 1,26 | 12,6 | 14 | 50 | 3 | 32,3 | 0,23 |
| 8760127 | 1,27 | 12,7 | 14 | 50 | 3 | 32,3 | 0,23 |
| 8760128 | 1,28 | 12,8 | 14 | 50 | 3 | 32,3 | 0,23 |
| 8760129 | 1,29 | 12,9 | 14 | 50 | 3 | 32,3 | 0,24 |
| 8760130 | 1,3 | 13 | 14 | 50 | 3 | 32,3 | 0,24 |
| 8760131 | 1,31 | 13,1 | 14 | 50 | 3 | 32,3 | 0,24 |
| 8760132 | 1,32 | 13,2 | 14 | 50 | 3 | 32,4 | 0,24 |
| 8760133 | 1,33 | 13,3 | 15 | 50 | 3 | 31,4 | 0,24 |
| 8760134 | 1,34 | 13,4 | 15 | 50 | 3 | 31,4 | 0,24 |
| 8760135 | 1,35 | 13,5 | 15 | 50 | 3 | 31,4 | 0,25 |
| 8760136 | 1,36 | 13,6 | 15 | 50 | 3 | 31,4 | 0,25 |
| 8760137 | 1,37 | 13,7 | 15 | 50 | 3 | 31,5 | 0,25 |
| 8760138 | 1,38 | 13,8 | 15 | 50 | 3 | 31,5 | 0,25 |
| 8760139 | 1,39 | 13,9 | 15 | 50 | 3 | 31,5 | 0,25 |
| 8760140 | 1,4 | 14 | 16,5 | 50 | 3 | 30 | 0,26 |
| 8760141 | 1,41 | 14,1 | 16,5 | 50 | 3 | 30 | 0,26 |

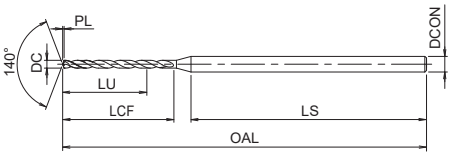
# AD-MICRO-10D

**Drilling | Solid carbide | Micro drills**

INDEX

**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 10xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

| P ● | P ● | P ● | P ● | M ● | K ● | K ● | N ○ | S ● | H ● | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

| A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | 140° | B.513 |
|---|---|---|---|---|---|---|---|---|

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760142 | 1,42 | 14,2 | 16,5 | 50 | 3 | 30,1 | 0,26 |
| 8760143 | 1,43 | 14,3 | 16,5 | 50 | 3 | 30,1 | 0,26 |
| 8760144 | 1,44 | 14,4 | 16,5 | 50 | 3 | 30,1 | 0,26 |
| 8760145 | 1,45 | 14,5 | 16,5 | 50 | 3 | 30,1 | 0,26 |
| 8760146 | 1,46 | 14,6 | 16,5 | 50 | 3 | 30,1 | 0,27 |
| 8760147 | 1,47 | 14,7 | 16,5 | 50 | 3 | 30,1 | 0,27 |
| 8760148 | 1,48 | 14,8 | 16,5 | 50 | 3 | 30,2 | 0,27 |
| 8760149 | 1,49 | 14,9 | 16,5 | 50 | 3 | 30,2 | 0,27 |
| 8760150 | 1,5 | 15 | 16,5 | 50 | 3 | 30,2 | 0,27 |
| 8760151 | 1,51 | 15,1 | 17,5 | 50 | 3 | 29,2 | 0,28 |
| 8760152 | 1,52 | 15,2 | 17,5 | 50 | 3 | 29,2 | 0,28 |
| 8760153 | 1,53 | 15,3 | 17,5 | 50 | 3 | 29,3 | 0,28 |
| 8760154 | 1,54 | 15,4 | 17,5 | 50 | 3 | 29,3 | 0,28 |
| 8760155 | 1,55 | 15,5 | 17,5 | 50 | 3 | 29,3 | 0,28 |
| 8760156 | 1,56 | 15,6 | 17,5 | 50 | 3 | 29,3 | 0,28 |
| 8760157 | 1,57 | 15,7 | 17,5 | 50 | 3 | 29,3 | 0,29 |
| 8760158 | 1,58 | 15,8 | 17,5 | 50 | 3 | 29,4 | 0,29 |
| 8760159 | 1,59 | 15,9 | 17,5 | 50 | 3 | 29,4 | 0,29 |
| 8760160 | 1,6 | 16 | 17,5 | 50 | 3 | 29,4 | 0,29 |
| 8760161 | 1,61 | 16,1 | 18,5 | 50 | 3 | 28,4 | 0,29 |
| 8760162 | 1,62 | 16,2 | 18,5 | 50 | 3 | 28,4 | 0,30 |
| 8760163 | 1,63 | 16,3 | 18,5 | 50 | 3 | 28,4 | 0,30 |
| 8760164 | 1,64 | 16,4 | 18,5 | 50 | 3 | 28,5 | 0,30 |
| 8760165 | 1,65 | 16,5 | 18,5 | 50 | 3 | 28,5 | 0,30 |
| 8760166 | 1,66 | 16,6 | 18,5 | 50 | 3 | 28,5 | 0,30 |
| 8760167 | 1,67 | 16,7 | 18,5 | 50 | 3 | 28,5 | 0,30 |
| 8760168 | 1,68 | 16,8 | 18,5 | 50 | 3 | 28,5 | 0,31 |
| 8760169 | 1,69 | 16,9 | 18,5 | 50 | 3 | 28,6 | 0,31 |
| 8760170 | 1,7 | 17 | 18,5 | 50 | 3 | 28,6 | 0,31 |
| 8760171 | 1,71 | 17,1 | 20,5 | 54 | 3 | 30,6 | 0,31 |
| 8760172 | 1,72 | 17,2 | 20,5 | 54 | 3 | 30,6 | 0,31 |
| 8760173 | 1,73 | 17,3 | 20,5 | 54 | 3 | 30,6 | 0,32 |
| 8760174 | 1,74 | 17,4 | 20,5 | 54 | 3 | 30,6 | 0,32 |
| 8760175 | 1,75 | 17,5 | 20,5 | 54 | 3 | 30,7 | 0,32 |
| 8760176 | 1,76 | 17,6 | 20,5 | 54 | 3 | 30,7 | 0,32 |
| 8760177 | 1,77 | 17,7 | 20,5 | 54 | 3 | 30,7 | 0,32 |
| 8760178 | 1,78 | 17,8 | 20,5 | 54 | 3 | 30,7 | 0,32 |
| 8760179 | 1,79 | 17,9 | 20,5 | 54 | 3 | 30,7 | 0,33 |
| 8760180 | 1,8 | 18 | 20,5 | 54 | 3 | 30,8 | 0,33 |
| 8760181 | 1,81 | 18,1 | 20,5 | 54 | 3 | 30,8 | 0,33 |
| 8760182 | 1,82 | 18,2 | 20,5 | 54 | 3 | 30,8 | 0,33 |
| 8760183 | 1,83 | 18,3 | 20,5 | 54 | 3 | 30,8 | 0,33 |
| 8760184 | 1,84 | 18,4 | 20,5 | 54 | 3 | 30,8 | 0,34 |
| 8760185 | 1,85 | 18,5 | 20,5 | 54 | 3 | 30,9 | 0,34 |
| 8760186 | 1,86 | 18,6 | 20,5 | 54 | 3 | 30,9 | 0,34 |
| 8760187 | 1,87 | 18,7 | 20,5 | 54 | 3 | 30,9 | 0,34 |

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760188 | 1,88 | 18,8 | 20,5 | 54 | 3 | 30,9 | 0,34 |
| 8760189 | 1,89 | 18,9 | 20,5 | 54 | 3 | 30,9 | 0,34 |
| 8760190 | 1,9 | 19 | 20,5 | 54 | 3 | 30,9 | 0,35 |
| 8760191 | 1,91 | 19,1 | 23 | 54 | 3 | 28,5 | 0,35 |
| 8760192 | 1,92 | 19,2 | 23 | 54 | 3 | 28,5 | 0,35 |
| 8760193 | 1,93 | 19,3 | 23 | 54 | 3 | 28,5 | 0,35 |
| 8760194 | 1,94 | 19,4 | 23 | 54 | 3 | 28,5 | 0,35 |
| 8760195 | 1,95 | 19,5 | 23 | 54 | 3 | 28,5 | 0,36 |
| 8760196 | 1,96 | 19,6 | 23 | 54 | 3 | 28,6 | 0,36 |
| 8760197 | 1,97 | 19,7 | 23 | 54 | 3 | 28,6 | 0,36 |
| 8760198 | 1,98 | 19,8 | 23 | 54 | 3 | 28,6 | 0,36 |
| 8760199 | 1,99 | 19,9 | 23 | 54 | 3 | 28,6 | 0,36 |
| 8760200 | 2 | 20 | 23 | 54 | 3 | 28,6 | 0,36 |
| 8760201 | 2,01 | 20,1 | 23 | 54 | 3 | 28,7 | 0,37 |
| 8760202 | 2,02 | 20,2 | 23 | 54 | 3 | 28,7 | 0,37 |
| 8760203 | 2,03 | 20,3 | 23 | 54 | 3 | 28,7 | 0,37 |
| 8760204 | 2,04 | 20,4 | 23 | 54 | 3 | 28,7 | 0,37 |
| 8760205 | 2,05 | 20,5 | 23 | 54 | 3 | 28,7 | 0,37 |
| 8760206 | 2,06 | 20,6 | 23 | 54 | 3 | 28,7 | 0,38 |
| 8760207 | 2,07 | 20,7 | 23 | 54 | 3 | 28,8 | 0,38 |
| 8760208 | 2,08 | 20,8 | 23 | 54 | 3 | 28,8 | 0,38 |
| 8760209 | 2,09 | 20,9 | 23 | 54 | 3 | 28,8 | 0,38 |
| 8760210 | 2,1 | 21 | 23 | 54 | 3 | 28,8 | 0,38 |
| 8760211 | 2,11 | 21,1 | 24,5 | 58 | 3 | 31,3 | 0,38 |
| 8760212 | 2,12 | 21,2 | 24,5 | 58 | 3 | 31,4 | 0,39 |
| 8760213 | 2,13 | 21,3 | 24,5 | 58 | 3 | 31,4 | 0,39 |
| 8760214 | 2,14 | 21,4 | 24,5 | 58 | 3 | 31,4 | 0,39 |
| 8760215 | 2,15 | 21,5 | 24,5 | 58 | 3 | 31,4 | 0,39 |
| 8760216 | 2,16 | 21,6 | 24,5 | 58 | 3 | 31,4 | 0,39 |
| 8760217 | 2,17 | 21,7 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760218 | 2,18 | 21,8 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760219 | 2,19 | 21,9 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760220 | 2,2 | 22 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760221 | 2,21 | 22,1 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760222 | 2,22 | 22,2 | 24,5 | 58 | 3 | 31,5 | 0,40 |
| 8760223 | 2,23 | 22,3 | 24,5 | 58 | 3 | 31,6 | 0,41 |
| 8760224 | 2,24 | 22,4 | 24,5 | 58 | 3 | 31,6 | 0,41 |
| 8760225 | 2,25 | 22,5 | 24,5 | 58 | 3 | 31,6 | 0,41 |
| 8760226 | 2,26 | 22,6 | 26 | 58 | 3 | 30,1 | 0,41 |
| 8760227 | 2,27 | 22,7 | 26 | 58 | 3 | 30,1 | 0,41 |
| 8760228 | 2,28 | 22,8 | 26 | 58 | 3 | 30,2 | 0,42 |
| 8760229 | 2,29 | 22,9 | 26 | 58 | 3 | 30,2 | 0,42 |
| 8760230 | 2,3 | 23 | 26 | 58 | 3 | 30,2 | 0,42 |
| 8760231 | 2,31 | 23,1 | 26 | 58 | 3 | 30,2 | 0,42 |
| 8760232 | 2,32 | 23,2 | 26 | 58 | 3 | 30,2 | 0,42 |
| 8760233 | 2,33 | 23,3 | 26 | 58 | 3 | 30,2 | 0,42 |

# AD-MICRO-10D

**Drilling | Solid carbide | Micro drills**

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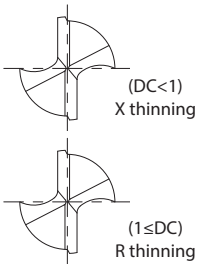
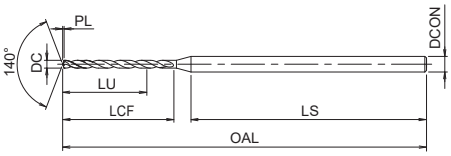
**NEW**




- First choice in quality and performance
- Micro carbide drill with KeptA coating
- Up to 10xD
- For general steels, stainless steels and titanium alloys
- 251 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | KeptA | 0~-0.004 | ±30° | SHANK h4 | SHRINK FIT | D>4 130°

B.513

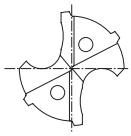
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760234 | 2,34 | 23,4 | 26 | 58 | 3 | 30,3 | 0,43 |
| 8760235 | 2,35 | 23,5 | 26 | 58 | 3 | 30,3 | 0,43 |
| 8760236 | 2,36 | 23,6 | 26 | 58 | 3 | 30,3 | 0,43 |
| 8760237 | 2,37 | 23,7 | 26 | 58 | 3 | 30,3 | 0,43 |
| 8760238 | 2,38 | 23,8 | 26 | 58 | 3 | 30,3 | 0,43 |
| 8760239 | 2,39 | 23,9 | 26 | 58 | 3 | 30,4 | 0,44 |
| 8760240 | 2,4 | 24 | 29 | 62 | 3 | 31,4 | 0,44 |
| 8760241 | 2,41 | 24,1 | 29 | 62 | 3 | 31,4 | 0,44 |
| 8760242 | 2,42 | 24,2 | 29 | 62 | 3 | 31,4 | 0,44 |
| 8760243 | 2,43 | 24,3 | 29 | 62 | 3 | 31,4 | 0,44 |
| 8760244 | 2,44 | 24,4 | 29 | 62 | 3 | 31,5 | 0,44 |
| 8760245 | 2,45 | 24,5 | 29 | 62 | 3 | 31,5 | 0,45 |
| 8760246 | 2,46 | 24,6 | 29 | 62 | 3 | 31,5 | 0,45 |
| 8760247 | 2,47 | 24,7 | 29 | 62 | 3 | 31,5 | 0,45 |
| 8760248 | 2,48 | 24,8 | 29 | 62 | 3 | 31,5 | 0,45 |
| 8760249 | 2,49 | 24,9 | 29 | 62 | 3 | 31,5 | 0,45 |
| 8760250 | 2,5 | 25 | 29 | 62 | 3 | 31,6 | 0,46 |
| 8760251 | 2,51 | 25,1 | 29 | 62 | 3 | 31,6 | 0,46 |
| 8760252 | 2,52 | 25,2 | 29 | 62 | 3 | 31,6 | 0,46 |
| 8760253 | 2,53 | 25,3 | 29 | 62 | 3 | 31,6 | 0,46 |
| 8760254 | 2,54 | 25,4 | 29 | 62 | 3 | 31,6 | 0,46 |
| 8760255 | 2,55 | 25,5 | 29 | 62 | 3 | 31,7 | 0,46 |
| 8760256 | 2,56 | 25,6 | 29 | 62 | 3 | 31,7 | 0,47 |
| 8760257 | 2,57 | 25,7 | 29 | 62 | 3 | 31,7 | 0,47 |
| 8760258 | 2,58 | 25,8 | 29 | 62 | 3 | 31,7 | 0,47 |
| 8760259 | 2,59 | 25,9 | 29 | 62 | 3 | 31,7 | 0,47 |
| 8760260 | 2,6 | 26 | 29 | 62 | 3 | 31,8 | 0,47 |
| 8760261 | 2,61 | 26,1 | 29 | 62 | 3 | 31,8 | 0,48 |
| 8760262 | 2,62 | 26,2 | 29 | 62 | 3 | 31,8 | 0,48 |
| 8760263 | 2,63 | 26,3 | 29 | 62 | 3 | 31,8 | 0,48 |
| 8760264 | 2,64 | 26,4 | 29 | 62 | 3 | 31,8 | 0,48 |
| 8760265 | 2,65 | 26,5 | 29 | 62 | 3 | 31,8 | 0,48 |
| 8760266 | 2,66 | 26,6 | 31 | 62 | 3 | 29,9 | 0,48 |
| 8760267 | 2,67 | 26,7 | 31 | 62 | 3 | 29,9 | 0,49 |
| 8760268 | 2,68 | 26,8 | 31 | 62 | 3 | 29,9 | 0,49 |
| 8760269 | 2,69 | 26,9 | 31 | 62 | 3 | 29,9 | 0,49 |
| 8760270 | 2,7 | 27 | 31 | 62 | 3 | 29,9 | 0,49 |
| 8760271 | 2,71 | 27,1 | 31 | 62 | 3 | 30 | 0,49 |
| 8760272 | 2,72 | 27,2 | 31 | 62 | 3 | 30 | 0,50 |
| 8760273 | 2,73 | 27,3 | 31 | 62 | 3 | 30 | 0,50 |
| 8760274 | 2,74 | 27,4 | 31 | 62 | 3 | 30 | 0,50 |
| 8760275 | 2,75 | 27,5 | 31 | 62 | 3 | 30 | 0,50 |
| 8760276 | 2,76 | 27,6 | 31 | 62 | 3 | 30,1 | 0,50 |
| 8760277 | 2,77 | 27,7 | 31 | 62 | 3 | 30,1 | 0,50 |
| 8760278 | 2,78 | 27,8 | 31 | 62 | 3 | 30,1 | 0,51 |
| 8760279 | 2,79 | 27,9 | 31 | 62 | 3 | 30,1 | 0,51 |

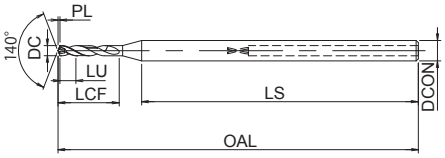
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8760280 | 2,8 | 28 | 31 | 62 | 3 | 30,1 | 0,51 |
| 8760281 | 2,81 | 28,1 | 33 | 62 | 3 | 28,1 | 0,51 |
| 8760282 | 2,82 | 28,2 | 33 | 62 | 3 | 28,2 | 0,51 |
| 8760283 | 2,83 | 28,3 | 33 | 62 | 3 | 28,2 | 0,52 |
| 8760284 | 2,84 | 28,4 | 33 | 62 | 3 | 28,2 | 0,52 |
| 8760285 | 2,85 | 28,5 | 33 | 62 | 3 | 28,2 | 0,52 |
| 8760286 | 2,86 | 28,6 | 33 | 62 | 3 | 28,2 | 0,52 |
| 8760287 | 2,87 | 28,7 | 33 | 62 | 3 | 28,3 | 0,52 |
| 8760288 | 2,88 | 28,8 | 33 | 62 | 3 | 28,3 | 0,52 |
| 8760289 | 2,89 | 28,9 | 33 | 62 | 3 | 28,3 | 0,53 |
| 8760290 | 2,9 | 29 | 33 | 62 | 3 | 28,3 | 0,53 |
| 8760291 | 2,91 | 29,1 | 33 | 62 | 3 | 28,3 | 0,53 |
| 8760292 | 2,92 | 29,2 | 33 | 62 | 3 | 28,4 | 0,53 |
| 8760293 | 2,93 | 29,3 | 33 | 62 | 3 | 28,4 | 0,53 |
| 8760294 | 2,94 | 29,4 | 33 | 62 | 3 | 28,4 | 0,54 |
| 8760295 | 2,95 | 29,5 | 33 | 62 | 3 | 28,4 | 0,54 |
| 8760296 | 2,96 | 29,6 | 33 | 62 | 3 | 28,4 | 0,54 |
| 8760297 | 2,97 | 29,7 | 33 | 62 | 3 | 28,4 | 0,54 |
| 8760298 | 2,98 | 29,8 | 33 | 62 | 3 | 28,5 | 0,54 |
| 8760299 | 2,99 | 29,9 | 33 | 62 | 3 | 28,5 | 0,54 |
| 8760300 | 3 | 30 | 33 | 62 | 3 | 28,5 | 0,55 |

# ADO-MICRO-2D

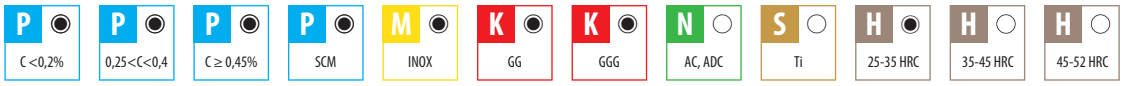
**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 2xD
- For general purpose steels and cast iron
- 17 sizes



| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8732001 | 0,7 | 1,4 | 4,2 | 47 | 3 | 38,5 | 0,13 |
| 8732002 | 0,75 | 1,5 | 4,5 | 47 | 3 | 38,3 | 0,14 |
| 8732003 | 0,8 | 1,6 | 4,8 | 50 | 3 | 41,1 | 0,15 |
| 8732004 | 0,85 | 1,7 | 5,1 | 50 | 3 | 40,9 | 0,15 |
| 8732005 | 0,9 | 1,8 | 5,4 | 50 | 3 | 40,7 | 0,16 |
| 8732006 | 0,95 | 1,9 | 5,7 | 50 | 3 | 40,5 | 0,17 |
| 8732007 | 1 | 2 | 6 | 53 | 3 | 42,8 | 0,18 |
| 8732008 | 1,1 | 2,2 | 6,6 | 53 | 3 | 42,4 | 0,20 |
| 8732009 | 1,2 | 2,4 | 7,2 | 53 | 3 | 41,9 | 0,22 |
| 8732010 | 1,3 | 2,6 | 7,8 | 53 | 3 | 41,5 | 0,24 |
| 8732011 | 1,4 | 2,8 | 8,4 | 53 | 3 | 41,1 | 0,25 |
| 8732012 | 1,5 | 3 | 9 | 53 | 3 | 40,7 | 0,27 |
| 8732013 | 1,6 | 3,2 | 9,6 | 53 | 3 | 40,3 | 0,29 |
| 8732014 | 1,7 | 3,4 | 10,2 | 53 | 3 | 39,9 | 0,31 |
| 8732015 | 1,8 | 3,6 | 10,8 | 53 | 3 | 39,5 | 0,33 |
| 8732016 | 1,9 | 3,8 | 11,4 | 53 | 3 | 39 | 0,35 |
| 8732017 | 2 | 4 | 12 | 58 | 3 | 43,6 | 0,36 |

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-5D

**Drilling | Solid carbide | Micro drills**

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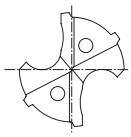
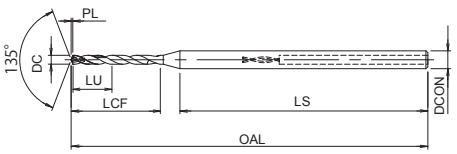





- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 5xD
- For general purpose steels and cast iron
- 19 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | 135°

B.493

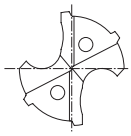
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8732018 | 0,7 | 3,5 | 7 | 47 | 3 | 35,7 | 0,14 |
| 8732019 | 0,75 | 3,8 | 7,5 | 47 | 3 | 35,3 | 0,16 |
| 8732020 | 0,8 | 4 | 8 | 50 | 3 | 37,9 | 0,17 |
| 8732021 | 0,85 | 4,3 | 8,5 | 50 | 3 | 37,5 | 0,18 |
| 8732022 | 0,9 | 4,5 | 9 | 50 | 3 | 37,1 | 0,19 |
| 8732023 | 0,95 | 4,8 | 9,5 | 50 | 3 | 36,7 | 0,20 |
| 8732024 | 1 | 5 | 10 | 55 | 3 | 40,8 | 0,21 |
| 8732025 | 1,1 | 5,5 | 11 | 55 | 3 | 40 | 0,23 |
| 8732026 | 1,2 | 6 | 12 | 60 | 3 | 44,1 | 0,25 |
| 8732027 | 1,3 | 6,5 | 13 | 60 | 3 | 43,3 | 0,27 |
| 8732028 | 1,4 | 7 | 14 | 60 | 3 | 42,5 | 0,29 |
| 8732029 | 1,5 | 7,5 | 15 | 60 | 3 | 41,7 | 0,31 |
| 48337155 | 1,55 | 7,8 | 15,5 | 60 | 3 | 41,3 | 0,32 |
| 8732030 | 1,6 | 8 | 16 | 60 | 3 | 40,9 | 0,33 |
| 8732031 | 1,7 | 8,5 | 17 | 60 | 3 | 40,1 | 0,35 |
| 8732032 | 1,8 | 9 | 18 | 65 | 3 | 44,3 | 0,37 |
| 48337184 | 1,84 | 9,2 | 18,4 | 65 | 3 | 43,9 | 0,38 |
| 8732033 | 1,9 | 9,5 | 19 | 65 | 3 | 43,4 | 0,39 |
| 8732034 | 2 | 10 | 20 | 65 | 3 | 42,6 | 0,41 |

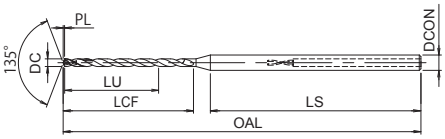
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-12D

**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 12xD
- For general purpose steels and cast iron
- 11 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ◉ INOX | K ◉ GG | K ◉ GGG | N ○ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | | 135°

B.493

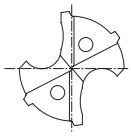
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8732035 | 1 | 12 | 17 | 60 | 3 | 38,8 | 0,21 |
| 8732036 | 1,1 | 13,2 | 18,7 | 65 | 3 | 42,3 | 0,23 |
| 8732037 | 1,2 | 14,4 | 20,4 | 65 | 3 | 40,7 | 0,25 |
| 8732038 | 1,3 | 15,6 | 22,1 | 65 | 3 | 39,2 | 0,27 |
| 8732039 | 1,4 | 16,8 | 23,8 | 70 | 3 | 42,7 | 0,29 |
| 8732040 | 1,5 | 18 | 25,5 | 70 | 3 | 41,2 | 0,31 |
| 8732041 | 1,6 | 19,2 | 27,2 | 70 | 3 | 39,7 | 0,33 |
| 8732042 | 1,7 | 20,4 | 28,9 | 73 | 3 | 41,2 | 0,35 |
| 8732043 | 1,8 | 21,6 | 30,6 | 73 | 3 | 39,7 | 0,37 |
| 8732044 | 1,9 | 22,8 | 32,3 | 73 | 3 | 38,1 | 0,39 |
| 8732045 | 2 | 24 | 34 | 77 | 3 | 40,6 | 0,41 |

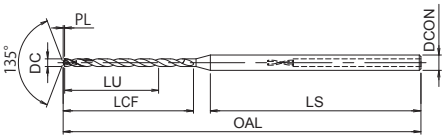
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-15D

**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 15xD
- For general purpose steels and cast iron

| P | P | P | P | M | K | K | N | S | H | H | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | 135°

B.493

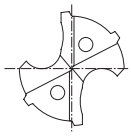
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 48337120 | 2 | 30 | 40 | 77 | 3 | 34,6 | 0,41 |

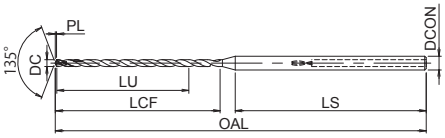
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-20D

**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 20xD
- For general purpose steels and cast iron

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | 135°

B.493

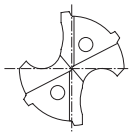
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8732046 | 1 | 20 | 24 | 68 | 3 | 39,8 | 0,21 |
| 8732047 | 1,1 | 22 | 26,4 | 75 | 3 | 44,6 | 0,23 |
| 8732048 | 1,2 | 24 | 28,8 | 75 | 3 | 42,3 | 0,25 |
| 8732049 | 1,3 | 26 | 31,2 | 75 | 3 | 40,1 | 0,27 |
| 8732050 | 1,4 | 28 | 33,6 | 81 | 3 | 43,9 | 0,29 |
| 8732051 | 1,5 | 30 | 36 | 81 | 3 | 41,7 | 0,31 |
| 8732052 | 1,6 | 32 | 38,4 | 81 | 3 | 39,5 | 0,33 |
| 8732053 | 1,7 | 34 | 40,8 | 88 | 3 | 44,3 | 0,35 |
| 8732054 | 1,8 | 36 | 43,2 | 88 | 3 | 42,1 | 0,37 |
| 8732055 | 1,9 | 38 | 45,6 | 88 | 3 | 39,8 | 0,39 |
| 8732056 | 2 | 40 | 48 | 95 | 3 | 44,6 | 0,41 |

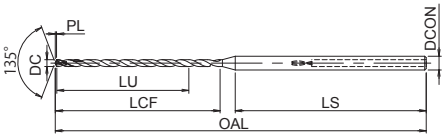
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-25D

**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 25xD
- For general purpose steels and cast iron

| P | P | P | P | M | K | K | N | S | H | H | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | | 135°

B.493

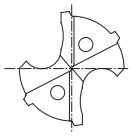
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 48337320 | 2 | 50 | 58 | 105 | 3 | 44,6 | 0,41 |

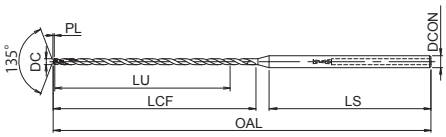
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# ADO-MICRO-30D

**Drilling | Solid carbide | Micro drills**

INDEX






- First choice in quality and performance
- Micro carbide drill with internal coolant, IchAda coating
- Double margin, up to 30xD
- For general purpose steels and cast iron
- 11 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ◉ INOX | K ◉ GG | K ◉ GGG | N ○ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | IchAda | ±30° | 0~-0.009 | SHRINK FIT | | 135° | B.493

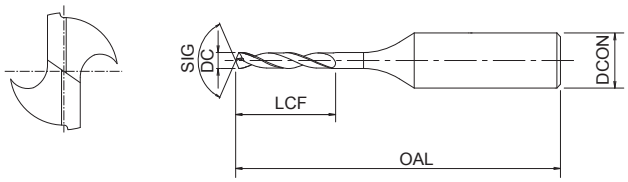
| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|
| 8732057 | 1 | 30 | 34 | 77 | 3 | 38,8 | 0,21 |
| 8732058 | 1,1 | 33 | 37,4 | 86 | 3 | 44,6 | 0,23 |
| 8732059 | 1,2 | 36 | 40,8 | 86 | 3 | 41,3 | 0,25 |
| 8732060 | 1,3 | 39 | 44,2 | 86 | 3 | 38,1 | 0,27 |
| 8732061 | 1,4 | 42 | 47,6 | 95 | 3 | 43,9 | 0,29 |
| 8732062 | 1,5 | 45 | 51 | 95 | 3 | 40,7 | 0,31 |
| 8732063 | 1,6 | 48 | 54,4 | 101 | 3 | 43,5 | 0,33 |
| 8732064 | 1,7 | 51 | 57,8 | 101 | 3 | 40,3 | 0,35 |
| 8732065 | 1,8 | 54 | 61,2 | 107 | 3 | 43,1 | 0,37 |
| 8732066 | 1,9 | 57 | 64,6 | 107 | 3 | 39,8 | 0,39 |
| 8732067 | 2 | 60 | 68 | 112 | 3 | 41,6 | 0,41 |

| EDP | DC | LU | LCF | OAL | DCON | LS | PL |
|---|---|---|---|---|---|---|---|

# WX-MS-GDS



**Drilling | Solid carbide | Micro drills**




- Micro carbide drill with multilayer TiAlN coating
- Small sizes for precision operation
- 241 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti

CARBIDE | WX | 26° ~32° | SHRINK FIT | D≥2,36 130° | 2≤2.35 140° | 0~-0.01

B.494

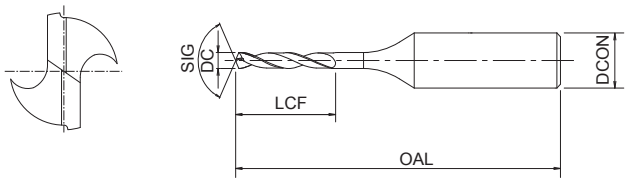
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300020 | 0,2 | 1,5 | 38 | 3 |
| 3300021 | 0,21 | 1,5 | 38 | 3 |
| 3300022 | 0,22 | 1,5 | 38 | 3 |
| 3300023 | 0,23 | 1,5 | 38 | 3 |
| 3300024 | 0,24 | 1,5 | 38 | 3 |
| 3300025 | 0,25 | 1,5 | 38 | 3 |
| 3300026 | 0,26 | 1,5 | 38 | 3 |
| 3300027 | 0,27 | 1,5 | 38 | 3 |
| 3300028 | 0,28 | 1,5 | 38 | 3 |
| 3300029 | 0,29 | 1,5 | 38 | 3 |
| 3300030 | 0,3 | 1,5 | 38 | 3 |
| 3300031 | 0,31 | 2 | 38 | 3 |
| 3300032 | 0,32 | 2 | 38 | 3 |
| 3300033 | 0,33 | 2 | 38 | 3 |
| 3300034 | 0,34 | 2 | 38 | 3 |
| 3300035 | 0,35 | 2 | 38 | 3 |
| 3300036 | 0,36 | 2 | 38 | 3 |
| 3300037 | 0,37 | 2 | 38 | 3 |
| 3300038 | 0,38 | 2 | 38 | 3 |
| 3300039 | 0,39 | 2,5 | 38 | 3 |
| 3300040 | 0,4 | 2,5 | 38 | 3 |
| 3300041 | 0,41 | 2,5 | 38 | 3 |
| 3300042 | 0,42 | 2,5 | 38 | 3 |
| 3300043 | 0,43 | 2,5 | 38 | 3 |
| 3300044 | 0,44 | 2,5 | 38 | 3 |
| 3300045 | 0,45 | 2,5 | 38 | 3 |
| 3300046 | 0,46 | 2,5 | 38 | 3 |
| 3300047 | 0,47 | 2,5 | 38 | 3 |
| 3300048 | 0,48 | 2,5 | 38 | 3 |
| 3300049 | 0,49 | 3 | 38 | 3 |
| 3300050 | 0,5 | 3 | 38 | 3 |
| 3300051 | 0,51 | 3 | 38 | 3 |
| 3300052 | 0,52 | 3 | 38 | 3 |
| 3300053 | 0,53 | 3 | 38 | 3 |
| 3300054 | 0,54 | 3,5 | 38 | 3 |
| 3300055 | 0,55 | 3,5 | 38 | 3 |
| 3300056 | 0,56 | 3,5 | 38 | 3 |
| 3300057 | 0,57 | 3,5 | 38 | 3 |
| 3300058 | 0,58 | 3,5 | 38 | 3 |
| 3300059 | 0,59 | 3,5 | 38 | 3 |
| 3300060 | 0,6 | 3,5 | 38 | 3 |
| 3300061 | 0,61 | 4 | 38 | 3 |
| 3300062 | 0,62 | 4 | 38 | 3 |
| 3300063 | 0,63 | 4 | 38 | 3 |
| 3300064 | 0,64 | 4 | 38 | 3 |
| 3300065 | 0,65 | 4 | 38 | 3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300066 | 0,66 | 4 | 38 | 3 |
| 3300067 | 0,67 | 4 | 38 | 3 |
| 3300068 | 0,68 | 4,5 | 38 | 3 |
| 3300069 | 0,69 | 4,5 | 38 | 3 |
| 3300070 | 0,7 | 4,5 | 38 | 3 |
| 3300071 | 0,71 | 4,5 | 38 | 3 |
| 3300072 | 0,72 | 4,5 | 38 | 3 |
| 3300073 | 0,73 | 4,5 | 38 | 3 |
| 3300074 | 0,74 | 4,5 | 38 | 3 |
| 3300075 | 0,75 | 4,5 | 38 | 3 |
| 3300076 | 0,76 | 5 | 38 | 3 |
| 3300077 | 0,77 | 5 | 38 | 3 |
| 3300078 | 0,78 | 5 | 38 | 3 |
| 3300079 | 0,79 | 5 | 38 | 3 |
| 3300080 | 0,8 | 5 | 38 | 3 |
| 3300081 | 0,81 | 5 | 38 | 3 |
| 3300082 | 0,82 | 5 | 38 | 3 |
| 3300083 | 0,83 | 5 | 38 | 3 |
| 3300084 | 0,84 | 5 | 38 | 3 |
| 3300085 | 0,85 | 5 | 38 | 3 |
| 3300086 | 0,86 | 5,5 | 38 | 3 |
| 3300087 | 0,87 | 5,5 | 38 | 3 |
| 3300088 | 0,88 | 5,5 | 38 | 3 |
| 3300089 | 0,89 | 5,5 | 38 | 3 |
| 3300090 | 0,9 | 5,5 | 38 | 3 |
| 3300091 | 0,91 | 5,5 | 38 | 3 |
| 3300092 | 0,92 | 5,5 | 38 | 3 |
| 3300093 | 0,93 | 5,5 | 38 | 3 |
| 3300094 | 0,94 | 5,5 | 38 | 3 |
| 3300095 | 0,95 | 5,5 | 38 | 3 |
| 3300096 | 0,96 | 6 | 38 | 3 |
| 3300097 | 0,97 | 6 | 38 | 3 |
| 3300098 | 0,98 | 6 | 38 | 3 |
| 3300099 | 0,99 | 6 | 38 | 3 |
| 3300100 | 1 | 6 | 38 | 3 |
| 3300101 | 1,01 | 6 | 38 | 3 |
| 3300102 | 1,02 | 6 | 38 | 3 |
| 3300103 | 1,03 | 6 | 38 | 3 |
| 3300104 | 1,04 | 6 | 38 | 3 |
| 3300105 | 1,05 | 6 | 38 | 3 |
| 3300106 | 1,06 | 6 | 38 | 3 |
| 3300107 | 1,07 | 7 | 42 | 3 |
| 3300108 | 1,08 | 7 | 42 | 3 |
| 3300109 | 1,09 | 7 | 42 | 3 |

# WX-MS-GDS



**Drilling | Solid carbide | Micro drills**




- Micro carbide drill with multilayer TiAlN coating
- Small sizes for precision operation
- 241 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | M ○ INOX | K ○ GG | N ◉ Al | N ○ AC, ADC | S ○ Ti

CARBIDE | WX | 26° ~32° | SHRINK FIT | D≥2,36 130° | 2≤2.35 140° | 0~-0.01

B.494

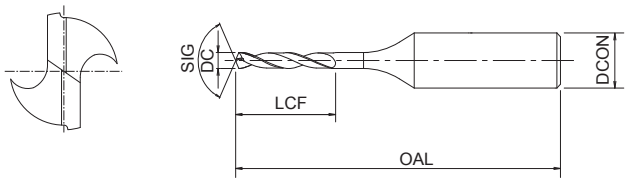
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300110 | 1,1 | 7 | 42 | 3 |
| 3300111 | 1,11 | 7 | 42 | 3 |
| 3300112 | 1,12 | 7 | 42 | 3 |
| 3300113 | 1,13 | 7 | 42 | 3 |
| 3300114 | 1,14 | 7 | 42 | 3 |
| 3300115 | 1,15 | 7 | 42 | 3 |
| 3300116 | 1,16 | 7 | 42 | 3 |
| 3300117 | 1,17 | 7 | 42 | 3 |
| 3300118 | 1,18 | 7 | 42 | 3 |
| 3300119 | 1,19 | 8 | 42 | 3 |
| 3300120 | 1,2 | 8 | 42 | 3 |
| 3300121 | 1,21 | 8 | 42 | 3 |
| 3300122 | 1,22 | 8 | 42 | 3 |
| 3300123 | 1,23 | 8 | 42 | 3 |
| 3300124 | 1,24 | 8 | 42 | 3 |
| 3300125 | 1,25 | 8 | 42 | 3 |
| 3300126 | 1,26 | 8 | 42 | 3 |
| 3300127 | 1,27 | 8 | 42 | 3 |
| 3300128 | 1,28 | 8 | 42 | 3 |
| 3300129 | 1,29 | 8 | 42 | 3 |
| 3300130 | 1,3 | 8 | 42 | 3 |
| 3300131 | 1,31 | 8 | 42 | 3 |
| 3300132 | 1,32 | 8 | 42 | 3 |
| 3300133 | 1,33 | 9 | 42 | 3 |
| 3300134 | 1,34 | 9 | 42 | 3 |
| 3300135 | 1,35 | 9 | 42 | 3 |
| 3300136 | 1,36 | 9 | 42 | 3 |
| 3300137 | 1,37 | 9 | 42 | 3 |
| 3300138 | 1,38 | 9 | 42 | 3 |
| 3300139 | 1,39 | 9 | 42 | 3 |
| 3300140 | 1,4 | 9 | 42 | 3 |
| 3300141 | 1,41 | 9 | 42 | 3 |
| 3300142 | 1,42 | 9 | 42 | 3 |
| 3300143 | 1,43 | 9 | 42 | 3 |
| 3300144 | 1,44 | 9 | 42 | 3 |
| 3300145 | 1,45 | 9 | 42 | 3 |
| 3300146 | 1,46 | 9 | 42 | 3 |
| 3300147 | 1,47 | 9 | 42 | 3 |
| 3300148 | 1,48 | 9 | 42 | 3 |
| 3300149 | 1,49 | 9 | 42 | 3 |
| 3300150 | 1,5 | 9 | 42 | 3 |
| 3300151 | 1,51 | 10 | 42 | 3 |
| 3300152 | 1,52 | 10 | 42 | 3 |
| 3300153 | 1,53 | 10 | 42 | 3 |
| 3300154 | 1,54 | 10 | 42 | 3 |
| 3300155 | 1,55 | 10 | 42 | 3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300156 | 1,56 | 10 | 42 | 3 |
| 3300157 | 1,57 | 10 | 42 | 3 |
| 3300158 | 1,58 | 10 | 42 | 3 |
| 3300159 | 1,59 | 10 | 42 | 3 |
| 3300160 | 1,6 | 10 | 42 | 3 |
| 3300161 | 1,61 | 10 | 42 | 3 |
| 3300162 | 1,62 | 10 | 42 | 3 |
| 3300163 | 1,63 | 10 | 42 | 3 |
| 3300164 | 1,64 | 10 | 42 | 3 |
| 3300165 | 1,65 | 10 | 42 | 3 |
| 3300166 | 1,66 | 10 | 42 | 3 |
| 3300167 | 1,67 | 10 | 42 | 3 |
| 3300168 | 1,68 | 10 | 42 | 3 |
| 3300169 | 1,69 | 10 | 42 | 3 |
| 3300170 | 1,7 | 10 | 42 | 3 |
| 3300171 | 1,71 | 11 | 42 | 3 |
| 3300172 | 1,72 | 11 | 42 | 3 |
| 3300173 | 1,73 | 11 | 42 | 3 |
| 3300174 | 1,74 | 11 | 42 | 3 |
| 3300175 | 1,75 | 11 | 42 | 3 |
| 3300176 | 1,76 | 11 | 42 | 3 |
| 3300177 | 1,77 | 11 | 42 | 3 |
| 3300178 | 1,78 | 11 | 42 | 3 |
| 3300179 | 1,79 | 11 | 42 | 3 |
| 3300180 | 1,8 | 11 | 42 | 3 |
| 3300181 | 1,81 | 11 | 42 | 3 |
| 3300182 | 1,82 | 11 | 42 | 3 |
| 3300183 | 1,83 | 11 | 42 | 3 |
| 3300184 | 1,84 | 11 | 42 | 3 |
| 3300185 | 1,85 | 11 | 42 | 3 |
| 3300186 | 1,86 | 11 | 42 | 3 |
| 3300187 | 1,87 | 11 | 42 | 3 |
| 3300188 | 1,88 | 11 | 42 | 3 |
| 3300189 | 1,89 | 11 | 42 | 3 |
| 3300190 | 1,9 | 11 | 42 | 3 |
| 3300191 | 1,91 | 12 | 50 | 3 |
| 3300192 | 1,92 | 12 | 50 | 3 |
| 3300193 | 1,93 | 12 | 50 | 3 |
| 3300194 | 1,94 | 12 | 50 | 3 |
| 3300195 | 1,95 | 12 | 50 | 3 |
| 3300196 | 1,96 | 12 | 50 | 3 |
| 3300197 | 1,97 | 12 | 50 | 3 |
| 3300198 | 1,98 | 12 | 50 | 3 |
| 3300199 | 1,99 | 12 | 50 | 3 |

# WX-MS-GDS



**Drilling | Solid carbide | Micro drills**




- Micro carbide drill with multilayer TiAlN coating
- Small sizes for precision operation
- 241 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ○ C ≥ 0,45% | P ○ SCM | M ○ INOX | K ○ GG | N ◉ Al | N ○ AC, ADC | S ○ Ti

CARBIDE | WX | 26°~32° | SHRINK FIT | D≥2,36 130° | 2≤2.35 140° | 0~-0.01

B.494

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300200 | 2 | 12 | 50 | 3 |
| 3300205 | 2,05 | 12 | 50 | 3 |
| 3300210 | 2,1 | 12 | 50 | 3 |
| 3300215 | 2,15 | 13 | 50 | 3 |
| 3300220 | 2,2 | 13 | 50 | 3 |
| 3300225 | 2,25 | 13 | 50 | 3 |
| 3300230 | 2,3 | 13 | 50 | 3 |
| 3300235 | 2,35 | 13 | 50 | 3 |
| 3300240 | 2,4 | 14 | 50 | 3 |
| 3300245 | 2,45 | 14 | 50 | 3 |
| 3300250 | 2,5 | 14 | 50 | 3 |
| 3300255 | 2,55 | 14 | 50 | 3 |
| 3300260 | 2,6 | 14 | 50 | 3 |
| 3300265 | 2,65 | 14 | 50 | 3 |
| 3300270 | 2,7 | 16 | 50 | 3 |
| 3300275 | 2,75 | 16 | 50 | 3 |
| 3300280 | 2,8 | 16 | 50 | 3 |
| 3300285 | 2,85 | 16 | 50 | 3 |
| 3300290 | 2,9 | 16 | 50 | 3 |
| 3300295 | 2,95 | 16 | 50 | 3 |
| 3300300 | 3 | 16 | 50 | 3 |
| 3300305 | 3,05 | 18 | 56 | 4 |
| 3300310 | 3,1 | 18 | 56 | 4 |
| 3300315 | 3,15 | 18 | 56 | 4 |
| 3300320 | 3,2 | 18 | 56 | 4 |
| 3300325 | 3,25 | 18 | 56 | 4 |
| 3300330 | 3,3 | 18 | 56 | 4 |
| 3300335 | 3,35 | 18 | 56 | 4 |
| 3300340 | 3,4 | 20 | 56 | 4 |
| 3300345 | 3,45 | 20 | 56 | 4 |
| 3300350 | 3,5 | 20 | 56 | 4 |
| 3300355 | 3,55 | 20 | 56 | 4 |
| 3300360 | 3,6 | 20 | 56 | 4 |
| 3300365 | 3,65 | 20 | 56 | 4 |
| 3300370 | 3,7 | 20 | 56 | 4 |
| 3300375 | 3,75 | 20 | 56 | 4 |
| 3300380 | 3,8 | 22 | 56 | 4 |
| 3300385 | 3,85 | 22 | 56 | 4 |
| 3300390 | 3,9 | 22 | 56 | 4 |
| 3300395 | 3,95 | 22 | 56 | 4 |
| 3300400 | 4 | 22 | 56 | 4 |
| 3300405 | 4,05 | 22 | 64 | 5 |
| 3300410 | 4,1 | 22 | 64 | 5 |
| 3300415 | 4,15 | 22 | 64 | 5 |
| 3300420 | 4,2 | 22 | 64 | 5 |
| 3300425 | 4,25 | 22 | 64 | 5 |

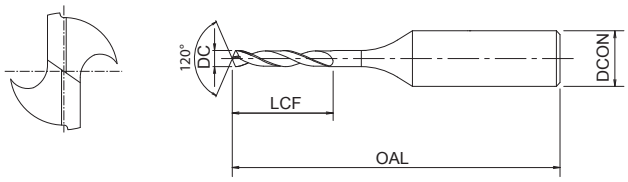
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3300430 | 4,3 | 24 | 64 | 5 |
| 3300435 | 4,35 | 24 | 64 | 5 |
| 3300440 | 4,4 | 24 | 64 | 5 |
| 3300445 | 4,45 | 24 | 64 | 5 |
| 3300450 | 4,5 | 24 | 64 | 5 |
| 3300455 | 4,55 | 24 | 64 | 5 |
| 3300460 | 4,6 | 24 | 64 | 5 |
| 3300465 | 4,65 | 24 | 64 | 5 |
| 3300470 | 4,7 | 24 | 64 | 5 |
| 3300475 | 4,75 | 24 | 64 | 5 |
| 3300480 | 4,8 | 26 | 64 | 5 |
| 3300485 | 4,85 | 26 | 64 | 5 |
| 3300490 | 4,9 | 26 | 64 | 5 |
| 3300495 | 4,95 | 26 | 64 | 5 |
| 3300500 | 5 | 26 | 64 | 5 |

# MRS-GDL



**Drilling | Solid carbide | Micro drills**

**WHILE STOCK LASTS**




- Micro carbide drill with SC coating
- For deep micro drilling in stainless steel
- 75 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX

CARBIDE | SC | 30° | SHRINK FIT | 120° | 0~-0.008

B.494

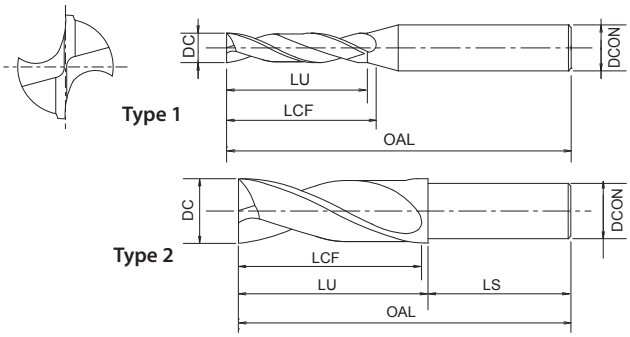
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8577050 | 0,5 | 6 | 42 | 3 |
| 8577054 | 0,54 | 6,6 | 42 | 3 |
| 8577055 | 0,55 | 6,6 | 42 | 3 |
| 8577056 | 0,56 | 7,2 | 42 | 3 |
| 8577060 | 0,6 | 7,2 | 42 | 3 |
| 8577063 | 0,63 | 7,8 | 46 | 3 |
| 8577064 | 0,64 | 7,8 | 46 | 3 |
| 8577065 | 0,65 | 7,8 | 46 | 3 |
| 8577070 | 0,7 | 8,4 | 46 | 3 |
| 8577071 | 0,71 | 9 | 46 | 3 |
| 8577072 | 0,72 | 9 | 46 | 3 |
| 8577073 | 0,73 | 9 | 46 | 3 |
| 8577074 | 0,74 | 9 | 46 | 3 |
| 8577075 | 0,75 | 9 | 46 | 3 |
| 8577080 | 0,8 | 9,6 | 46 | 3 |
| 8577081 | 0,81 | 10,2 | 46 | 3 |
| 8577082 | 0,82 | 10,2 | 46 | 3 |
| 8577090 | 0,9 | 10,8 | 46 | 3 |
| 8577091 | 0,91 | 11,4 | 46 | 3 |
| 8577092 | 0,92 | 11,4 | 46 | 3 |
| 8577100 | 1 | 12 | 46 | 3 |
| 8577110 | 1,1 | 13,2 | 50 | 3 |
| 8577111 | 1,11 | 13,8 | 50 | 3 |
| 8577112 | 1,12 | 13,8 | 50 | 3 |
| 8577115 | 1,15 | 13,8 | 50 | 3 |
| 8577120 | 1,2 | 14,4 | 50 | 3 |
| 8577127 | 1,27 | 15,6 | 50 | 3 |
| 8577128 | 1,28 | 15,6 | 50 | 3 |
| 8577129 | 1,29 | 15,6 | 50 | 3 |
| 8577130 | 1,3 | 15,6 | 50 | 3 |
| 8577140 | 1,4 | 16,8 | 54 | 3 |
| 8577145 | 1,45 | 17,4 | 54 | 3 |
| 8577146 | 1,46 | 18 | 54 | 3 |
| 8577147 | 1,47 | 18 | 54 | 3 |
| 8577150 | 1,5 | 18 | 54 | 3 |
| 8577151 | 1,51 | 18,6 | 54 | 3 |
| 8577152 | 1,52 | 18,6 | 54 | 3 |
| 8577153 | 1,53 | 18,6 | 54 | 3 |
| 8577155 | 1,55 | 18,6 | 54 | 3 |
| 8577156 | 1,56 | 19,2 | 54 | 3 |
| 8577157 | 1,57 | 19,2 | 54 | 3 |
| 8577160 | 1,6 | 19,2 | 54 | 3 |
| 8577170 | 1,7 | 20,4 | 58 | 3 |
| 8577180 | 1,8 | 21,6 | 58 | 3 |
| 8577181 | 1,81 | 22,2 | 58 | 3 |
| 8577182 | 1,82 | 22,2 | 58 | 3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8577183 | 1,83 | 22,2 | 58 | 3 |
| 8577190 | 1,9 | 22,8 | 58 | 3 |
| 8577198 | 1,98 | 24 | 58 | 3 |
| 8577199 | 1,99 | 24 | 58 | 3 |
| 8577200 | 2 | 24 | 58 | 3 |
| 8577210 | 2,1 | 25,2 | 62 | 3 |
| 8577212 | 2,12 | 25,8 | 62 | 3 |
| 8577213 | 2,13 | 25,8 | 62 | 3 |
| 8577214 | 2,14 | 25,8 | 62 | 3 |
| 8577220 | 2,2 | 26,4 | 62 | 3 |
| 8577229 | 2,29 | 27,6 | 62 | 3 |
| 8577230 | 2,3 | 27,6 | 62 | 3 |
| 8577231 | 2,31 | 28,2 | 62 | 3 |
| 8577239 | 2,39 | 28,8 | 62 | 3 |
| 8577240 | 2,4 | 28,8 | 62 | 3 |
| 8577241 | 2,41 | 29,4 | 66 | 3 |
| 8577242 | 2,42 | 29,4 | 66 | 3 |
| 8577250 | 2,5 | 30 | 66 | 3 |
| 8577255 | 2,55 | 30,6 | 66 | 3 |
| 8577256 | 2,56 | 31,2 | 66 | 3 |
| 8577257 | 2,57 | 31,2 | 66 | 3 |
| 8577260 | 2,6 | 31,2 | 66 | 3 |
| 8577270 | 2,7 | 32,4 | 66 | 3 |
| 8577277 | 2,77 | 33,6 | 66 | 3 |
| 8577278 | 2,78 | 33,6 | 66 | 3 |
| 8577279 | 2,79 | 33,6 | 66 | 3 |
| 8577280 | 2,8 | 33,6 | 66 | 3 |
| 8577290 | 2,9 | 34,8 | 66 | 3 |
| 8577300 | 3 | 36 | 66 | 3 |

# ADF-2D



**Drilling | Solid carbide | Flat drills**




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- Flat drilling application
- 253 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | EgiAs D≥2 | IchAda D<2 | h8 D≥2 | 0~-0.009 D<2 | 20° | SHRINK FIT | B.495

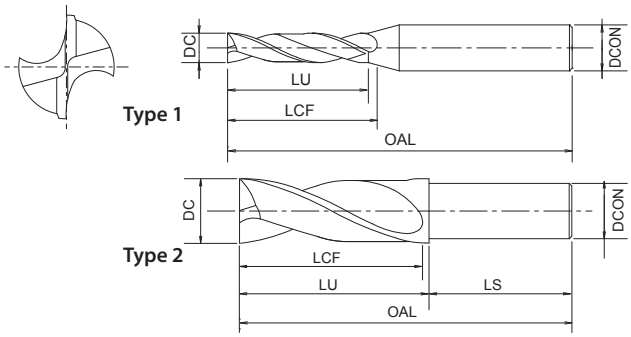
| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3330020 | 0,2 | 0,4 | 0,7 | 40 | 3 | 1 |
| 3330025 | 0,25 | 0,5 | 0,9 | 40 | 3 | 1 |
| 3330030 | 0,3 | 0,6 | 1 | 40 | 3 | 1 |
| 3330035 | 0,35 | 0,7 | 1,2 | 40 | 3 | 1 |
| 48315037 | 0,37 | 0,8 | 1,4 | 40 | 3 | 1 |
| 3330040 | 0,4 | 0,8 | 1,3 | 40 | 3 | 1 |
| 3330045 | 0,45 | 0,9 | 1,5 | 40 | 3 | 1 |
| 48315046 | 0,46 | 1 | 1,7 | 40 | 3 | 1 |
| 3330050 | 0,5 | 1 | 1,9 | 40 | 3 | 1 |
| 3330055 | 0,55 | 1,1 | 2,1 | 40 | 3 | 1 |
| 3330060 | 0,6 | 1,2 | 2,2 | 40 | 3 | 1 |
| 48315062 | 0,62 | 1,3 | 2,3 | 40 | 3 | 1 |
| 3330065 | 0,65 | 1,3 | 2,4 | 40 | 3 | 1 |
| 3330070 | 0,7 | 1,4 | 2,6 | 40 | 3 | 1 |
| 3330071 | 0,71 | 1,5 | 2,6 | 40 | 3 | 1 |
| 3330072 | 0,72 | 1,5 | 2,6 | 40 | 3 | 1 |
| 3330074 | 0,74 | 1,5 | 2,7 | 40 | 3 | 1 |
| 3330075 | 0,75 | 1,5 | 2,8 | 40 | 3 | 1 |
| 3330080 | 0,8 | 1,6 | 2,9 | 40 | 3 | 1 |
| 3330081 | 0,81 | 1,7 | 3 | 40 | 3 | 1 |
| 3330085 | 0,85 | 1,7 | 3,1 | 40 | 3 | 1 |
| 48315087 | 0,87 | 1,8 | 3,2 | 40 | 3 | 1 |
| 48315088 | 0,88 | 1,8 | 3,2 | 40 | 3 | 1 |
| 3330089 | 0,89 | 1,8 | 3,2 | 40 | 3 | 1 |
| 3330090 | 0,9 | 1,8 | 3,3 | 40 | 3 | 1 |
| 3330091 | 0,91 | 1,9 | 3,3 | 40 | 3 | 1 |
| 3330092 | 0,92 | 1,9 | 3,3 | 40 | 3 | 1 |
| 3330095 | 0,95 | 1,9 | 3,4 | 40 | 3 | 1 |
| 3330100 | 1 | 2 | 4,3 | 45 | 3 | 1 |
| 48315104 | 1,04 | 2,1 | 4,2 | 45 | 3 | 1 |
| 48315105 | 1,05 | 2,1 | 4,2 | 45 | 3 | 1 |
| 3330109 | 1,09 | 2,2 | 4,7 | 45 | 3 | 1 |
| 3330110 | 1,1 | 2,2 | 4,7 | 45 | 3 | 1 |
| 3330111 | 1,11 | 2,3 | 4,7 | 45 | 3 | 1 |
| 3330112 | 1,12 | 2,3 | 4,8 | 45 | 3 | 1 |
| 48315115 | 1,15 | 2,3 | 4,9 | 45 | 3 | 1 |
| 48315116 | 1,16 | 2,4 | 4,6 | 45 | 3 | 1 |
| 3330120 | 1,2 | 2,4 | 5,1 | 45 | 3 | 1 |
| 3330125 | 1,25 | 2,5 | 5,3 | 45 | 3 | 1 |
| 3330126 | 1,26 | 2,6 | 5,3 | 45 | 3 | 1 |
| 3330127 | 1,27 | 2,6 | 5,4 | 45 | 3 | 1 |
| 3330128 | 1,28 | 2,6 | 5,4 | 45 | 3 | 1 |
| 3330129 | 1,29 | 2,6 | 5,5 | 45 | 3 | 1 |
| 3330130 | 1,3 | 2,6 | 5,5 | 45 | 3 | 1 |
| 48315132 | 1,32 | 2,7 | 5,3 | 45 | 3 | 1 |
| 48315133 | 1,33 | 2,7 | 5,3 | 45 | 3 | 1 |

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3330135 | 1,35 | 2,7 | 5,7 | 45 | 3 | 1 |
| 3330140 | 1,4 | 2,8 | 5,9 | 45 | 3 | 1 |
| 48315143 | 1,43 | 2,9 | 5,7 | 45 | 3 | 1 |
| 3330144 | 1,44 | 2,9 | 6,1 | 45 | 3 | 1 |
| 3330145 | 1,45 | 2,9 | 6,1 | 45 | 3 | 1 |
| 3330146 | 1,46 | 3 | 6,1 | 45 | 3 | 1 |
| 3330147 | 1,47 | 3 | 6,2 | 45 | 3 | 1 |
| 3330148 | 1,48 | 3 | 6,2 | 45 | 3 | 1 |
| 3330150 | 1,5 | 3 | 6,3 | 45 | 3 | 1 |
| 48315152 | 1,52 | 3,1 | 6,4 | 45 | 3 | 1 |
| 3330153 | 1,53 | 3,1 | 6,4 | 45 | 3 | 1 |
| 3330154 | 1,54 | 3,1 | 6,5 | 45 | 3 | 1 |
| 3330155 | 1,55 | 3,1 | 6,5 | 45 | 3 | 1 |
| 3330156 | 1,56 | 3,2 | 6,5 | 45 | 3 | 1 |
| 3330157 | 1,57 | 3,2 | 6,6 | 45 | 3 | 1 |
| 3330158 | 1,58 | 3,2 | 6,6 | 45 | 3 | 1 |
| 3330160 | 1,6 | 3,2 | 6,7 | 45 | 3 | 1 |
| 48315165 | 1,65 | 3,3 | 6,9 | 45 | 3 | 1 |
| 48315167 | 1,67 | 3,4 | 7 | 45 | 3 | 1 |
| 48315168 | 1,68 | 3,4 | 7 | 45 | 3 | 1 |
| 3330170 | 1,7 | 3,4 | 7,1 | 45 | 3 | 1 |
| 3330175 | 1,75 | 3,5 | 7,3 | 45 | 3 | 1 |
| 3330180 | 1,8 | 3,6 | 7,5 | 45 | 3 | 1 |
| 3330182 | 1,82 | 3,7 | 7,6 | 45 | 3 | 1 |
| 3330183 | 1,83 | 3,7 | 7,6 | 45 | 3 | 1 |
| 3330184 | 1,84 | 3,7 | 7,7 | 45 | 3 | 1 |
| 3330185 | 1,85 | 3,7 | 7,7 | 45 | 3 | 1 |
| 3330186 | 1,86 | 3,8 | 7,7 | 45 | 3 | 1 |
| 3330190 | 1,9 | 3,8 | 7,9 | 45 | 3 | 1 |
| 3330195 | 1,95 | 3,9 | 8,1 | 45 | 3 | 1 |
| 48315199 | 1,99 | 4 | 8,3 | 45 | 3 | 1 |
| 3330200 | 2 | 4 | 10,3 | 50 | 4 | 1 |
| 3330210 | 2,1 | 4,2 | 10,5 | 50 | 4 | 1 |
| 3330220 | 2,2 | 4,4 | 11 | 50 | 4 | 1 |
| 3330230 | 2,3 | 4,6 | 11 | 50 | 4 | 1 |
| 3330232 | 2,32 | 4,7 | 11 | 50 | 4 | 1 |
| 3330240 | 2,4 | 4,8 | 12 | 50 | 4 | 1 |
| 3330242 | 2,42 | 4,9 | 12 | 50 | 4 | 1 |
| 3330250 | 2,5 | 5 | 12 | 50 | 4 | 1 |
| 3330254 | 2,54 | 5,1 | 12 | 50 | 4 | 1 |
| 3330258 | 2,58 | 5,2 | 12 | 50 | 4 | 1 |
| 3330260 | 2,6 | 5,2 | 13 | 50 | 4 | 1 |
| 3330270 | 2,7 | 5,4 | 13 | 50 | 4 | 1 |
| 3330276 | 2,76 | 5,6 | 14 | 50 | 4 | 1 |
| 3330278 | 2,78 | 5,6 | 14 | 50 | 4 | 1 |
| 3330280 | 2,8 | 5,6 | 14 | 50 | 4 | 1 |

# ADF-2D



**Drilling | Solid carbide | Flat drills**




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- Flat drilling application
- 253 sizes

| P ◉ | P ◉ | P ◉ | P ◉ | K ◉ | K ◉ | N ○ | N ○ | H ◉ | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | GG | GGG | Al | AC, ADC | 25-35 HRC | 35-45 HRC | 45-52 HRC |

| A | CARBIDE | EgiAs | IchAda | h8 | 0~-0.009 | 20° | SHRINK FIT | B.495 |
|---|---|---|---|---|---|---|---|---|
| | | D≥2 | D<2 | D≥2 | D<2 | | | |

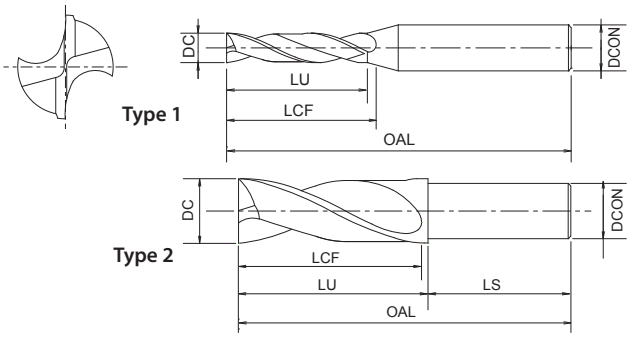
| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3330290 | 2,9 | 5,8 | 14 | 50 | 4 | 1 |
| 3330300 | 3 | 6 | 15 | 55 | 6 | 1 |
| 3330303 | 3,03 | 11,5 | 15 | 55 | 6 | 1 |
| 3330310 | 3,1 | 11,6 | 15 | 55 | 6 | 1 |
| 3330315 | 3,15 | 11,7 | 15 | 55 | 6 | 1 |
| 3330320 | 3,2 | 11,8 | 15 | 55 | 6 | 1 |
| 3330330 | 3,3 | 12 | 15 | 55 | 6 | 1 |
| 3330340 | 3,4 | 12,1 | 16 | 55 | 6 | 1 |
| 3330350 | 3,5 | 12,3 | 16 | 55 | 6 | 1 |
| 3330353 | 3,53 | 12,4 | 16 | 55 | 6 | 1 |
| 3330360 | 3,6 | 12,5 | 16 | 55 | 6 | 1 |
| 3330366 | 3,66 | 12,6 | 16 | 55 | 6 | 1 |
| 3330368 | 3,68 | 12,7 | 16 | 55 | 6 | 1 |
| 3330370 | 3,7 | 12,7 | 16 | 55 | 6 | 1 |
| 3330380 | 3,8 | 17,9 | 19 | 60 | 6 | 1 |
| 3330390 | 3,9 | 18,1 | 19 | 60 | 6 | 1 |
| 3330400 | 4 | 18,3 | 19 | 60 | 6 | 1 |
| 3330403 | 4,03 | 18,3 | 19 | 60 | 6 | 1 |
| 3330410 | 4,1 | 18,5 | 19 | 60 | 6 | 1 |
| 3330420 | 4,2 | 18,6 | 21 | 60 | 6 | 1 |
| 3330430 | 4,3 | 18,8 | 21 | 60 | 6 | 1 |
| 3330440 | 4,4 | 19 | 21 | 60 | 6 | 1 |
| 3330450 | 4,5 | 19,2 | 21 | 60 | 6 | 1 |
| 3330453 | 4,53 | 19,3 | 21 | 60 | 6 | 1 |
| 3330460 | 4,6 | 19,4 | 21 | 60 | 6 | 1 |
| 3330462 | 4,62 | 19,4 | 21 | 60 | 6 | 1 |
| 3330464 | 4,64 | 19,5 | 21 | 60 | 6 | 1 |
| 3330470 | 4,7 | 19,6 | 21 | 60 | 6 | 1 |
| 3330480 | 4,8 | 24 | 24,8 | 65 | 6 | 1 |
| 3330490 | 4,9 | 24 | 24,9 | 65 | 6 | 1 |
| 3330500 | 5 | 24 | 25,1 | 65 | 6 | 1 |
| 3330503 | 5,03 | 24 | 25,2 | 65 | 6 | 1 |
| 3330510 | 5,1 | 24 | 25,3 | 65 | 6 | 1 |
| 3330520 | 5,2 | 24 | 25,5 | 65 | 6 | 1 |
| 3330530 | 5,3 | 24 | 25,7 | 65 | 6 | 1 |
| 3330540 | 5,4 | 25,9 | 27 | 65 | 6 | 1 |
| 3330550 | 5,5 | 26,1 | 27 | 65 | 6 | 1 |
| 3330552 | 5,52 | 26,1 | 27 | 65 | 6 | 1 |
| 3330554 | 5,54 | 26,1 | 27 | 65 | 6 | 1 |
| 3330560 | 5,6 | 26,3 | 27 | 65 | 6 | 1 |
| 3330570 | 5,7 | 26,4 | 27 | 65 | 6 | 1 |
| 3330580 | 5,8 | 26,6 | 27 | 65 | 6 | 1 |
| 3330590 | 5,9 | 26,8 | 27 | 65 | 6 | 1 |
| 3330600 | 6 | 27 | 27 | 65 | 6 | 2 |
| 3330603 | 6,03 | 32 | 30 | 70 | 6 | 2 |
| 3330610 | 6,1 | 32 | 30 | 70 | 6 | 2 |

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3330620 | 6,2 | 32 | 30 | 70 | 6 | 2 |
| 3330630 | 6,3 | 32 | 30 | 70 | 6 | 2 |
| 3330640 | 6,4 | 32 | 30 | 70 | 6 | 2 |
| 3330650 | 6,5 | 32 | 30 | 70 | 6 | 2 |
| 3330653 | 6,53 | 32 | 30 | 70 | 6 | 2 |
| 3330660 | 6,6 | 32 | 30 | 70 | 6 | 2 |
| 3330670 | 6,7 | 32 | 30 | 70 | 6 | 2 |
| 3330680 | 6,8 | 32 | 30 | 70 | 6 | 2 |
| 3330690 | 6,9 | 32 | 30 | 70 | 6 | 2 |
| 3330700 | 7 | 32 | 30 | 70 | 6 | 2 |
| 3330703 | 7,03 | 36 | 34 | 75 | 6 | 2 |
| 3330710 | 7,1 | 36 | 34 | 75 | 6 | 2 |
| 3330720 | 7,2 | 36 | 34 | 75 | 6 | 2 |
| 3330730 | 7,3 | 36 | 34 | 75 | 6 | 2 |
| 3330740 | 7,4 | 36 | 34 | 75 | 6 | 2 |
| 3330750 | 7,5 | 36 | 34 | 75 | 6 | 2 |
| 3330760 | 7,6 | 36 | 34 | 75 | 6 | 2 |
| 3330770 | 7,7 | 36 | 34 | 75 | 6 | 2 |
| 3330780 | 7,8 | 36 | 34 | 75 | 6 | 2 |
| 3330790 | 7,9 | 36 | 34 | 75 | 6 | 2 |
| 3330800 | 8 | 36 | 34 | 75 | 8 | 2 |
| 3330803 | 8,03 | 40 | 38 | 80 | 8 | 2 |
| 3330810 | 8,1 | 40 | 38 | 80 | 8 | 2 |
| 3330820 | 8,2 | 40 | 38 | 80 | 8 | 2 |
| 3330830 | 8,3 | 40 | 38 | 80 | 8 | 2 |
| 3330840 | 8,4 | 40 | 38 | 80 | 8 | 2 |
| 3330850 | 8,5 | 40 | 38 | 80 | 8 | 2 |
| 3330853 | 8,53 | 40 | 38 | 80 | 8 | 2 |
| 3330860 | 8,6 | 40 | 38 | 80 | 8 | 2 |
| 3330870 | 8,7 | 40 | 38 | 80 | 8 | 2 |
| 3330880 | 8,8 | 40 | 38 | 80 | 8 | 2 |
| 3330890 | 8,9 | 40 | 38 | 80 | 8 | 2 |
| 3330900 | 9 | 40 | 38 | 80 | 8 | 2 |
| 3330903 | 9,03 | 44 | 42 | 85 | 8 | 2 |
| 3330910 | 9,1 | 44 | 42 | 85 | 8 | 2 |
| 3330920 | 9,2 | 44 | 42 | 85 | 8 | 2 |
| 3330930 | 9,3 | 44 | 42 | 85 | 8 | 2 |
| 3330940 | 9,4 | 44 | 42 | 85 | 8 | 2 |
| 3330950 | 9,5 | 44 | 42 | 85 | 8 | 2 |
| 3330960 | 9,6 | 44 | 42 | 85 | 8 | 2 |
| 3330970 | 9,7 | 44 | 42 | 85 | 8 | 2 |
| 3330980 | 9,8 | 44 | 42 | 85 | 8 | 2 |
| 3330990 | 9,9 | 44 | 42 | 85 | 8 | 2 |
| 3331000 | 10 | 44 | 42 | 85 | 10 | 2 |
| 3331003 | 10,03 | 48 | 46 | 90 | 10 | 2 |
| 3331010 | 10,1 | 48 | 46 | 90 | 10 | 2 |

# ADF-2D

**Drilling | Solid carbide | Flat drills**

INDEX




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- Flat drilling application
- 253 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | EgiAs D≥2 | IchAda D<2 | h8 D≥2 | 0~-0.009 D<2 | 20° | SHRINK FIT | B.495

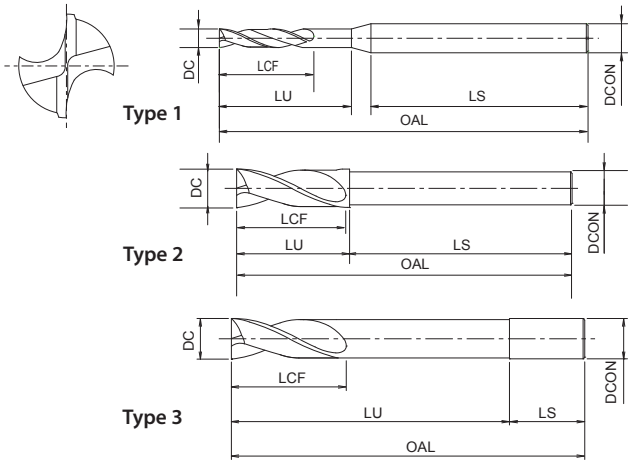
| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3331020 | 10,2 | 48 | 46 | 90 | 10 | 2 |
| 3331030 | 10,3 | 48 | 46 | 90 | 10 | 2 |
| 3331040 | 10,4 | 48 | 46 | 90 | 10 | 2 |
| 3331050 | 10,5 | 48 | 46 | 90 | 10 | 2 |
| 3331060 | 10,6 | 48 | 46 | 90 | 10 | 2 |
| 3331070 | 10,7 | 48 | 46 | 90 | 10 | 2 |
| 3331080 | 10,8 | 48 | 46 | 90 | 10 | 2 |
| 3331090 | 10,9 | 48 | 46 | 90 | 10 | 2 |
| 3331100 | 11 | 48 | 46 | 90 | 10 | 2 |
| 3331103 | 11,03 | 52 | 50 | 95 | 10 | 2 |
| 3331110 | 11,1 | 52 | 50 | 95 | 10 | 2 |
| 3331120 | 11,2 | 52 | 50 | 95 | 10 | 2 |
| 3331130 | 11,3 | 52 | 50 | 95 | 10 | 2 |
| 3331140 | 11,4 | 52 | 50 | 95 | 10 | 2 |
| 3331150 | 11,5 | 52 | 50 | 95 | 10 | 2 |
| 3331160 | 11,6 | 52 | 50 | 95 | 10 | 2 |
| 3331170 | 11,7 | 52 | 50 | 95 | 10 | 2 |
| 3331180 | 11,8 | 52 | 50 | 95 | 10 | 2 |
| 3331190 | 11,9 | 52 | 50 | 95 | 10 | 2 |
| 3331200 | 12 | 52 | 50 | 95 | 12 | 2 |
| 3331203 | 12,03 | 58 | 56 | 100 | 12 | 2 |
| 3331210 | 12,1 | 58 | 56 | 100 | 12 | 2 |
| 3331220 | 12,2 | 58 | 56 | 100 | 12 | 2 |
| 3331230 | 12,3 | 58 | 56 | 100 | 12 | 2 |
| 3331240 | 12,4 | 58 | 56 | 100 | 12 | 2 |
| 3331250 | 12,5 | 58 | 56 | 100 | 12 | 2 |
| 3331260 | 12,6 | 58 | 56 | 100 | 12 | 2 |
| 3331270 | 12,7 | 58 | 56 | 100 | 12 | 2 |
| 3331280 | 12,8 | 58 | 56 | 100 | 12 | 2 |
| 3331290 | 12,9 | 58 | 56 | 100 | 12 | 2 |
| 3331300 | 13 | 58 | 56 | 100 | 12 | 2 |
| 3331310 | 13,1 | 62 | 60 | 105 | 12 | 2 |
| 3331320 | 13,2 | 62 | 60 | 105 | 12 | 2 |
| 3331330 | 13,3 | 62 | 60 | 105 | 12 | 2 |
| 3331340 | 13,4 | 62 | 60 | 105 | 12 | 2 |
| 3331350 | 13,5 | 62 | 60 | 105 | 12 | 2 |
| 3331360 | 13,6 | 62 | 60 | 105 | 12 | 2 |
| 3331370 | 13,7 | 62 | 60 | 105 | 12 | 2 |
| 3331380 | 13,8 | 62 | 60 | 105 | 12 | 2 |
| 3331390 | 13,9 | 62 | 60 | 105 | 12 | 2 |
| 3331400 | 14 | 62 | 60 | 105 | 12 | 2 |
| 3331410 | 14,1 | 66 | 64 | 110 | 12 | 2 |
| 3331420 | 14,2 | 66 | 64 | 110 | 12 | 2 |
| 3331430 | 14,3 | 66 | 64 | 110 | 12 | 2 |
| 3331440 | 14,4 | 66 | 64 | 110 | 12 | 2 |
| 3331450 | 14,5 | 66 | 64 | 110 | 12 | 2 |

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3331460 | 14,6 | 66 | 64 | 110 | 12 | 2 |
| 3331470 | 14,7 | 66 | 64 | 110 | 12 | 2 |
| 3331480 | 14,8 | 66 | 64 | 110 | 12 | 2 |
| 3331490 | 14,9 | 66 | 64 | 110 | 12 | 2 |
| 3331500 | 15 | 66 | 64 | 110 | 12 | 2 |
| 3331510 | 15,1 | 70 | 68 | 115 | 12 | 2 |
| 3331520 | 15,2 | 70 | 68 | 115 | 12 | 2 |
| 3331530 | 15,3 | 70 | 68 | 115 | 12 | 2 |
| 3331540 | 15,4 | 70 | 68 | 115 | 12 | 2 |
| 3331550 | 15,5 | 70 | 68 | 115 | 12 | 2 |
| 3331560 | 15,6 | 70 | 68 | 115 | 12 | 2 |
| 3331570 | 15,7 | 70 | 68 | 115 | 12 | 2 |
| 3331580 | 15,8 | 70 | 68 | 115 | 12 | 2 |
| 3331590 | 15,9 | 70 | 68 | 115 | 12 | 2 |
| 3331600 | 16 | 70 | 68 | 115 | 16 | 2 |
| 3331650 | 16,5 | 76 | 74 | 125 | 16 | 2 |
| 3331700 | 17 | 76 | 74 | 125 | 16 | 2 |
| 3331750 | 17,5 | 80 | 78 | 130 | 16 | 2 |
| 3331800 | 18 | 80 | 78 | 130 | 16 | 2 |
| 3331850 | 18,5 | 86 | 84 | 135 | 16 | 2 |
| 3331900 | 19 | 86 | 84 | 135 | 16 | 2 |
| 3331950 | 19,5 | 90 | 88 | 140 | 16 | 2 |
| 3332000 | 20 | 90 | 88 | 140 | 20 | 2 |

# ADFLS-2D

**Drilling | Solid carbide | Flat drills**

INDEX




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- For deep reach flat drilling application
- 78 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | H 25-35 HRC | H 35-45 HRC

A | CARBIDE | EgiAs | 20° | h8 | SHRINK FIT

B.496

| EDP | DC | LU | LCF | OAL | DCON | LS | Type |
|---|---|---|---|---|---|---|---|
| 3332300 | 3 | 6 | 15 | 100 | 6 | 64,4 | 1 |
| 3332310 | 3,1 | 31 | 15 | 100 | 6 | 63,6 | 1 |
| 3332320 | 3,2 | 32 | 15 | 100 | 6 | 62,8 | 1 |
| 3332330 | 3,3 | 33 | 15 | 100 | 6 | 62 | 1 |
| 3332340 | 3,4 | 34 | 16 | 100 | 6 | 61,1 | 1 |
| 3332350 | 3,5 | 35 | 16 | 100 | 6 | 60,3 | 1 |
| 3332360 | 3,6 | 36 | 16 | 100 | 6 | 59,5 | 1 |
| 3332370 | 3,7 | 37 | 16 | 100 | 6 | 58,7 | 1 |
| 3332380 | 3,8 | 38 | 19 | 100 | 6 | 57,9 | 1 |
| 3332390 | 3,9 | 39 | 19 | 100 | 6 | 57,1 | 1 |
| 3332400 | 4 | 40 | 19 | 100 | 6 | 56,3 | 1 |
| 3332410 | 4,1 | 41 | 19 | 100 | 6 | 55,5 | 1 |
| 3332420 | 4,2 | 42 | 21 | 100 | 6 | 54,6 | 1 |
| 3332430 | 4,3 | 43 | 21 | 100 | 6 | 53,8 | 1 |
| 3332440 | 4,4 | 44 | 21 | 100 | 6 | 53 | 1 |
| 3332450 | 4,5 | 45 | 21 | 100 | 6 | 52,2 | 1 |
| 3332460 | 4,6 | 46 | 21 | 100 | 6 | 51,4 | 1 |
| 3332470 | 4,7 | 47 | 21 | 100 | 6 | 50,6 | 1 |
| 3332480 | 4,8 | 48 | 24 | 100 | 6 | 49,8 | 1 |
| 3332490 | 4,9 | 49 | 24 | 100 | 6 | 48,9 | 1 |
| 3332500 | 5 | 50 | 24 | 110 | 6 | 58,1 | 1 |
| 3332510 | 5,1 | 51 | 24 | 110 | 6 | 57,3 | 1 |
| 3332520 | 5,2 | 52 | 24 | 110 | 6 | 56,5 | 1 |
| 3332530 | 5,3 | 53 | 24 | 110 | 6 | 55,7 | 1 |
| 3332540 | 5,4 | 54 | 27 | 110 | 6 | 54,9 | 1 |
| 3332550 | 5,5 | 55 | 27 | 110 | 6 | 54,1 | 1 |
| 3332560 | 5,6 | 56 | 27 | 110 | 6 | 53,3 | 1 |
| 3332570 | 5,7 | 57 | 27 | 110 | 6 | 52,4 | 1 |
| 3332580 | 5,8 | 58 | 27 | 110 | 6 | 51,6 | 1 |
| 3332590 | 5,9 | 59 | 27 | 110 | 6 | 50,8 | 1 |
| 3332600 | 6 | 29 | 27 | 110 | 6 | 81 | 2 |
| 3334060 | 6 | 60 | 27 | 110 | 6 | 50 | 3 |
| 3332650 | 6,5 | 32 | 30 | 120 | 6 | 88 | 2 |
| 3332680 | 6,8 | 32 | 30 | 120 | 6 | 88 | 2 |
| 3332690 | 6,9 | 32 | 30 | 120 | 6 | 88 | 2 |
| 3332700 | 7 | 32 | 30 | 120 | 6 | 88 | 2 |
| 3332740 | 7,4 | 36 | 34 | 130 | 6 | 94 | 2 |
| 3332750 | 7,5 | 36 | 34 | 130 | 6 | 94 | 2 |
| 3332780 | 7,8 | 36 | 34 | 130 | 6 | 94 | 2 |
| 3332800 | 8 | 36 | 34 | 130 | 8 | 94 | 2 |
| 3334080 | 8 | 80 | 34 | 130 | 8 | 50 | 3 |
| 3332850 | 8,5 | 40 | 38 | 140 | 8 | 100 | 2 |
| 3332860 | 8,6 | 40 | 38 | 140 | 8 | 100 | 2 |
| 3332880 | 8,8 | 40 | 38 | 140 | 8 | 100 | 2 |
| 3332900 | 9 | 40 | 38 | 140 | 8 | 100 | 2 |
| 3332920 | 9,2 | 44 | 42 | 150 | 8 | 106 | 2 |

| EDP | DC | LU | LCF | OAL | DCON | LS | Type |
|---|---|---|---|---|---|---|---|
| 3332950 | 9,5 | 44 | 42 | 150 | 8 | 106 | 2 |
| 3332980 | 9,8 | 44 | 42 | 150 | 8 | 106 | 2 |
| 3333000 | 10 | 44 | 42 | 150 | 10 | 106 | 2 |
| 3334100 | 10 | 100 | 42 | 150 | 10 | 50 | 3 |
| 3333030 | 10,3 | 48 | 46 | 160 | 10 | 112 | 2 |
| 3333040 | 10,4 | 48 | 46 | 160 | 10 | 112 | 2 |
| 3333050 | 10,5 | 48 | 46 | 160 | 10 | 112 | 2 |
| 3333080 | 10,8 | 48 | 46 | 160 | 10 | 112 | 2 |
| 3333100 | 11 | 48 | 46 | 160 | 10 | 112 | 2 |
| 3333110 | 11,1 | 52 | 50 | 170 | 10 | 118 | 2 |
| 3333150 | 11,5 | 52 | 50 | 170 | 10 | 118 | 2 |
| 3333180 | 11,8 | 52 | 50 | 170 | 10 | 118 | 2 |
| 3333200 | 12 | 52 | 50 | 170 | 12 | 118 | 2 |
| 3334120 | 12 | 120 | 50 | 170 | 12 | 50 | 3 |
| 3333250 | 12,5 | 58 | 56 | 180 | 12 | 122 | 2 |
| 3333300 | 13 | 58 | 56 | 180 | 12 | 122 | 2 |
| 3333350 | 13,5 | 62 | 60 | 190 | 12 | 128 | 2 |
| 3333400 | 14 | 62 | 60 | 190 | 12 | 128 | 2 |
| 3333450 | 14,5 | 66 | 64 | 200 | 12 | 134 | 2 |
| 3333500 | 15 | 66 | 64 | 200 | 12 | 134 | 2 |
| 3333550 | 15,5 | 70 | 68 | 210 | 12 | 140 | 2 |
| 3333600 | 16 | 70 | 68 | 210 | 16 | 140 | 2 |
| 3334160 | 16 | 160 | 68 | 210 | 16 | 50 | 3 |
| 3333650 | 16,5 | 76 | 74 | 220 | 16 | 144 | 2 |
| 3333700 | 17 | 76 | 74 | 220 | 16 | 144 | 2 |
| 3333750 | 17,5 | 80 | 78 | 230 | 16 | 150 | 2 |
| 3333800 | 18 | 80 | 78 | 230 | 16 | 150 | 2 |
| 3333850 | 18,5 | 86 | 84 | 240 | 16 | 154 | 2 |
| 3333900 | 19 | 86 | 84 | 240 | 16 | 154 | 2 |
| 3333950 | 19,5 | 90 | 88 | 250 | 16 | 160 | 2 |
| 3334000 | 20 | 90 | 88 | 250 | 20 | 160 | 2 |
| 3334200 | 20 | 200 | 88 | 250 | 20 | 50 | 3 |

# ADFO-3D

**Drilling | Solid carbide | Flat drills**

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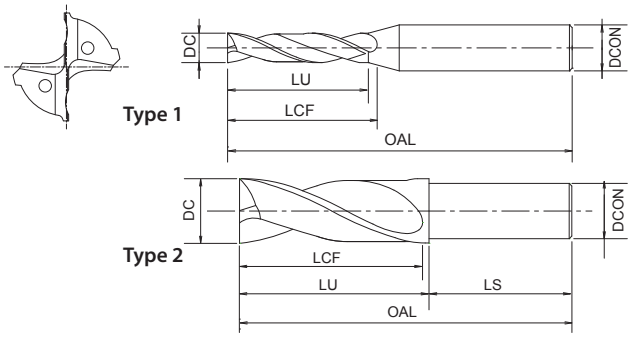


- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Flat drilling application
- 160 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 20° | SHRINK FIT | h8

B.497

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3334300 | 3 | 9 | 16 | 55 | 4 | 1 |
| 3334301 | 3,03 | 15 | 16 | 55 | 4 | 1 |
| 3334302 | 3,1 | 15 | 16 | 55 | 4 | 1 |
| 3334303 | 3,15 | 15 | 16 | 55 | 4 | 1 |
| 3334304 | 3,2 | 15 | 16 | 55 | 4 | 1 |
| 3334305 | 3,3 | 15 | 16 | 55 | 4 | 1 |
| 3334306 | 3,4 | 16 | 17 | 55 | 4 | 1 |
| 3334307 | 3,5 | 16 | 17 | 55 | 4 | 1 |
| 3334308 | 3,53 | 16 | 17 | 55 | 4 | 1 |
| 3334309 | 3,6 | 16 | 17 | 55 | 4 | 1 |
| 3334310 | 3,66 | 16 | 17 | 55 | 4 | 1 |
| 3334311 | 3,68 | 16 | 17 | 55 | 4 | 1 |
| 3334312 | 3,7 | 16 | 17 | 55 | 4 | 1 |
| 3334313 | 3,8 | 19 | 20 | 60 | 4 | 1 |
| 3334314 | 3,9 | 19 | 20 | 60 | 4 | 1 |
| 3334315 | 4 | 19 | 20 | 60 | 4 | 2 |
| 3334316 | 4,03 | 21 | 22 | 60 | 6 | 1 |
| 3334317 | 4,1 | 21 | 22 | 60 | 6 | 1 |
| 3334318 | 4,2 | 21 | 22 | 60 | 6 | 1 |
| 3334319 | 4,3 | 21 | 22 | 60 | 6 | 1 |
| 3334320 | 4,4 | 21 | 22 | 60 | 6 | 1 |
| 3334321 | 4,5 | 21 | 22 | 60 | 6 | 1 |
| 3334322 | 4,53 | 21 | 21 | 60 | 6 | 1 |
| 3334323 | 4,6 | 21 | 21 | 60 | 6 | 1 |
| 3334324 | 4,62 | 21 | 21 | 60 | 6 | 1 |
| 3334325 | 4,64 | 21 | 21 | 60 | 6 | 1 |
| 3334326 | 4,7 | 21 | 21 | 60 | 6 | 1 |
| 3334327 | 4,8 | 24 | 24 | 65 | 6 | 1 |
| 3334328 | 4,9 | 24 | 24 | 65 | 6 | 1 |
| 3334329 | 5 | 24 | 24 | 65 | 6 | 1 |
| 3334330 | 5,03 | 24 | 24 | 65 | 6 | 1 |
| 3334331 | 5,1 | 24 | 24 | 65 | 6 | 1 |
| 3334332 | 5,2 | 24 | 24 | 65 | 6 | 1 |
| 3334333 | 5,3 | 24 | 24 | 65 | 6 | 1 |
| 3334334 | 5,4 | 27 | 27 | 65 | 6 | 1 |
| 3334335 | 5,5 | 27 | 27 | 65 | 6 | 1 |
| 3334336 | 5,52 | 27 | 27 | 65 | 6 | 1 |
| 3334337 | 5,54 | 27 | 27 | 65 | 6 | 1 |
| 3334338 | 5,6 | 27 | 27 | 65 | 6 | 1 |
| 3334339 | 5,7 | 27 | 27 | 65 | 6 | 1 |
| 3334340 | 5,8 | 27 | 27 | 65 | 6 | 1 |
| 3334341 | 5,9 | 27 | 27 | 65 | 6 | 1 |
| 3334342 | 6 | 27 | 27 | 65 | 6 | 2 |
| 3334343 | 6,03 | 30 | 30 | 70 | 8 | 1 |
| 3334344 | 6,1 | 30 | 30 | 70 | 8 | 1 |
| 3334345 | 6,2 | 30 | 31 | 70 | 8 | 1 |

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3334346 | 6,3 | 30 | 31 | 70 | 8 | 1 |
| 3334347 | 6,4 | 30 | 31 | 70 | 8 | 1 |
| 3334348 | 6,5 | 30 | 31 | 70 | 8 | 1 |
| 3334349 | 6,53 | 30 | 31 | 70 | 8 | 1 |
| 3334350 | 6,6 | 30 | 31 | 70 | 8 | 1 |
| 3334351 | 6,7 | 30 | 31 | 70 | 8 | 1 |
| 3334352 | 6,8 | 30 | 31 | 70 | 8 | 1 |
| 3334353 | 6,9 | 30 | 31 | 70 | 8 | 1 |
| 3334354 | 7 | 30 | 31 | 70 | 8 | 1 |
| 3334355 | 7,03 | 30 | 31 | 70 | 8 | 1 |
| 3334356 | 7,1 | 34 | 35 | 75 | 8 | 1 |
| 3334357 | 7,2 | 34 | 35 | 75 | 8 | 1 |
| 3334358 | 7,3 | 34 | 35 | 75 | 8 | 1 |
| 3334359 | 7,4 | 34 | 35 | 75 | 8 | 1 |
| 3334360 | 7,5 | 34 | 35 | 75 | 8 | 1 |
| 3334361 | 7,6 | 34 | 35 | 75 | 8 | 1 |
| 3334362 | 7,7 | 34 | 35 | 75 | 8 | 1 |
| 3334363 | 7,8 | 34 | 35 | 75 | 8 | 1 |
| 3334364 | 7,9 | 34 | 35 | 75 | 8 | 1 |
| 3334365 | 8 | 34 | 35 | 75 | 8 | 2 |
| 3334366 | 8,03 | 38 | 39 | 80 | 10 | 1 |
| 3334367 | 8,1 | 38 | 39 | 80 | 10 | 1 |
| 3334368 | 8,2 | 38 | 39 | 80 | 10 | 1 |
| 3334369 | 8,3 | 38 | 39 | 80 | 10 | 1 |
| 3334370 | 8,4 | 38 | 39 | 80 | 10 | 1 |
| 3334371 | 8,5 | 38 | 39 | 80 | 10 | 1 |
| 3334372 | 8,53 | 38 | 39 | 80 | 10 | 1 |
| 3334373 | 8,6 | 38 | 39 | 80 | 10 | 1 |
| 3334374 | 8,7 | 38 | 39 | 80 | 10 | 1 |
| 3334375 | 8,8 | 38 | 39 | 80 | 10 | 1 |
| 3334376 | 8,9 | 38 | 39 | 80 | 10 | 1 |
| 3334377 | 9 | 38 | 39 | 80 | 10 | 1 |
| 3334378 | 9,03 | 38 | 39 | 80 | 10 | 1 |
| 3334379 | 9,1 | 42 | 43 | 85 | 10 | 1 |
| 3334380 | 9,2 | 42 | 43 | 85 | 10 | 1 |
| 3334381 | 9,3 | 42 | 43 | 85 | 10 | 1 |
| 3334382 | 9,4 | 42 | 43 | 85 | 10 | 1 |
| 3334383 | 9,5 | 42 | 43 | 85 | 10 | 1 |
| 3334384 | 9,6 | 42 | 43 | 85 | 10 | 1 |
| 3334385 | 9,7 | 42 | 43 | 85 | 10 | 1 |
| 3334386 | 9,8 | 42 | 43 | 85 | 10 | 1 |
| 3334387 | 9,9 | 42 | 43 | 85 | 10 | 1 |
| 3334388 | 10 | 42 | 43 | 85 | 10 | 2 |
| 3334389 | 10,03 | 46 | 47 | 90 | 12 | 1 |
| 3334390 | 10,1 | 46 | 47 | 90 | 12 | 1 |
| 3334391 | 10,2 | 46 | 47 | 90 | 12 | 1 |

# ADFO-3D

**Drilling | Solid carbide | Flat drills**

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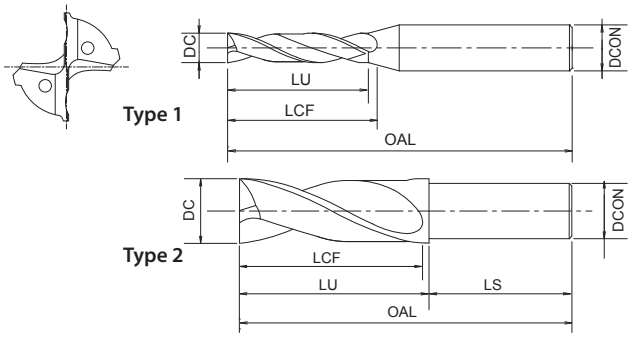



- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Flat drilling application
- 160 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 20° | SHRINK FIT | h8

B.497

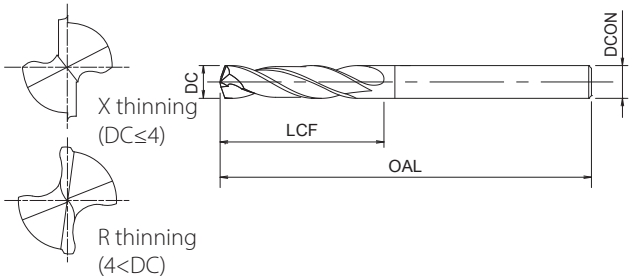
| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3334392 | 10,3 | 46 | 47 | 90 | 12 | 1 |
| 3334393 | 10,4 | 46 | 47 | 90 | 12 | 1 |
| 3334394 | 10,5 | 46 | 47 | 90 | 12 | 1 |
| 3334395 | 10,6 | 46 | 47 | 90 | 12 | 1 |
| 3334396 | 10,7 | 46 | 47 | 90 | 12 | 1 |
| 3334397 | 10,8 | 46 | 47 | 90 | 12 | 1 |
| 3334398 | 10,9 | 46 | 47 | 90 | 12 | 1 |
| 3334399 | 11 | 46 | 47 | 90 | 12 | 1 |
| 3334400 | 11,03 | 46 | 47 | 90 | 12 | 1 |
| 3334401 | 11,1 | 50 | 51 | 95 | 12 | 1 |
| 3334402 | 11,2 | 50 | 51 | 95 | 12 | 1 |
| 3334403 | 11,3 | 50 | 51 | 95 | 12 | 1 |
| 3334404 | 11,4 | 50 | 51 | 95 | 12 | 1 |
| 3334405 | 11,5 | 50 | 51 | 95 | 12 | 1 |
| 3334406 | 11,6 | 50 | 51 | 95 | 12 | 1 |
| 3334407 | 11,7 | 50 | 51 | 95 | 12 | 1 |
| 3334408 | 11,8 | 50 | 51 | 95 | 12 | 1 |
| 3334409 | 11,9 | 50 | 51 | 95 | 12 | 1 |
| 3334410 | 12 | 50 | 51 | 95 | 12 | 2 |
| 3334411 | 12,03 | 56 | 57 | 100 | 14 | 1 |
| 3334412 | 12,1 | 56 | 57 | 100 | 14 | 1 |
| 3334413 | 12,2 | 56 | 57 | 100 | 14 | 1 |
| 3334414 | 12,3 | 56 | 57 | 100 | 14 | 1 |
| 3334415 | 12,4 | 56 | 57 | 100 | 14 | 1 |
| 3334416 | 12,5 | 56 | 57 | 100 | 14 | 1 |
| 3334417 | 12,6 | 56 | 57 | 100 | 14 | 1 |
| 3334418 | 12,7 | 56 | 57 | 100 | 14 | 1 |
| 3334419 | 12,8 | 56 | 57 | 100 | 14 | 1 |
| 3334420 | 12,9 | 56 | 57 | 100 | 14 | 1 |
| 3334421 | 13 | 56 | 57 | 100 | 14 | 1 |
| 3334422 | 13,1 | 60 | 61 | 105 | 14 | 1 |
| 3334423 | 13,2 | 60 | 61 | 105 | 14 | 1 |
| 3334424 | 13,3 | 60 | 61 | 105 | 14 | 1 |
| 3334425 | 13,4 | 60 | 61 | 105 | 14 | 1 |
| 3334426 | 13,5 | 60 | 61 | 105 | 14 | 1 |
| 3334427 | 13,6 | 60 | 61 | 105 | 14 | 1 |
| 3334428 | 13,7 | 60 | 61 | 105 | 14 | 1 |
| 3334429 | 13,8 | 60 | 61 | 105 | 14 | 1 |
| 3334430 | 13,9 | 60 | 61 | 105 | 14 | 1 |
| 3334431 | 14 | 60 | 61 | 105 | 14 | 2 |
| 3334432 | 14,1 | 64 | 65 | 110 | 16 | 1 |
| 3334433 | 14,2 | 64 | 65 | 110 | 16 | 1 |
| 3334434 | 14,3 | 64 | 65 | 110 | 16 | 1 |
| 3334435 | 14,4 | 64 | 65 | 110 | 16 | 1 |
| 3334436 | 14,5 | 64 | 65 | 110 | 16 | 1 |
| 3334437 | 14,6 | 65 | 65 | 110 | 16 | 1 |

| EDP | DC | LU | LCF | OAL | DCON | Type |
|---|---|---|---|---|---|---|
| 3334438 | 14,7 | 65 | 65 | 110 | 16 | 1 |
| 3334439 | 14,8 | 65 | 65 | 110 | 16 | 1 |
| 3334440 | 14,9 | 65 | 65 | 110 | 16 | 1 |
| 3334441 | 15 | 65 | 65 | 110 | 16 | 1 |
| 3334442 | 15,1 | 69 | 69 | 115 | 16 | 1 |
| 3334443 | 15,2 | 69 | 69 | 115 | 16 | 1 |
| 3334444 | 15,3 | 69 | 69 | 115 | 16 | 1 |
| 3334445 | 15,4 | 69 | 69 | 115 | 16 | 1 |
| 3334446 | 15,5 | 69 | 69 | 115 | 16 | 1 |
| 3334447 | 15,6 | 69 | 69 | 115 | 16 | 1 |
| 3334448 | 15,7 | 69 | 69 | 115 | 16 | 1 |
| 3334449 | 15,8 | 69 | 69 | 115 | 16 | 1 |
| 3334450 | 15,9 | 69 | 69 | 115 | 16 | 1 |
| 3334451 | 16 | 69 | 69 | 115 | 16 | 2 |
| 3334452 | 16,5 | 75 | 75 | 125 | 18 | 1 |
| 3334453 | 17 | 75 | 75 | 125 | 18 | 1 |
| 3334454 | 17,5 | 79 | 79 | 130 | 18 | 1 |
| 3334455 | 18 | 79 | 79 | 130 | 18 | 2 |
| 3334456 | 18,5 | 85 | 85 | 135 | 20 | 1 |
| 3334457 | 19 | 85 | 85 | 135 | 20 | 1 |
| 3334458 | 19,5 | 88 | 89 | 140 | 20 | 1 |
| 3334459 | 20 | 88 | 89 | 140 | 20 | 2 |

# AD-2D

**Drilling | Solid carbide | 2xD**

INDEX




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- For general purpose steels and cast iron
- 160 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.497

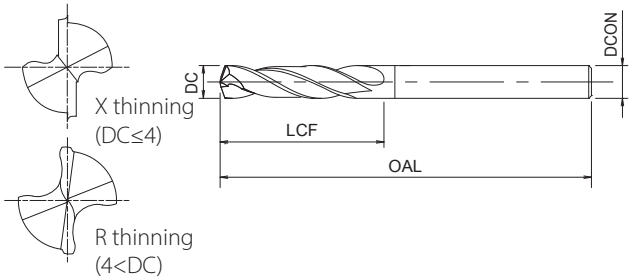
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8670200 | 2 | 14 | 62 | 4 |
| 8670210 | 2,1 | 14 | 62 | 4 |
| 8670220 | 2,2 | 14 | 62 | 4 |
| 8670230 | 2,3 | 14 | 62 | 4 |
| 8670240 | 2,4 | 14 | 62 | 4 |
| 8670250 | 2,5 | 14 | 62 | 4 |
| 8670260 | 2,6 | 14 | 62 | 4 |
| 8670270 | 2,7 | 14 | 62 | 4 |
| 8670276 | 2,76 | 14 | 62 | 4 |
| 8670278 | 2,78 | 14 | 62 | 4 |
| 8670280 | 2,8 | 14 | 62 | 4 |
| 8670290 | 2,9 | 14 | 62 | 4 |
| 8670300 | 3 | 20 | 66 | 4 |
| 8670310 | 3,1 | 20 | 66 | 4 |
| 8670320 | 3,2 | 20 | 66 | 4 |
| 8670330 | 3,3 | 20 | 66 | 4 |
| 8670340 | 3,4 | 20 | 66 | 4 |
| 8670350 | 3,5 | 20 | 66 | 4 |
| 8670360 | 3,6 | 20 | 66 | 4 |
| 8670366 | 3,66 | 20 | 66 | 4 |
| 8670368 | 3,68 | 20 | 66 | 4 |
| 8670370 | 3,7 | 20 | 66 | 4 |
| 8670380 | 3,8 | 24 | 66 | 4 |
| 8670390 | 3,9 | 24 | 66 | 4 |
| 8670400 | 4 | 24 | 66 | 4 |
| 8670410 | 4,1 | 24 | 66 | 6 |
| 8670420 | 4,2 | 24 | 66 | 6 |
| 8670430 | 4,3 | 24 | 66 | 6 |
| 8670440 | 4,4 | 24 | 66 | 6 |
| 8670450 | 4,5 | 24 | 66 | 6 |
| 8670460 | 4,6 | 24 | 66 | 6 |
| 8670462 | 4,62 | 24 | 66 | 6 |
| 8670464 | 4,64 | 24 | 66 | 6 |
| 8670470 | 4,7 | 24 | 66 | 6 |
| 8670480 | 4,8 | 28 | 66 | 6 |
| 8670490 | 4,9 | 28 | 66 | 6 |
| 8670500 | 5 | 28 | 66 | 6 |
| 8670510 | 5,1 | 28 | 66 | 6 |
| 8670520 | 5,2 | 28 | 66 | 6 |
| 8670530 | 5,3 | 28 | 66 | 6 |
| 8670540 | 5,4 | 28 | 66 | 6 |
| 8670550 | 5,5 | 28 | 66 | 6 |
| 8670552 | 5,52 | 28 | 66 | 6 |
| 8670554 | 5,54 | 28 | 66 | 6 |
| 8670560 | 5,6 | 28 | 66 | 6 |
| 8670570 | 5,7 | 28 | 66 | 6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8670580 | 5,8 | 28 | 66 | 6 |
| 8670590 | 5,9 | 28 | 66 | 6 |
| 8670600 | 6 | 28 | 66 | 6 |
| 8670610 | 6,1 | 34 | 79 | 8 |
| 8670620 | 6,2 | 34 | 79 | 8 |
| 8670630 | 6,3 | 34 | 79 | 8 |
| 8670640 | 6,4 | 34 | 79 | 8 |
| 8670650 | 6,5 | 34 | 79 | 8 |
| 8670660 | 6,6 | 34 | 79 | 8 |
| 8670670 | 6,7 | 34 | 79 | 8 |
| 8670680 | 6,8 | 34 | 79 | 8 |
| 8670690 | 6,9 | 34 | 79 | 8 |
| 8670700 | 7 | 34 | 79 | 8 |
| 8670710 | 7,1 | 41 | 79 | 8 |
| 8670720 | 7,2 | 41 | 79 | 8 |
| 8670730 | 7,3 | 41 | 79 | 8 |
| 8670736 | 7,36 | 41 | 79 | 8 |
| 8670738 | 7,38 | 41 | 79 | 8 |
| 8670740 | 7,4 | 41 | 79 | 8 |
| 8670750 | 7,5 | 41 | 79 | 8 |
| 8670754 | 7,54 | 41 | 79 | 8 |
| 8670760 | 7,6 | 41 | 79 | 8 |
| 8670770 | 7,7 | 41 | 79 | 8 |
| 8670780 | 7,8 | 41 | 79 | 8 |
| 8670790 | 7,9 | 41 | 79 | 8 |
| 8670800 | 8 | 41 | 79 | 8 |
| 8670810 | 8,1 | 47 | 89 | 10 |
| 8670820 | 8,2 | 47 | 89 | 10 |
| 8670830 | 8,3 | 47 | 89 | 10 |
| 8670840 | 8,4 | 47 | 89 | 10 |
| 8670850 | 8,5 | 47 | 89 | 10 |
| 8670860 | 8,6 | 47 | 89 | 10 |
| 8670870 | 8,7 | 47 | 89 | 10 |
| 8670880 | 8,8 | 47 | 89 | 10 |
| 8670890 | 8,9 | 47 | 89 | 10 |
| 8670900 | 9 | 47 | 89 | 10 |
| 8670910 | 9,1 | 47 | 89 | 10 |
| 8670920 | 9,2 | 47 | 89 | 10 |
| 8670930 | 9,3 | 47 | 89 | 10 |
| 8670940 | 9,4 | 47 | 89 | 10 |
| 8670950 | 9,5 | 47 | 89 | 10 |
| 8670960 | 9,6 | 47 | 89 | 10 |
| 8670970 | 9,7 | 47 | 89 | 10 |
| 8670980 | 9,8 | 47 | 89 | 10 |
| 8670990 | 9,9 | 47 | 89 | 10 |
| 8671000 | 10 | 47 | 89 | 10 |

# AD-2D

**Drilling | Solid carbide | 2xD**

INDEX




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 2xD
- For general purpose steels and cast iron
- 160 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.497

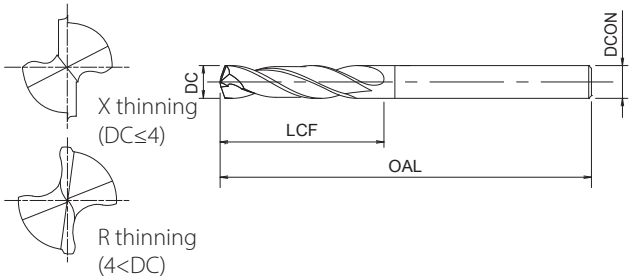
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8671010 | 10,1 | 55 | 102 | 12 |
| 8671020 | 10,2 | 55 | 102 | 12 |
| 8671030 | 10,3 | 55 | 102 | 12 |
| 8671040 | 10,4 | 55 | 102 | 12 |
| 8671050 | 10,5 | 55 | 102 | 12 |
| 8671060 | 10,6 | 55 | 102 | 12 |
| 8671070 | 10,7 | 55 | 102 | 12 |
| 8671080 | 10,8 | 55 | 102 | 12 |
| 8671090 | 10,9 | 55 | 102 | 12 |
| 8671100 | 11 | 55 | 102 | 12 |
| 8671110 | 11,1 | 55 | 102 | 12 |
| 8671120 | 11,2 | 55 | 102 | 12 |
| 8671130 | 11,3 | 55 | 102 | 12 |
| 8671140 | 11,4 | 55 | 102 | 12 |
| 8671150 | 11,5 | 55 | 102 | 12 |
| 8671160 | 11,6 | 55 | 102 | 12 |
| 8671170 | 11,7 | 55 | 102 | 12 |
| 8671180 | 11,8 | 55 | 102 | 12 |
| 8671190 | 11,9 | 55 | 102 | 12 |
| 8671200 | 12 | 55 | 102 | 12 |
| 8671210 | 12,1 | 60 | 107 | 14 |
| 8671220 | 12,2 | 60 | 107 | 14 |
| 8671230 | 12,3 | 60 | 107 | 14 |
| 8671240 | 12,4 | 60 | 107 | 14 |
| 8671250 | 12,5 | 60 | 107 | 14 |
| 8671260 | 12,6 | 60 | 107 | 14 |
| 8671270 | 12,7 | 60 | 107 | 14 |
| 8671280 | 12,8 | 60 | 107 | 14 |
| 8671290 | 12,9 | 60 | 107 | 14 |
| 8671300 | 13 | 60 | 107 | 14 |
| 8671310 | 13,1 | 60 | 107 | 14 |
| 8671320 | 13,2 | 60 | 107 | 14 |
| 8671330 | 13,3 | 60 | 107 | 14 |
| 8671340 | 13,4 | 60 | 107 | 14 |
| 8671350 | 13,5 | 60 | 107 | 14 |
| 8671360 | 13,6 | 60 | 107 | 14 |
| 8671370 | 13,7 | 60 | 107 | 14 |
| 8671380 | 13,8 | 60 | 107 | 14 |
| 8671390 | 13,9 | 60 | 107 | 14 |
| 8671400 | 14 | 60 | 107 | 14 |
| 8671410 | 14,1 | 65 | 115 | 16 |
| 8671420 | 14,2 | 65 | 115 | 16 |
| 8671430 | 14,3 | 65 | 115 | 16 |
| 8671440 | 14,4 | 65 | 115 | 16 |
| 8671450 | 14,5 | 65 | 115 | 16 |
| 8671460 | 14,6 | 65 | 115 | 16 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8671470 | 14,7 | 65 | 115 | 16 |
| 8671480 | 14,8 | 65 | 115 | 16 |
| 8671490 | 14,9 | 65 | 115 | 16 |
| 8671500 | 15 | 65 | 115 | 16 |
| 8671510 | 15,1 | 65 | 115 | 16 |
| 8671520 | 15,2 | 65 | 115 | 16 |
| 8671530 | 15,3 | 65 | 115 | 16 |
| 8671540 | 15,4 | 65 | 115 | 16 |
| 8671550 | 15,5 | 65 | 115 | 16 |
| 8671560 | 15,6 | 65 | 115 | 16 |
| 8671570 | 15,7 | 65 | 115 | 16 |
| 8671580 | 15,8 | 65 | 115 | 16 |
| 8671590 | 15,9 | 65 | 115 | 16 |
| 8671600 | 16 | 65 | 115 | 16 |
| 8671650 | 16,5 | 73 | 123 | 18 |
| 8671700 | 17 | 73 | 123 | 18 |
| 8671750 | 17,5 | 73 | 123 | 18 |
| 8671800 | 18 | 73 | 123 | 18 |
| 8671850 | 18,5 | 79 | 131 | 20 |
| 8671900 | 19 | 79 | 131 | 20 |
| 8671950 | 19,5 | 79 | 131 | 20 |
| 8672000 | 20 | 79 | 131 | 20 |

# AD-4D

**Drilling | Solid carbide | 4xD**

INDEX




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 4xD
- For general purpose steels and cast iron
- 149 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ○ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.497

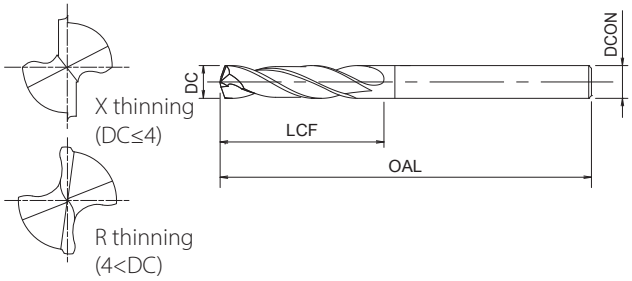
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8672200 | 2 | 20 | 66 | 4 |
| 8672210 | 2,1 | 20 | 66 | 4 |
| 8672220 | 2,2 | 20 | 66 | 4 |
| 8672230 | 2,3 | 20 | 66 | 4 |
| 8672240 | 2,4 | 20 | 66 | 4 |
| 8672250 | 2,5 | 20 | 66 | 4 |
| 8672260 | 2,6 | 20 | 66 | 4 |
| 8672270 | 2,7 | 20 | 66 | 4 |
| 8672280 | 2,8 | 20 | 66 | 4 |
| 8672290 | 2,9 | 20 | 66 | 4 |
| 8672300 | 3 | 28 | 74 | 4 |
| 8672310 | 3,1 | 28 | 74 | 4 |
| 8672320 | 3,2 | 28 | 74 | 4 |
| 8672330 | 3,3 | 28 | 74 | 4 |
| 8672340 | 3,4 | 28 | 74 | 4 |
| 8672350 | 3,5 | 28 | 74 | 4 |
| 8672360 | 3,6 | 28 | 74 | 4 |
| 8672370 | 3,7 | 28 | 74 | 4 |
| 8672380 | 3,8 | 36 | 74 | 4 |
| 8672390 | 3,9 | 36 | 74 | 4 |
| 8672400 | 4 | 36 | 74 | 4 |
| 8672410 | 4,1 | 36 | 74 | 6 |
| 8672420 | 4,2 | 36 | 74 | 6 |
| 8672430 | 4,3 | 36 | 74 | 6 |
| 8672440 | 4,4 | 36 | 74 | 6 |
| 8672450 | 4,5 | 36 | 74 | 6 |
| 8672460 | 4,6 | 36 | 74 | 6 |
| 8672470 | 4,7 | 36 | 74 | 6 |
| 8672480 | 4,8 | 44 | 82 | 6 |
| 8672490 | 4,9 | 44 | 82 | 6 |
| 8672500 | 5 | 44 | 82 | 6 |
| 8672510 | 5,1 | 44 | 82 | 6 |
| 8672520 | 5,2 | 44 | 82 | 6 |
| 8672530 | 5,3 | 44 | 82 | 6 |
| 8672540 | 5,4 | 44 | 82 | 6 |
| 8672550 | 5,5 | 44 | 82 | 6 |
| 8672560 | 5,6 | 44 | 82 | 6 |
| 8672570 | 5,7 | 44 | 82 | 6 |
| 8672580 | 5,8 | 44 | 82 | 6 |
| 8672590 | 5,9 | 44 | 82 | 6 |
| 8672600 | 6 | 44 | 82 | 6 |
| 8672610 | 6,1 | 53 | 91 | 8 |
| 8672620 | 6,2 | 53 | 91 | 8 |
| 8672630 | 6,3 | 53 | 91 | 8 |
| 8672640 | 6,4 | 53 | 91 | 8 |
| 8672650 | 6,5 | 53 | 91 | 8 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8672660 | 6,6 | 53 | 91 | 8 |
| 8672670 | 6,7 | 53 | 91 | 8 |
| 8672680 | 6,8 | 53 | 91 | 8 |
| 8672690 | 6,9 | 53 | 91 | 8 |
| 8672700 | 7 | 53 | 91 | 8 |
| 8672710 | 7,1 | 53 | 91 | 8 |
| 8672720 | 7,2 | 53 | 91 | 8 |
| 8672730 | 7,3 | 53 | 91 | 8 |
| 8672740 | 7,4 | 53 | 91 | 8 |
| 8672750 | 7,5 | 53 | 91 | 8 |
| 8672760 | 7,6 | 53 | 91 | 8 |
| 8672770 | 7,7 | 53 | 91 | 8 |
| 8672780 | 7,8 | 53 | 91 | 8 |
| 8672790 | 7,9 | 53 | 91 | 8 |
| 8672800 | 8 | 53 | 91 | 8 |
| 8672810 | 8,1 | 61 | 103 | 10 |
| 8672820 | 8,2 | 61 | 103 | 10 |
| 8672830 | 8,3 | 61 | 103 | 10 |
| 8672840 | 8,4 | 61 | 103 | 10 |
| 8672850 | 8,5 | 61 | 103 | 10 |
| 8672860 | 8,6 | 61 | 103 | 10 |
| 8672870 | 8,7 | 61 | 103 | 10 |
| 8672880 | 8,8 | 61 | 103 | 10 |
| 8672890 | 8,9 | 61 | 103 | 10 |
| 8672900 | 9 | 61 | 103 | 10 |
| 8672910 | 9,1 | 61 | 103 | 10 |
| 8672920 | 9,2 | 61 | 103 | 10 |
| 8672930 | 9,3 | 61 | 103 | 10 |
| 8672940 | 9,4 | 61 | 103 | 10 |
| 8672950 | 9,5 | 61 | 103 | 10 |
| 8672960 | 9,6 | 61 | 103 | 10 |
| 8672970 | 9,7 | 61 | 103 | 10 |
| 8672980 | 9,8 | 61 | 103 | 10 |
| 8673010 | 10,1 | 71 | 118 | 12 |
| 8673020 | 10,2 | 71 | 118 | 12 |
| 8673030 | 10,3 | 71 | 118 | 12 |
| 8673040 | 10,4 | 71 | 118 | 12 |
| 8673050 | 10,5 | 71 | 118 | 12 |
| 8673060 | 10,6 | 71 | 118 | 12 |
| 8673070 | 10,7 | 71 | 118 | 12 |
| 8673080 | 10,8 | 71 | 118 | 12 |
| 8673090 | 10,9 | 71 | 118 | 12 |

# AD-4D



**Drilling | Solid carbide | 4xD**




- First choice in quality and performance
- Carbide drill with EgiAs coating
- Up to 4xD
- For general purpose steels and cast iron
- 149 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.497

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8673100 | 11 | 71 | 118 | 12 |
| 8673110 | 11,1 | 71 | 118 | 12 |
| 8673120 | 11,2 | 71 | 118 | 12 |
| 8673130 | 11,3 | 71 | 118 | 12 |
| 8673140 | 11,4 | 71 | 118 | 12 |
| 8673150 | 11,5 | 71 | 118 | 12 |
| 8673160 | 11,6 | 71 | 118 | 12 |
| 8673170 | 11,7 | 71 | 118 | 12 |
| 8673180 | 11,8 | 71 | 118 | 12 |
| 8673190 | 11,9 | 71 | 118 | 12 |
| 8673200 | 12 | 71 | 118 | 12 |
| 8673210 | 12,1 | 77 | 124 | 14 |
| 8673220 | 12,2 | 77 | 124 | 14 |
| 8673230 | 12,3 | 77 | 124 | 14 |
| 8673240 | 12,4 | 77 | 124 | 14 |
| 8673250 | 12,5 | 77 | 124 | 14 |
| 8673260 | 12,6 | 77 | 124 | 14 |
| 8673270 | 12,7 | 77 | 124 | 14 |
| 8673280 | 12,8 | 77 | 124 | 14 |
| 8673290 | 12,9 | 77 | 124 | 14 |
| 8673300 | 13 | 77 | 124 | 14 |
| 8673310 | 13,1 | 77 | 124 | 14 |
| 8673320 | 13,2 | 77 | 124 | 14 |
| 8673330 | 13,3 | 77 | 124 | 14 |
| 8673340 | 13,4 | 77 | 124 | 14 |
| 8673350 | 13,5 | 77 | 124 | 14 |
| 8673360 | 13,6 | 77 | 124 | 14 |
| 8673370 | 13,7 | 77 | 124 | 14 |
| 8673380 | 13,8 | 77 | 124 | 14 |
| 8673390 | 13,9 | 77 | 124 | 14 |
| 8673400 | 14 | 77 | 124 | 14 |
| 8673410 | 14,1 | 83 | 133 | 16 |
| 8673420 | 14,2 | 83 | 133 | 16 |
| 8673430 | 14,3 | 83 | 133 | 16 |
| 8673440 | 14,4 | 83 | 133 | 16 |
| 8673450 | 14,5 | 83 | 133 | 16 |
| 8673460 | 14,6 | 83 | 133 | 16 |
| 8673470 | 14,7 | 83 | 133 | 16 |
| 8673480 | 14,8 | 83 | 133 | 16 |
| 8673490 | 14,9 | 83 | 133 | 16 |
| 8673500 | 15 | 83 | 133 | 16 |
| 8673510 | 15,1 | 83 | 133 | 16 |
| 8673520 | 15,2 | 83 | 133 | 16 |
| 8673530 | 15,3 | 83 | 133 | 16 |
| 8673540 | 15,4 | 83 | 133 | 16 |
| 8673550 | 15,5 | 83 | 133 | 16 |

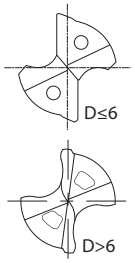
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8673560 | 15,6 | 83 | 133 | 16 |
| 8673570 | 15,7 | 83 | 133 | 16 |
| 8673580 | 15,8 | 83 | 133 | 16 |
| 8673590 | 15,9 | 83 | 133 | 16 |
| 8673600 | 16 | 83 | 133 | 16 |
| 8673650 | 16,5 | 93 | 143 | 18 |
| 8673700 | 17 | 93 | 143 | 18 |
| 8673750 | 17,5 | 93 | 143 | 18 |
| 8673800 | 18 | 93 | 143 | 18 |
| 8673850 | 18,5 | 101 | 153 | 20 |
| 8673900 | 19 | 101 | 153 | 20 |
| 8673950 | 19,5 | 101 | 153 | 20 |
| 8674000 | 20 | 101 | 153 | 20 |

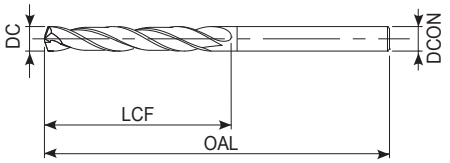
# ADO-SUS-3D

**Drilling | Solid carbide | 3xD**



**NEW SIZES**




- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 3xD
- Designed for stainless steel and titanium alloys
- 185 sizes

B.498

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8665200 | 2 | 12 | 66 | 3 |
| 8665210 | 2,1 | 13 | 66 | 3 |
| 8665220 | 2,2 | 14 | 66 | 3 |
| 8665230 | 2,3 | 14 | 66 | 3 |
| 8665240 | 2,4 | 15 | 66 | 3 |
| 8665250 | 2,5 | 15 | 66 | 3 |
| 8665260 | 2,6 | 16 | 66 | 3 |
| 8665270 | 2,7 | 17 | 66 | 3 |
| 8665280 | 2,8 | 17 | 66 | 3 |
| 8665283 | 2,83 | 17 | 66 | 3 |
| 8665287 | 2,87 | 18 | 66 | 3 |
| 8665290 | 2,9 | 18 | 66 | 3 |
| 8665300 | 3 | 18 | 66 | 3 |
| 8665310 | 3,1 | 19 | 74 | 4 |
| 8665315 | 3,15 | 19 | 74 | 4 |
| 8665320 | 3,2 | 20 | 74 | 4 |
| 8665326 | 3,26 | 20 | 74 | 4 |
| 8665330 | 3,3 | 20 | 74 | 4 |
| 8665340 | 3,4 | 21 | 74 | 4 |
| 8665350 | 3,5 | 21 | 74 | 4 |
| 8665360 | 3,6 | 22 | 74 | 4 |
| 8665370 | 3,7 | 23 | 74 | 4 |
| 8665373 | 3,73 | 23 | 74 | 4 |
| 8665375 | 3,75 | 23 | 74 | 4 |
| 8665380 | 3,8 | 23 | 74 | 4 |
| 8665390 | 3,9 | 24 | 74 | 4 |
| 8665400 | 4 | 24 | 74 | 4 |
| 8680410 | 4,1 | 25 | 80 | 6 |
| 8680420 | 4,2 | 26 | 80 | 6 |
| 8680430 | 4,3 | 26 | 80 | 6 |
| 8680440 | 4,4 | 27 | 80 | 6 |
| 8680445 | 4,45 | 27 | 80 | 6 |
| 8680450 | 4,5 | 27 | 80 | 6 |
| 8680460 | 4,6 | 28 | 80 | 6 |
| 8680465 | 4,65 | 28 | 80 | 6 |
| 8680470 | 4,7 | 29 | 80 | 6 |
| 8680480 | 4,8 | 29 | 80 | 6 |
| 8665485 | 4,85 | 29 | 80 | 6 |
| 8680490 | 4,9 | 30 | 80 | 6 |
| 8680500 | 5 | 25 | 80 | 6 |
| 8665510 | 5,1 | 26 | 82 | 6 |
| 8665520 | 5,2 | 26 | 82 | 6 |
| 8665525 | 5,25 | 27 | 82 | 6 |
| 8665530 | 5,3 | 27 | 82 | 6 |
| 8665540 | 5,4 | 27 | 82 | 6 |
| 8665550 | 5,5 | 28 | 82 | 6 |

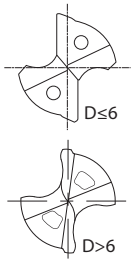
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8680555 | 5,55 | 28 | 82 | 6 |
| 8665560 | 5,6 | 28 | 82 | 6 |
| 8665570 | 5,7 | 29 | 82 | 6 |
| 8665580 | 5,8 | 29 | 82 | 6 |
| 8665590 | 5,9 | 30 | 82 | 6 |
| 8665600 | 6 | 30 | 82 | 6 |
| 8680610 | 6,1 | 31 | 88 | 8 |
| 8680620 | 6,2 | 31 | 88 | 8 |
| 8680630 | 6,3 | 32 | 88 | 8 |
| 8680640 | 6,4 | 32 | 88 | 8 |
| 8680650 | 6,5 | 33 | 88 | 8 |
| 8680660 | 6,6 | 33 | 88 | 8 |
| 8680670 | 6,7 | 34 | 88 | 8 |
| 8680680 | 6,8 | 34 | 88 | 8 |
| 8680690 | 6,9 | 35 | 88 | 8 |
| 8680700 | 7 | 35 | 88 | 8 |
| 8665710 | 7,1 | 36 | 94 | 8 |
| 8665720 | 7,2 | 36 | 94 | 8 |
| 8665725 | 7,25 | 37 | 94 | 8 |
| 8665730 | 7,3 | 37 | 94 | 8 |
| 8665740 | 7,4 | 37 | 94 | 8 |
| 8680745 | 7,45 | 38 | 94 | 8 |
| 8665750 | 7,5 | 38 | 94 | 8 |
| 8680755 | 7,55 | 38 | 94 | 8 |
| 8665760 | 7,6 | 38 | 94 | 8 |
| 8665770 | 7,7 | 39 | 94 | 8 |
| 8665775 | 7,75 | 39 | 94 | 8 |
| 8665780 | 7,8 | 39 | 94 | 8 |
| 8665790 | 7,9 | 40 | 94 | 8 |
| 8665800 | 8 | 40 | 94 | 8 |
| 8680810 | 8,1 | 41 | 101 | 10 |
| 8680820 | 8,2 | 41 | 101 | 10 |
| 8680830 | 8,3 | 42 | 101 | 10 |
| 8680840 | 8,4 | 42 | 101 | 10 |
| 8680850 | 8,5 | 43 | 101 | 10 |
| 8680860 | 8,6 | 43 | 101 | 10 |
| 8680870 | 8,7 | 44 | 101 | 10 |
| 8680880 | 8,8 | 44 | 101 | 10 |
| 8680890 | 8,9 | 45 | 101 | 10 |
| 8680900 | 9 | 45 | 101 | 10 |
| 8665910 | 9,1 | 46 | 106 | 10 |
| 8665920 | 9,2 | 46 | 106 | 10 |
| 8665925 | 9,25 | 47 | 106 | 10 |
| 8665930 | 9,3 | 47 | 106 | 10 |
| 8665940 | 9,4 | 47 | 106 | 10 |
| 8665950 | 9,5 | 48 | 106 | 10 |

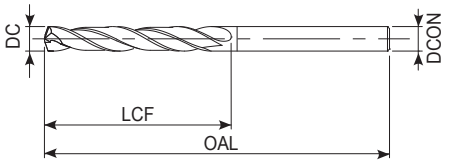
# ADO-SUS-3D

**Drilling | Solid carbide | 3xD**



## NEW SIZES




- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 3xD
- Designed for stainless steel and titanium alloys
- 185 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | WXL | 30° | SHRINK FIT | 140° | h8

B.498

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8680955 | 9,55 | 48 | 106 | 10 |
| 8665960 | 9,6 | 48 | 106 | 10 |
| 8665970 | 9,7 | 49 | 106 | 10 |
| 8665975 | 9,75 | 49 | 106 | 10 |
| 8665980 | 9,8 | 49 | 106 | 10 |
| 8665990 | 9,9 | 50 | 106 | 10 |
| 8666000 | 10 | 50 | 106 | 10 |
| 8681010 | 10,1 | 51 | 113 | 12 |
| 8681020 | 10,2 | 51 | 113 | 12 |
| 8681030 | 10,3 | 52 | 113 | 12 |
| 8681040 | 10,4 | 52 | 113 | 12 |
| 8681050 | 10,5 | 53 | 113 | 12 |
| 8681060 | 10,6 | 53 | 113 | 12 |
| 8681070 | 10,7 | 54 | 113 | 12 |
| 8681080 | 10,8 | 54 | 113 | 12 |
| 8681090 | 10,9 | 55 | 113 | 12 |
| 8681100 | 11 | 55 | 113 | 12 |
| 8666110 | 11,1 | 56 | 120 | 12 |
| 8666120 | 11,2 | 56 | 120 | 12 |
| 8666130 | 11,3 | 57 | 120 | 12 |
| 48350135 NEW | 11,35 | 57 | 120 | 12 |
| 8666140 | 11,4 | 57 | 120 | 12 |
| 8666150 | 11,5 | 58 | 120 | 12 |
| 8666160 | 11,6 | 58 | 120 | 12 |
| 8666170 | 11,7 | 59 | 120 | 12 |
| 8666180 | 11,8 | 59 | 120 | 12 |
| 8666190 | 11,9 | 60 | 120 | 12 |
| 8666200 | 12 | 60 | 120 | 12 |
| 8681210 | 12,1 | 61 | 128 | 14 |
| 8681220 | 12,2 | 61 | 128 | 14 |
| 8681230 | 12,3 | 62 | 128 | 14 |
| 8681240 | 12,4 | 62 | 128 | 14 |
| 8681250 | 12,5 | 63 | 128 | 14 |
| 8681260 | 12,6 | 63 | 128 | 14 |
| 8681270 | 12,7 | 64 | 128 | 14 |
| 8681280 | 12,8 | 64 | 128 | 14 |
| 8681290 | 12,9 | 65 | 128 | 14 |
| 8681300 | 13 | 65 | 128 | 14 |
| 8666310 | 13,1 | 66 | 134 | 14 |
| 8666320 | 13,2 | 67 | 134 | 14 |
| 8666330 | 13,3 | 68 | 134 | 14 |
| 48350335 NEW | 13,35 | 67 | 134 | 14 |
| 8666340 | 13,4 | 67 | 134 | 14 |
| 8681343 | 13,43 | 68 | 134 | 14 |
| 8666350 | 13,5 | 68 | 134 | 14 |
| 8681355 | 13,55 | 68 | 134 | 14 |

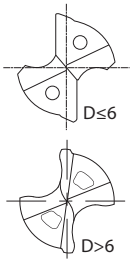
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8666360 | 13,6 | 68 | 134 | 14 |
| 8666370 | 13,7 | 69 | 134 | 14 |
| 8666380 | 13,8 | 69 | 134 | 14 |
| 8666390 | 13,9 | 70 | 134 | 14 |
| 8666400 | 14 | 70 | 134 | 14 |
| 8681410 | 14,1 | 71 | 140 | 16 |
| 8681420 | 14,2 | 71 | 140 | 16 |
| 8681430 | 14,3 | 72 | 140 | 16 |
| 8681440 | 14,4 | 72 | 140 | 16 |
| 8681450 | 14,5 | 73 | 140 | 16 |
| 8681460 | 14,6 | 73 | 140 | 16 |
| 8681470 | 14,7 | 74 | 140 | 16 |
| 8681480 | 14,8 | 74 | 140 | 16 |
| 8681490 | 14,9 | 75 | 140 | 16 |
| 8681500 | 15 | 75 | 140 | 16 |
| 8666510 | 15,1 | 76 | 145 | 16 |
| 8666520 | 15,2 | 76 | 145 | 16 |
| 8666530 | 15,3 | 77 | 145 | 16 |
| 48350535 NEW | 15,35 | 77 | 145 | 16 |
| 8666540 | 15,4 | 77 | 145 | 16 |
| 8666550 | 15,5 | 78 | 145 | 16 |
| 8681555 | 15,55 | 78 | 145 | 16 |
| 8666560 | 15,6 | 78 | 145 | 16 |
| 8666570 | 15,7 | 79 | 145 | 16 |
| 8666580 | 15,8 | 79 | 145 | 16 |
| 8666590 | 15,9 | 80 | 145 | 16 |
| 8666600 | 16 | 80 | 145 | 16 |
| 48350161 | 16,1 | 80 | 145 | 18 |
| 8681650 | 16,5 | 83 | 150 | 18 |
| 8681670 | 16,7 | 84 | 150 | 18 |
| 8681700 | 17 | 85 | 150 | 18 |
| 8681730 | 17,3 | 87 | 155 | 18 |
| 48350735 NEW | 17,35 | 87 | 155 | 18 |
| 8666750 | 17,5 | 88 | 155 | 18 |
| 8681755 | 17,55 | 88 | 155 | 18 |
| 48350178 NEW | 17,8 | 90 | 155 | 18 |
| 8666800 | 18 | 90 | 155 | 18 |
| 48350181 | 18,1 | 90 | 155 | 20 |
| 8681850 | 18,5 | 93 | 160 | 20 |
| 8681870 | 18,7 | 94 | 160 | 20 |
| 48350188 NEW | 18,8 | 94 | 160 | 20 |
| 8681900 | 19 | 95 | 160 | 20 |
| 8681930 | 19,3 | 97 | 165 | 20 |
| 48350935 NEW | 19,35 | 97 | 165 | 20 |
| 8666950 | 19,5 | 98 | 165 | 20 |
| 8681955 | 19,55 | 98 | 165 | 20 |

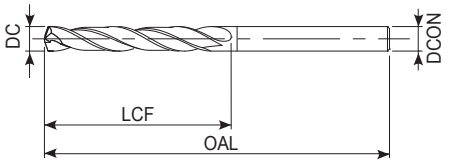
# ADO-SUS-3D

**Drilling | Solid carbide | 3xD**

INDEX

**NEW SIZES**




- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 3xD
- Designed for stainless steel and titanium alloys
- 179 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | WXL | 30° | SHRINK FIT | 140° | h8

B.498

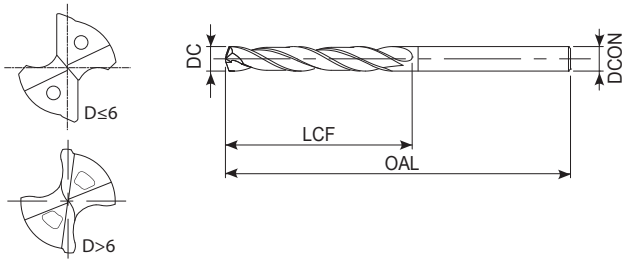
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8667000 | 20 | 100 | 165 | 20 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-SUS-5D

**Drilling | Solid carbide | 5xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 5xD
- Designed for stainless steel and titanium alloys
- 198 sizes

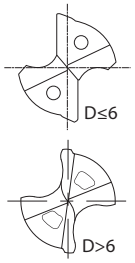
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8667200 | 2 | 18 | 70 | 3 |
| 8667210 | 2,1 | 19 | 70 | 3 |
| 48349215 | 2,15 | 20 | 70 | 3 |
| 8667220 | 2,2 | 20 | 70 | 3 |
| 48349225 | 2,25 | 21 | 70 | 3 |
| 8667230 | 2,3 | 21 | 70 | 3 |
| 48349235 | 2,35 | 22 | 70 | 3 |
| 8667240 | 2,4 | 22 | 70 | 3 |
| 8667250 | 2,5 | 23 | 70 | 3 |
| 48349255 | 2,55 | 24 | 70 | 3 |
| 8667260 | 2,6 | 24 | 78 | 3 |
| 8667270 | 2,7 | 25 | 78 | 3 |
| 8667276 | 2,76 | 25 | 78 | 3 |
| 8667278 | 2,78 | 26 | 78 | 3 |
| 8667280 | 2,8 | 26 | 78 | 3 |
| 8667283 | 2,83 | 26 | 78 | 3 |
| 8667287 | 2,87 | 26 | 78 | 3 |
| 8667290 | 2,9 | 27 | 78 | 3 |
| 8667300 | 3 | 27 | 78 | 3 |
| 8667310 | 3,1 | 28 | 86 | 4 |
| 8667315 | 3,15 | 29 | 86 | 4 |
| 8667320 | 3,2 | 29 | 86 | 4 |
| 8667326 | 3,26 | 29 | 86 | 4 |
| 8667330 | 3,3 | 30 | 86 | 4 |
| 48349335 | 3,35 | 31 | 86 | 4 |
| 8667340 | 3,4 | 31 | 86 | 4 |
| 8667350 | 3,5 | 32 | 86 | 4 |
| 8667360 | 3,6 | 33 | 86 | 4 |
| 8667366 | 3,66 | 33 | 86 | 4 |
| 8667368 | 3,68 | 34 | 86 | 4 |
| 8667370 | 3,7 | 34 | 86 | 4 |
| 8667373 | 3,73 | 34 | 86 | 4 |
| 8667375 | 3,75 | 34 | 86 | 4 |
| 8667380 | 3,8 | 35 | 86 | 4 |
| 8667390 | 3,9 | 36 | 86 | 4 |
| 8667400 | 4 | 36 | 86 | 4 |
| 8682410 | 4,1 | 37 | 95 | 6 |
| 8682420 | 4,2 | 38 | 95 | 6 |
| 8682430 | 4,3 | 39 | 95 | 6 |
| 8682440 | 4,4 | 40 | 95 | 6 |
| 8682445 | 4,45 | 41 | 95 | 6 |
| 8682450 | 4,5 | 41 | 95 | 6 |
| 8682460 | 4,6 | 42 | 95 | 6 |
| 8682464 | 4,64 | 42 | 95 | 6 |
| 8682470 | 4,7 | 43 | 95 | 6 |
| 8682480 | 4,8 | 44 | 95 | 6 |

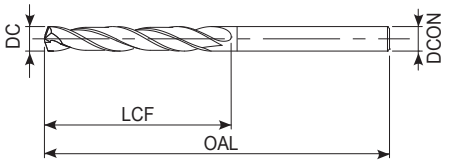
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8682490 | 4,9 | 45 | 95 | 6 |
| 8682500 | 5 | 45 | 95 | 6 |
| 8667510 | 5,1 | 41 | 100 | 6 |
| 8667520 | 5,2 | 42 | 100 | 6 |
| 8667530 | 5,3 | 43 | 100 | 6 |
| 8667540 | 5,4 | 44 | 100 | 6 |
| 8667550 | 5,5 | 44 | 100 | 6 |
| 8667552 | 5,52 | 45 | 100 | 6 |
| 8667554 | 5,54 | 45 | 100 | 6 |
| 8667560 | 5,6 | 45 | 100 | 6 |
| 8667570 | 5,7 | 46 | 100 | 6 |
| 8667580 | 5,8 | 47 | 100 | 6 |
| 8667590 | 5,9 | 48 | 100 | 6 |
| 8667600 | 6 | 48 | 100 | 6 |
| 8682610 | 6,1 | 49 | 109 | 8 |
| 8682620 | 6,2 | 50 | 109 | 8 |
| 8682630 | 6,3 | 51 | 109 | 8 |
| 8682640 | 6,4 | 52 | 109 | 8 |
| 8682650 | 6,5 | 52 | 109 | 8 |
| 8682660 | 6,6 | 53 | 109 | 8 |
| 8682670 | 6,7 | 54 | 109 | 8 |
| 8682680 | 6,8 | 55 | 109 | 8 |
| 8682690 | 6,9 | 56 | 109 | 8 |
| 8682700 | 7 | 56 | 109 | 8 |
| 8667710 | 7,1 | 57 | 118 | 8 |
| 8667720 | 7,2 | 58 | 118 | 8 |
| 8667725 | 7,25 | 58 | 118 | 8 |
| 8667730 | 7,3 | 59 | 118 | 8 |
| 8667736 | 7,36 | 59 | 118 | 8 |
| 8667738 | 7,38 | 60 | 118 | 8 |
| 8667740 | 7,4 | 60 | 118 | 8 |
| 8682745 | 7,45 | 60 | 118 | 8 |
| 8667750 | 7,5 | 60 | 118 | 8 |
| 8667752 | 7,52 | 61 | 118 | 8 |
| 8667754 | 7,54 | 61 | 118 | 8 |
| 8667760 | 7,6 | 61 | 118 | 8 |
| 8667770 | 7,7 | 62 | 118 | 8 |
| 8667775 | 7,75 | 62 | 118 | 8 |
| 8667780 | 7,8 | 63 | 118 | 8 |
| 8667790 | 7,9 | 64 | 118 | 8 |
| 8667800 | 8 | 64 | 118 | 8 |
| 8682810 | 8,1 | 65 | 128 | 10 |
| 8682820 | 8,2 | 66 | 128 | 10 |
| 8682830 | 8,3 | 67 | 128 | 10 |
| 8682840 | 8,4 | 68 | 128 | 10 |
| 8682850 | 8,5 | 68 | 128 | 10 |

# ADO-SUS-5D

**Drilling | Solid carbide | 5xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 5xD
- Designed for stainless steel and titanium alloys
- 198 sizes

B.498

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8682860 | 8,6 | 69 | 128 | 10 |
| 8682870 | 8,7 | 70 | 128 | 10 |
| 8682880 | 8,8 | 71 | 128 | 10 |
| 8682890 | 8,9 | 72 | 128 | 10 |
| 8682900 | 9 | 72 | 128 | 10 |
| 8667910 | 9,1 | 73 | 136 | 10 |
| 8667920 | 9,2 | 74 | 136 | 10 |
| 8667924 | 9,24 | 74 | 136 | 10 |
| 8667925 | 9,25 | 74 | 136 | 10 |
| 8667926 | 9,26 | 75 | 136 | 10 |
| 8667930 | 9,3 | 75 | 136 | 10 |
| 8667936 | 9,36 | 75 | 136 | 10 |
| 8667938 | 9,38 | 76 | 136 | 10 |
| 8667940 | 9,4 | 76 | 136 | 10 |
| 8667950 | 9,5 | 76 | 136 | 10 |
| 8667952 | 9,52 | 77 | 136 | 10 |
| 8667954 | 9,54 | 77 | 136 | 10 |
| 8667960 | 9,6 | 77 | 136 | 10 |
| 8667970 | 9,7 | 78 | 136 | 10 |
| 8667975 | 9,75 | 78 | 136 | 10 |
| 8667980 | 9,8 | 79 | 136 | 10 |
| 8667990 | 9,9 | 80 | 136 | 10 |
| 8668000 | 10 | 80 | 136 | 10 |
| 8683010 | 10,1 | 81 | 146 | 12 |
| 8683020 | 10,2 | 82 | 146 | 12 |
| 8683030 | 10,3 | 83 | 146 | 12 |
| 8683040 | 10,4 | 84 | 146 | 12 |
| 8683050 | 10,5 | 84 | 146 | 12 |
| 8683060 | 10,6 | 85 | 146 | 12 |
| 8683070 | 10,7 | 86 | 146 | 12 |
| 8683080 | 10,8 | 87 | 146 | 12 |
| 8683090 | 10,9 | 88 | 146 | 12 |
| 8683100 | 11 | 88 | 146 | 12 |
| 8668110 | 11,1 | 89 | 156 | 12 |
| 8668120 | 11,2 | 90 | 156 | 12 |
| 8668122 | 11,22 | 90 | 156 | 12 |
| 8668124 | 11,24 | 90 | 156 | 12 |
| 8668130 | 11,3 | 91 | 156 | 12 |
| 8668136 | 11,36 | 91 | 156 | 12 |
| 8668138 | 11,38 | 92 | 156 | 12 |
| 8668140 | 11,4 | 92 | 156 | 12 |
| 8668150 | 11,5 | 92 | 156 | 12 |
| 8668160 | 11,6 | 93 | 156 | 12 |
| 8668170 | 11,7 | 94 | 156 | 12 |
| 8668180 | 11,8 | 95 | 156 | 12 |
| 8668190 | 11,9 | 96 | 156 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8668200 | 12 | 96 | 156 | 12 |
| 8683210 | 12,1 | 97 | 167 | 14 |
| 8683220 | 12,2 | 98 | 167 | 14 |
| 8683230 | 12,3 | 99 | 167 | 14 |
| 8683240 | 12,4 | 100 | 167 | 14 |
| 8683250 | 12,5 | 100 | 167 | 14 |
| 8683260 | 12,6 | 101 | 167 | 14 |
| 8683270 | 12,7 | 102 | 167 | 14 |
| 8683280 | 12,8 | 103 | 167 | 14 |
| 8683290 | 12,9 | 104 | 167 | 14 |
| 8683300 | 13 | 104 | 167 | 14 |
| 8668310 | 13,1 | 105 | 176 | 14 |
| 8668320 | 13,2 | 106 | 176 | 14 |
| 8668325 | 13,25 | 106 | 176 | 14 |
| 8668330 | 13,3 | 107 | 176 | 14 |
| 8668340 | 13,4 | 108 | 176 | 14 |
| 8683343 | 13,43 | 108 | 176 | 14 |
| 8668350 | 13,5 | 108 | 176 | 14 |
| 8683355 | 13,55 | 109 | 176 | 14 |
| 8668360 | 13,6 | 109 | 176 | 14 |
| 8668370 | 13,7 | 110 | 176 | 14 |
| 8668380 | 13,8 | 111 | 176 | 14 |
| 8668390 | 13,9 | 112 | 176 | 14 |
| 8668400 | 14 | 112 | 176 | 14 |
| 8683410 | 14,1 | 113 | 185 | 16 |
| 8683420 | 14,2 | 114 | 185 | 16 |
| 8683430 | 14,3 | 115 | 185 | 16 |
| 8683440 | 14,4 | 116 | 185 | 16 |
| 8683450 | 14,5 | 116 | 185 | 16 |
| 8683460 | 14,6 | 117 | 185 | 16 |
| 8683470 | 14,7 | 118 | 185 | 16 |
| 8683480 | 14,8 | 119 | 185 | 16 |
| 8683490 | 14,9 | 120 | 185 | 16 |
| 8683500 | 15 | 120 | 185 | 16 |
| 8668510 | 15,1 | 121 | 193 | 16 |
| 8668520 | 15,2 | 122 | 193 | 16 |
| 8668525 | 15,25 | 122 | 193 | 16 |
| 8668530 | 15,3 | 123 | 193 | 16 |
| 8668540 | 15,4 | 124 | 193 | 16 |
| 8668550 | 15,5 | 124 | 193 | 16 |
| 8683555 | 15,55 | 125 | 193 | 16 |
| 8668560 | 15,6 | 125 | 193 | 16 |
| 8668570 | 15,7 | 126 | 193 | 16 |
| 8668580 | 15,8 | 127 | 193 | 16 |
| 8668590 | 15,9 | 128 | 193 | 16 |
| 8668600 | 16 | 128 | 193 | 16 |

# ADO-SUS-5D

**Drilling | Solid carbide | 5xD**

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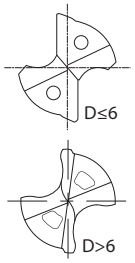


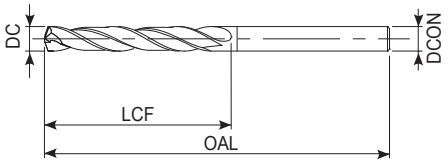


- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 5xD
- Designed for stainless steel and titanium alloys
- 198 sizes

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8683650 | 16,5 | 113 | 184 | 18 |
| 8683670 | 16,7 | 117 | 184 | 18 |
| 8683700 | 17 | 114 | 184 | 18 |
| 8683730 | 17,3 | 122 | 191 | 18 |
| 8668750 | 17,5 | 123 | 191 | 18 |
| 8683755 | 17,55 | 123 | 191 | 18 |
| 8668800 | 18 | 126 | 191 | 18 |
| 8683850 | 18,5 | 130 | 198 | 20 |
| 8683870 | 18,7 | 131 | 198 | 20 |
| 8683900 | 19 | 133 | 198 | 20 |
| 8683930 | 19,3 | 136 | 205 | 20 |
| 8668950 | 19,5 | 137 | 205 | 20 |
| 8683955 | 19,55 | 137 | 205 | 20 |
| 8669000 | 20 | 140 | 205 | 20 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-SUS-8D

**Drilling | Solid carbide | 8xD**

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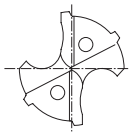
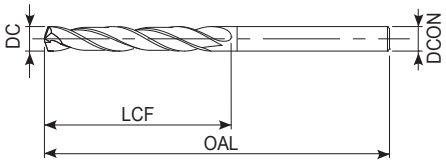





- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 8xD
- Designed for stainless steel and titanium alloys
- 101 sizes

B.498

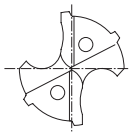
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8686200 | 2 | 22 | 75 | 3 |
| 8686210 | 2,1 | 24 | 75 | 3 |
| 8686220 | 2,2 | 25 | 75 | 3 |
| 8686230 | 2,3 | 26 | 75 | 3 |
| 8686240 | 2,4 | 27 | 75 | 3 |
| 8686250 | 2,5 | 28 | 75 | 3 |
| 8686260 | 2,6 | 29 | 80 | 3 |
| 8686270 | 2,7 | 30 | 80 | 3 |
| 8686280 | 2,8 | 31 | 80 | 3 |
| 8686290 | 2,9 | 32 | 80 | 3 |
| 8686300 | 3 | 33 | 80 | 3 |
| 8684310 | 3,1 | 34 | 95 | 4 |
| 8684320 | 3,2 | 35 | 95 | 4 |
| 8684330 | 3,3 | 36 | 95 | 4 |
| 8684340 | 3,4 | 37 | 95 | 4 |
| 8684350 | 3,5 | 39 | 95 | 4 |
| 8684360 | 3,6 | 40 | 95 | 4 |
| 8684370 | 3,7 | 41 | 95 | 4 |
| 8684380 | 3,8 | 42 | 95 | 4 |
| 8684390 | 3,9 | 43 | 95 | 4 |
| 8684400 | 4 | 44 | 95 | 4 |
| 8684410 | 4,1 | 45 | 105 | 6 |
| 8684420 | 4,2 | 46 | 105 | 6 |
| 8684430 | 4,3 | 47 | 105 | 6 |
| 8684440 | 4,4 | 48 | 105 | 6 |
| 8684450 | 4,5 | 50 | 105 | 6 |
| 8684460 | 4,6 | 51 | 105 | 6 |
| 8684470 | 4,7 | 52 | 105 | 6 |
| 8684480 | 4,8 | 53 | 105 | 6 |
| 8684490 | 4,9 | 54 | 105 | 6 |
| 8684500 | 5 | 55 | 105 | 6 |
| 8684510 | 5,1 | 56 | 115 | 6 |
| 8684520 | 5,2 | 57 | 115 | 6 |
| 8684530 | 5,3 | 58 | 115 | 6 |
| 8684540 | 5,4 | 59 | 115 | 6 |
| 8684550 | 5,5 | 61 | 115 | 6 |
| 8684560 | 5,6 | 62 | 115 | 6 |
| 8684570 | 5,7 | 63 | 115 | 6 |
| 8684580 | 5,8 | 64 | 115 | 6 |
| 8684590 | 5,9 | 65 | 115 | 6 |
| 8684600 | 6 | 66 | 115 | 6 |
| 8684610 | 6,1 | 67 | 125 | 8 |
| 8684620 | 6,2 | 68 | 125 | 8 |
| 8684630 | 6,3 | 69 | 125 | 8 |
| 8684640 | 6,4 | 70 | 125 | 8 |
| 8684650 | 6,5 | 72 | 125 | 8 |

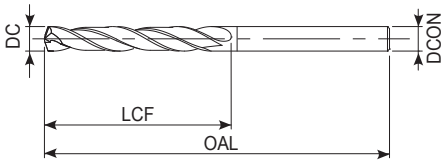
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8684660 | 6,6 | 73 | 125 | 8 |
| 8684670 | 6,7 | 74 | 125 | 8 |
| 8684680 | 6,8 | 75 | 125 | 8 |
| 8684690 | 6,9 | 76 | 125 | 8 |
| 8684700 | 7 | 77 | 125 | 8 |
| 8684710 | 7,1 | 78 | 140 | 8 |
| 8684720 | 7,2 | 79 | 140 | 8 |
| 8684730 | 7,3 | 80 | 140 | 8 |
| 8684740 | 7,4 | 81 | 140 | 8 |
| 8684750 | 7,5 | 83 | 140 | 8 |
| 8684760 | 7,6 | 84 | 140 | 8 |
| 8684770 | 7,7 | 85 | 140 | 8 |
| 8684780 | 7,8 | 86 | 140 | 8 |
| 8684790 | 7,9 | 87 | 140 | 8 |
| 8684800 | 8 | 88 | 140 | 8 |
| 8684810 | 8,1 | 89 | 150 | 10 |
| 8684820 | 8,2 | 90 | 150 | 10 |
| 8684830 | 8,3 | 91 | 150 | 10 |
| 8684840 | 8,4 | 92 | 150 | 10 |
| 8684850 | 8,5 | 94 | 150 | 10 |
| 8684860 | 8,6 | 95 | 150 | 10 |
| 8684870 | 8,7 | 96 | 150 | 10 |
| 8684880 | 8,8 | 97 | 150 | 10 |
| 8684890 | 8,9 | 98 | 150 | 10 |
| 8684900 | 9 | 99 | 150 | 10 |
| 8684910 | 9,1 | 100 | 160 | 10 |
| 8684920 | 9,2 | 101 | 160 | 10 |
| 8684930 | 9,3 | 102 | 160 | 10 |
| 8684940 | 9,4 | 103 | 160 | 10 |
| 8684950 | 9,5 | 105 | 160 | 10 |
| 8684960 | 9,6 | 106 | 160 | 10 |
| 8684970 | 9,7 | 107 | 160 | 10 |
| 8684980 | 9,8 | 108 | 160 | 10 |
| 8684990 | 9,9 | 109 | 160 | 10 |
| 8685000 | 10 | 110 | 160 | 10 |
| 8685010 | 10,1 | 111 | 182 | 12 |
| 8685020 | 10,2 | 112 | 182 | 12 |
| 8685030 | 10,3 | 113 | 182 | 12 |
| 8685040 | 10,4 | 114 | 182 | 12 |
| 8685050 | 10,5 | 116 | 182 | 12 |
| 8685060 | 10,6 | 117 | 182 | 12 |
| 8685070 | 10,7 | 118 | 182 | 12 |
| 8685080 | 10,8 | 119 | 182 | 12 |
| 8685090 | 10,9 | 120 | 182 | 12 |
| 8685100 | 11 | 121 | 182 | 12 |
| 8685110 | 11,1 | 122 | 194 | 12 |

# ADO-SUS-8D

**Drilling | Solid carbide | 8xD**

INDEX






- First choice in quality and performance
- Carbide drill with internal coolant, WXL coating
- Up to 8xD
- Designed for stainless steel and titanium alloys
- 101 sizes

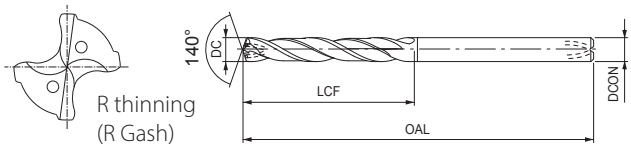
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8685120 | 11,2 | 123 | 194 | 12 |
| 8685130 | 11,3 | 124 | 194 | 12 |
| 8685140 | 11,4 | 125 | 194 | 12 |
| 8685150 | 11,5 | 127 | 194 | 12 |
| 8685160 | 11,6 | 128 | 194 | 12 |
| 8685170 | 11,7 | 129 | 194 | 12 |
| 8685180 | 11,8 | 130 | 194 | 12 |
| 8685190 | 11,9 | 131 | 194 | 12 |
| 8685200 | 12 | 132 | 194 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-3D

**Drilling | Solid carbide | 3xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- For general purpose steels and cast iron
- 167 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

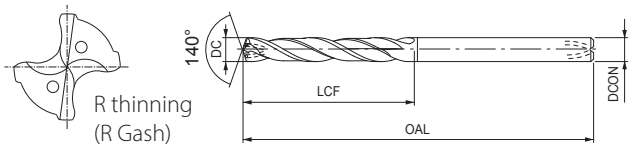
B.498

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8690200 | 2 | 12 | 66 | 3 |
| 8690210 | 2,1 | 13 | 66 | 3 |
| 8690220 | 2,2 | 14 | 66 | 3 |
| 8690230 | 2,3 | 14 | 66 | 3 |
| 8690240 | 2,4 | 15 | 66 | 3 |
| 8690250 | 2,5 | 15 | 66 | 3 |
| 8690260 | 2,6 | 16 | 66 | 3 |
| 8690265 | 2,65 | 16 | 66 | 3 |
| 8690270 | 2,7 | 17 | 66 | 3 |
| 8690280 | 2,8 | 17 | 66 | 3 |
| 8690290 | 2,9 | 18 | 66 | 3 |
| 8690300 | 3 | 18 | 66 | 3 |
| 8690310 | 3,1 | 19 | 74 | 4 |
| 8690315 | 3,15 | 19 | 74 | 4 |
| 8690320 | 3,2 | 20 | 74 | 4 |
| 8690330 | 3,3 | 20 | 74 | 4 |
| 8690340 | 3,4 | 21 | 74 | 4 |
| 8690350 | 3,5 | 21 | 74 | 4 |
| 8690360 | 3,6 | 22 | 74 | 4 |
| 8690370 | 3,7 | 23 | 74 | 4 |
| 8690375 | 3,75 | 23 | 74 | 4 |
| 8690380 | 3,8 | 23 | 74 | 4 |
| 8690390 | 3,9 | 24 | 74 | 4 |
| 8690400 | 4 | 24 | 74 | 4 |
| 8690410 | 4,1 | 25 | 80 | 5 |
| 8700410 | 4,1 | 25 | 80 | 6 |
| 8690420 | 4,2 | 26 | 80 | 5 |
| 8700420 | 4,2 | 26 | 80 | 6 |
| 8690430 | 4,3 | 26 | 80 | 5 |
| 8700430 | 4,3 | 26 | 80 | 6 |
| 8690440 | 4,4 | 27 | 80 | 5 |
| 8700440 | 4,4 | 27 | 80 | 6 |
| 8690450 | 4,5 | 27 | 80 | 5 |
| 8700450 | 4,5 | 27 | 80 | 6 |
| 8690460 | 4,6 | 28 | 80 | 5 |
| 8700460 | 4,6 | 28 | 80 | 6 |
| 8690470 | 4,7 | 29 | 80 | 5 |
| 8700470 | 4,7 | 29 | 80 | 6 |
| 8690480 | 4,8 | 29 | 80 | 5 |
| 8700480 | 4,8 | 29 | 80 | 6 |
| 8690490 | 4,9 | 30 | 80 | 5 |
| 8700490 | 4,9 | 30 | 80 | 6 |
| 8690500 | 5 | 25 | 80 | 5 |
| 8700500 | 5 | 25 | 80 | 6 |
| 8690510 | 5,1 | 26 | 82 | 6 |
| 8690520 | 5,2 | 26 | 82 | 6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8690525 | 5,25 | 27 | 82 | 6 |
| 8690530 | 5,3 | 27 | 82 | 6 |
| 8690540 | 5,4 | 27 | 82 | 6 |
| 8690550 | 5,5 | 28 | 82 | 6 |
| 8690560 | 5,6 | 28 | 82 | 6 |
| 8690570 | 5,7 | 29 | 82 | 6 |
| 8690580 | 5,8 | 29 | 82 | 6 |
| 8690590 | 5,9 | 30 | 82 | 6 |
| 8690600 | 6 | 30 | 82 | 6 |
| 8700610 | 6,1 | 31 | 88 | 8 |
| 8700620 | 6,2 | 31 | 88 | 8 |
| 8700630 | 6,3 | 32 | 88 | 8 |
| 8700640 | 6,4 | 32 | 88 | 8 |
| 8700650 | 6,5 | 33 | 88 | 8 |
| 8700660 | 6,6 | 33 | 88 | 8 |
| 8700670 | 6,7 | 34 | 88 | 8 |
| 8700680 | 6,8 | 34 | 88 | 8 |
| 8700690 | 6,9 | 35 | 88 | 8 |
| 8700700 | 7 | 35 | 88 | 8 |
| 8690710 | 7,1 | 36 | 94 | 8 |
| 8690720 | 7,2 | 36 | 94 | 8 |
| 8690725 | 7,25 | 37 | 94 | 8 |
| 8690730 | 7,3 | 37 | 94 | 8 |
| 8690740 | 7,4 | 37 | 94 | 8 |
| 8690750 | 7,5 | 38 | 94 | 8 |
| 8690760 | 7,6 | 38 | 94 | 8 |
| 8690770 | 7,7 | 39 | 94 | 8 |
| 8690775 | 7,75 | 39 | 94 | 8 |
| 8690780 | 7,8 | 39 | 94 | 8 |
| 8690790 | 7,9 | 40 | 94 | 8 |
| 8690800 | 8 | 40 | 94 | 8 |
| 8700810 | 8,1 | 41 | 101 | 10 |
| 8700820 | 8,2 | 41 | 101 | 10 |
| 8700830 | 8,3 | 42 | 101 | 10 |
| 8700840 | 8,4 | 42 | 101 | 10 |
| 8700850 | 8,5 | 43 | 101 | 10 |
| 8700860 | 8,6 | 43 | 101 | 10 |
| 8700870 | 8,7 | 43 | 101 | 10 |
| 8700880 | 8,8 | 44 | 101 | 10 |
| 8700890 | 8,9 | 45 | 101 | 10 |
| 8700900 | 9 | 45 | 101 | 10 |
| 8690910 | 9,1 | 46 | 106 | 10 |
| 8690920 | 9,2 | 46 | 106 | 10 |
| 8690925 | 9,25 | 47 | 106 | 10 |
| 8690930 | 9,3 | 47 | 106 | 10 |
| 8690940 | 9,4 | 47 | 106 | 10 |

# ADO-3D

**Drilling | Solid carbide | 3xD**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- For general purpose steels and cast iron
- 167 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.498

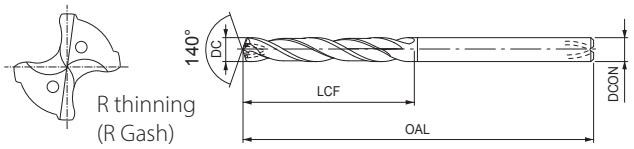
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8690950 | 9,5 | 48 | 106 | 10 |
| 8690960 | 9,6 | 48 | 106 | 10 |
| 8690970 | 9,7 | 49 | 106 | 10 |
| 8690975 | 9,75 | 49 | 106 | 10 |
| 8690980 | 9,8 | 49 | 106 | 10 |
| 8690990 | 9,9 | 50 | 106 | 10 |
| 8691000 | 10 | 50 | 106 | 10 |
| 8701010 | 10,1 | 51 | 113 | 12 |
| 8701020 | 10,2 | 51 | 113 | 12 |
| 8701030 | 10,3 | 52 | 113 | 12 |
| 8701040 | 10,4 | 52 | 113 | 12 |
| 8701050 | 10,5 | 53 | 113 | 12 |
| 8701060 | 10,6 | 53 | 113 | 12 |
| 8701070 | 10,7 | 54 | 113 | 12 |
| 8701080 | 10,8 | 54 | 113 | 12 |
| 8701090 | 10,9 | 55 | 113 | 12 |
| 8701100 | 11 | 55 | 113 | 12 |
| 8691110 | 11,1 | 56 | 120 | 12 |
| 8691120 | 11,2 | 56 | 120 | 12 |
| 8691130 | 11,3 | 57 | 120 | 12 |
| 8691140 | 11,4 | 57 | 120 | 12 |
| 8691150 | 11,5 | 58 | 120 | 12 |
| 8691160 | 11,6 | 58 | 120 | 12 |
| 8691170 | 11,7 | 59 | 120 | 12 |
| 8691180 | 11,8 | 59 | 120 | 12 |
| 8691190 | 11,9 | 60 | 120 | 12 |
| 8691200 | 12 | 60 | 120 | 12 |
| 8701210 | 12,1 | 61 | 128 | 14 |
| 8701220 | 12,2 | 61 | 128 | 14 |
| 8701230 | 12,3 | 62 | 128 | 14 |
| 8701240 | 12,4 | 62 | 128 | 14 |
| 8701250 | 12,5 | 63 | 128 | 14 |
| 8701260 | 12,6 | 63 | 128 | 14 |
| 8701270 | 12,7 | 64 | 128 | 14 |
| 8701280 | 12,8 | 64 | 128 | 14 |
| 8701290 | 12,9 | 65 | 128 | 14 |
| 8701300 | 13 | 65 | 128 | 14 |
| 8691310 | 13,1 | 66 | 134 | 14 |
| 8691320 | 13,2 | 66 | 134 | 14 |
| 8691330 | 13,3 | 67 | 134 | 14 |
| 8691340 | 13,4 | 67 | 134 | 14 |
| 8691350 | 13,5 | 68 | 134 | 14 |
| 8691360 | 13,6 | 68 | 134 | 14 |
| 8691370 | 13,7 | 69 | 134 | 14 |
| 8691380 | 13,8 | 69 | 134 | 14 |
| 8691390 | 13,9 | 70 | 134 | 14 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8691400 | 14 | 70 | 134 | 14 |
| 8701410 | 14,1 | 71 | 140 | 16 |
| 8701420 | 14,2 | 71 | 140 | 16 |
| 8701430 | 14,3 | 72 | 140 | 16 |
| 8701440 | 14,4 | 72 | 140 | 16 |
| 8701450 | 14,5 | 73 | 140 | 16 |
| 8701460 | 14,6 | 73 | 140 | 16 |
| 8701470 | 14,7 | 74 | 140 | 16 |
| 8701480 | 14,8 | 74 | 140 | 16 |
| 8701490 | 14,9 | 75 | 140 | 16 |
| 8701500 | 15 | 75 | 140 | 16 |
| 8691510 | 15,1 | 76 | 145 | 16 |
| 8691520 | 15,2 | 76 | 145 | 16 |
| 8691530 | 15,3 | 77 | 145 | 16 |
| 8691540 | 15,4 | 77 | 145 | 16 |
| 8691550 | 15,5 | 78 | 145 | 16 |
| 8691560 | 15,6 | 78 | 145 | 16 |
| 8691570 | 15,7 | 79 | 145 | 16 |
| 8691580 | 15,8 | 79 | 145 | 16 |
| 8691590 | 15,9 | 80 | 145 | 16 |
| 8691600 | 16 | 80 | 145 | 16 |
| 8701650 | 16,5 | 83 | 150 | 18 |
| 8701700 | 17 | 85 | 150 | 18 |
| 8691750 | 17,5 | 88 | 155 | 18 |
| 8691800 | 18 | 90 | 155 | 18 |
| 8701850 | 18,5 | 93 | 160 | 20 |
| 8701900 | 19 | 95 | 160 | 20 |
| 8691950 | 19,5 | 98 | 165 | 20 |
| 8692000 | 20 | 100 | 165 | 20 |

# ADO-5D

**Drilling | Solid carbide | 5xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- For general purpose steels and cast iron
- 191 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.498

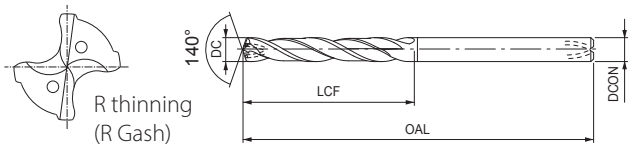
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8692200 | 2 | 18 | 70 | 3 |
| 8692210 | 2,1 | 19 | 70 | 3 |
| 8692220 | 2,2 | 20 | 70 | 3 |
| 8692230 | 2,3 | 21 | 70 | 3 |
| 8692240 | 2,4 | 22 | 70 | 3 |
| 8692250 | 2,5 | 23 | 70 | 3 |
| 8692260 | 2,6 | 24 | 78 | 3 |
| 8692265 | 2,65 | 24 | 78 | 3 |
| 8692270 | 2,7 | 25 | 78 | 3 |
| 8692276 | 2,76 | 25 | 78 | 3 |
| 8692278 | 2,78 | 26 | 78 | 3 |
| 8692280 | 2,8 | 26 | 78 | 3 |
| 8692290 | 2,9 | 27 | 78 | 3 |
| 8692300 | 3 | 27 | 78 | 3 |
| 8692310 | 3,1 | 28 | 86 | 4 |
| 8692315 | 3,15 | 29 | 86 | 4 |
| 8692320 | 3,2 | 29 | 86 | 4 |
| 8692330 | 3,3 | 30 | 86 | 4 |
| 8692340 | 3,4 | 31 | 86 | 4 |
| 8692350 | 3,5 | 32 | 86 | 4 |
| 8692360 | 3,6 | 33 | 86 | 4 |
| 8692366 | 3,66 | 33 | 86 | 4 |
| 8692368 | 3,68 | 34 | 86 | 4 |
| 8692370 | 3,7 | 34 | 86 | 4 |
| 8692375 | 3,75 | 34 | 86 | 4 |
| 8692380 | 3,8 | 35 | 86 | 4 |
| 8692390 | 3,9 | 36 | 86 | 4 |
| 8692400 | 4 | 36 | 86 | 4 |
| 8692410 | 4,1 | 37 | 95 | 5 |
| 8702410 | 4,1 | 37 | 95 | 6 |
| 8692420 | 4,2 | 38 | 95 | 5 |
| 8702420 | 4,2 | 38 | 95 | 6 |
| 8692430 | 4,3 | 39 | 95 | 5 |
| 8702430 | 4,3 | 39 | 95 | 6 |
| 8692440 | 4,4 | 40 | 95 | 5 |
| 8702440 | 4,4 | 40 | 95 | 6 |
| 8692450 | 4,5 | 41 | 95 | 5 |
| 8702450 | 4,5 | 41 | 95 | 6 |
| 8692460 | 4,6 | 42 | 95 | 5 |
| 8702460 | 4,6 | 42 | 95 | 6 |
| 8692462 | 4,62 | 42 | 95 | 5 |
| 8692464 | 4,64 | 42 | 95 | 5 |
| 8692470 | 4,7 | 43 | 95 | 5 |
| 8702470 | 4,7 | 43 | 95 | 6 |
| 8692480 | 4,8 | 44 | 95 | 5 |
| 8702480 | 4,8 | 44 | 95 | 6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8692490 | 4,9 | 45 | 95 | 5 |
| 8702490 | 4,9 | 45 | 95 | 6 |
| 8692500 | 5 | 45 | 95 | 5 |
| 8702500 | 5 | 45 | 95 | 6 |
| 8692510 | 5,1 | 41 | 100 | 6 |
| 8692520 | 5,2 | 42 | 100 | 6 |
| 8692525 | 5,25 | 42 | 100 | 6 |
| 8692530 | 5,3 | 43 | 100 | 6 |
| 8692540 | 5,4 | 44 | 100 | 6 |
| 8692550 | 5,5 | 44 | 100 | 6 |
| 8692552 | 5,52 | 45 | 100 | 6 |
| 8692554 | 5,54 | 45 | 100 | 6 |
| 8692560 | 5,6 | 45 | 100 | 6 |
| 8692570 | 5,7 | 46 | 100 | 6 |
| 8692580 | 5,8 | 47 | 100 | 6 |
| 8692590 | 5,9 | 48 | 100 | 6 |
| 8692600 | 6 | 48 | 100 | 6 |
| 8702610 | 6,1 | 49 | 109 | 8 |
| 8702620 | 6,2 | 50 | 109 | 8 |
| 8702630 | 6,3 | 51 | 109 | 8 |
| 8702640 | 6,4 | 52 | 109 | 8 |
| 8702650 | 6,5 | 52 | 109 | 8 |
| 8702660 | 6,6 | 53 | 109 | 8 |
| 8702670 | 6,7 | 54 | 109 | 8 |
| 8702680 | 6,8 | 55 | 109 | 8 |
| 8702690 | 6,9 | 56 | 109 | 8 |
| 8702700 | 7 | 56 | 109 | 8 |
| 8692710 | 7,1 | 57 | 118 | 8 |
| 8692720 | 7,2 | 58 | 118 | 8 |
| 8692725 | 7,25 | 58 | 118 | 8 |
| 8692730 | 7,3 | 59 | 118 | 8 |
| 8692736 | 7,36 | 59 | 118 | 8 |
| 8692738 | 7,38 | 60 | 118 | 8 |
| 8692740 | 7,4 | 60 | 118 | 8 |
| 8692750 | 7,5 | 60 | 118 | 8 |
| 8692752 | 7,52 | 61 | 118 | 8 |
| 8692754 | 7,54 | 61 | 118 | 8 |
| 8692760 | 7,6 | 61 | 118 | 8 |
| 8692770 | 7,7 | 62 | 118 | 8 |
| 8692775 | 7,75 | 62 | 118 | 8 |
| 8692780 | 7,8 | 63 | 118 | 8 |
| 8692790 | 7,9 | 64 | 118 | 8 |
| 8692800 | 8 | 64 | 118 | 8 |
| 8702810 | 8,1 | 65 | 128 | 10 |
| 8702820 | 8,2 | 66 | 128 | 10 |
| 8702830 | 8,3 | 67 | 128 | 10 |

# ADO-5D

**Drilling | Solid carbide | 5xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- For general purpose steels and cast iron
- 191 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8 | B.498

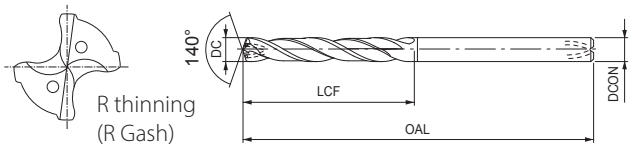
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8702840 | 8,4 | 68 | 128 | 10 |
| 8702850 | 8,5 | 68 | 128 | 10 |
| 8702860 | 8,6 | 69 | 128 | 10 |
| 8702870 | 8,7 | 70 | 128 | 10 |
| 8702880 | 8,8 | 71 | 128 | 10 |
| 8702890 | 8,9 | 72 | 128 | 10 |
| 8702900 | 9 | 72 | 128 | 10 |
| 8692910 | 9,1 | 73 | 136 | 10 |
| 8692920 | 9,2 | 74 | 136 | 10 |
| 8692924 | 9,24 | 74 | 136 | 10 |
| 8692925 | 9,25 | 74 | 136 | 10 |
| 8692926 | 9,26 | 75 | 136 | 10 |
| 8692930 | 9,3 | 75 | 136 | 10 |
| 8692936 | 9,36 | 75 | 136 | 10 |
| 8692938 | 9,38 | 76 | 136 | 10 |
| 8692940 | 9,4 | 76 | 136 | 10 |
| 8692950 | 9,5 | 76 | 136 | 10 |
| 8692952 | 9,52 | 77 | 136 | 10 |
| 8692954 | 9,54 | 77 | 136 | 10 |
| 8692960 | 9,6 | 77 | 136 | 10 |
| 8692970 | 9,7 | 78 | 136 | 10 |
| 8692975 | 9,75 | 78 | 136 | 10 |
| 8692980 | 9,8 | 79 | 136 | 10 |
| 8692990 | 9,9 | 80 | 136 | 10 |
| 8693000 | 10 | 80 | 136 | 10 |
| 8703010 | 10,1 | 81 | 146 | 12 |
| 8703020 | 10,2 | 82 | 146 | 12 |
| 8703030 | 10,3 | 83 | 146 | 12 |
| 8703040 | 10,4 | 84 | 146 | 12 |
| 8703050 | 10,5 | 84 | 146 | 12 |
| 8703060 | 10,6 | 85 | 146 | 12 |
| 8703070 | 10,7 | 86 | 146 | 12 |
| 8703080 | 10,8 | 87 | 146 | 12 |
| 8703090 | 10,9 | 88 | 146 | 12 |
| 8703100 | 11 | 88 | 146 | 12 |
| 8693110 | 11,1 | 89 | 156 | 12 |
| 8693120 | 11,2 | 90 | 156 | 12 |
| 8693122 | 11,22 | 90 | 156 | 12 |
| 8693124 | 11,24 | 90 | 156 | 12 |
| 8693130 | 11,3 | 91 | 156 | 12 |
| 8693136 | 11,36 | 91 | 156 | 12 |
| 8693138 | 11,38 | 92 | 156 | 12 |
| 8693140 | 11,4 | 92 | 156 | 12 |
| 8693150 | 11,5 | 92 | 156 | 12 |
| 8693160 | 11,6 | 93 | 156 | 12 |
| 8693170 | 11,7 | 94 | 156 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8693180 | 11,8 | 95 | 156 | 12 |
| 8693190 | 11,9 | 96 | 156 | 12 |
| 8693200 | 12 | 96 | 156 | 12 |
| 8703210 | 12,1 | 97 | 167 | 14 |
| 8703220 | 12,2 | 98 | 167 | 14 |
| 8703230 | 12,3 | 99 | 167 | 14 |
| 8703240 | 12,4 | 100 | 167 | 14 |
| 8703250 | 12,5 | 100 | 167 | 14 |
| 8703260 | 12,6 | 101 | 167 | 14 |
| 8703270 | 12,7 | 102 | 167 | 14 |
| 8703280 | 12,8 | 103 | 167 | 14 |
| 8703290 | 12,9 | 104 | 167 | 14 |
| 8703300 | 13 | 104 | 167 | 14 |
| 8693310 | 13,1 | 105 | 176 | 14 |
| 8693320 | 13,2 | 106 | 176 | 14 |
| 8693325 | 13,25 | 106 | 176 | 14 |
| 8693330 | 13,3 | 107 | 176 | 14 |
| 8693340 | 13,4 | 108 | 176 | 14 |
| 8693350 | 13,5 | 108 | 176 | 14 |
| 8693360 | 13,6 | 109 | 176 | 14 |
| 8693370 | 13,7 | 110 | 176 | 14 |
| 8693380 | 13,8 | 111 | 176 | 14 |
| 8693390 | 13,9 | 112 | 176 | 14 |
| 8693400 | 14 | 112 | 176 | 14 |
| 8703410 | 14,1 | 113 | 185 | 16 |
| 8703420 | 14,2 | 114 | 185 | 16 |
| 8703430 | 14,3 | 115 | 185 | 16 |
| 8703440 | 14,4 | 116 | 185 | 16 |
| 8703450 | 14,5 | 116 | 185 | 16 |
| 8703460 | 14,6 | 117 | 185 | 16 |
| 8703470 | 14,7 | 118 | 185 | 16 |
| 8703480 | 14,8 | 119 | 185 | 16 |
| 8703490 | 14,9 | 120 | 185 | 16 |
| 8703500 | 15 | 120 | 185 | 16 |
| 8693510 | 15,1 | 121 | 193 | 16 |
| 8693520 | 15,2 | 122 | 193 | 16 |
| 8693525 | 15,25 | 122 | 193 | 16 |
| 8693530 | 15,3 | 123 | 193 | 16 |
| 8693540 | 15,4 | 124 | 193 | 16 |
| 8693550 | 15,5 | 124 | 193 | 16 |
| 8693560 | 15,6 | 125 | 193 | 16 |
| 8693570 | 15,7 | 126 | 193 | 16 |
| 8693580 | 15,8 | 127 | 193 | 16 |
| 8693590 | 15,9 | 128 | 193 | 16 |
| 8693600 | 16 | 128 | 193 | 16 |
| 8703650 | 16,5 | 132 | 201 | 18 |

# ADO-5D

**Drilling | Solid carbide | 5xD**

INDEX




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- For general purpose steels and cast iron
- 191 sizes

| P ◉ | P ◉ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | N ○ | N ○ | S ○ | H ◉ | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | Al | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

| A | CARBIDE | EgiAs | 30° | SHRINK FIT | | 140° | h8 | B.498 |
|---|---|---|---|---|---|---|---|---|

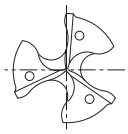
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8703700 | 17 | 136 | 201 | 18 |
| 8693750 | 17,5 | 140 | 209 | 18 |
| 8693800 | 18 | 144 | 209 | 18 |
| 8703850 | 18,5 | 148 | 217 | 20 |
| 8703900 | 19 | 152 | 217 | 20 |
| 8693950 | 19,5 | 156 | 225 | 20 |
| 8694000 | 20 | 160 | 225 | 20 |

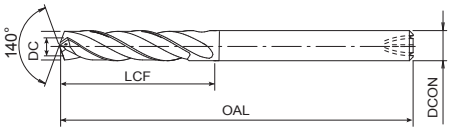
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-TRS-3D

**Drilling | Solid carbide | 3xD**

INDEX






- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.499

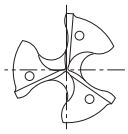
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8720300 | 3 | 18 | 66 | 3 |
| 8720330 | 3,3 | 20 | 74 | 4 |
| 8720350 | 3,5 | 21 | 74 | 4 |
| 8720366 | 3,66 | 22 | 74 | 4 |
| 8720400 | 4 | 24 | 74 | 4 |
| 8720420 | 4,2 | 26 | 80 | 6 |
| 8720450 | 4,5 | 27 | 80 | 6 |
| 8720460 | 4,6 | 28 | 80 | 6 |
| 8720500 | 5 | 25 | 80 | 6 |
| 8720510 | 5,1 | 26 | 82 | 6 |
| 8720520 | 5,2 | 26 | 82 | 6 |
| 8720530 | 5,3 | 27 | 82 | 6 |
| 8720540 | 5,4 | 27 | 82 | 6 |
| 8720550 | 5,5 | 28 | 82 | 6 |
| 48323555 | 5,55 | 28 | 82 | 6 |
| 8720560 | 5,6 | 28 | 82 | 6 |
| 8720570 | 5,7 | 29 | 82 | 6 |
| 8720580 | 5,8 | 29 | 82 | 6 |
| 8720590 | 5,9 | 30 | 82 | 6 |
| 8720600 | 6 | 30 | 82 | 6 |
| 8720610 | 6,1 | 31 | 88 | 8 |
| 8720620 | 6,2 | 31 | 88 | 8 |
| 8720630 | 6,3 | 32 | 88 | 8 |
| 8720640 | 6,4 | 32 | 88 | 8 |
| 8720650 | 6,5 | 33 | 88 | 8 |
| 8720660 | 6,6 | 33 | 88 | 8 |
| 8720670 | 6,7 | 34 | 88 | 8 |
| 8720680 | 6,8 | 34 | 88 | 8 |
| 8720690 | 6,9 | 35 | 88 | 8 |
| 8720700 | 7 | 35 | 88 | 8 |
| 8720710 | 7,1 | 36 | 94 | 8 |
| 8720720 | 7,2 | 36 | 94 | 8 |
| 8720730 | 7,3 | 37 | 94 | 8 |
| 8720738 | 7,38 | 37 | 94 | 8 |
| 8720740 | 7,4 | 37 | 94 | 8 |
| 48323745 | 7,45 | 38 | 94 | 8 |
| 8720750 | 7,5 | 38 | 94 | 8 |
| 8720760 | 7,6 | 38 | 94 | 8 |
| 8720770 | 7,7 | 39 | 94 | 8 |
| 8720780 | 7,8 | 39 | 94 | 8 |
| 8720790 | 7,9 | 40 | 94 | 8 |
| 8720800 | 8 | 40 | 94 | 8 |
| 8720810 | 8,1 | 41 | 101 | 10 |
| 8720820 | 8,2 | 41 | 101 | 10 |
| 8720830 | 8,3 | 42 | 101 | 10 |
| 8720840 | 8,4 | 42 | 101 | 10 |

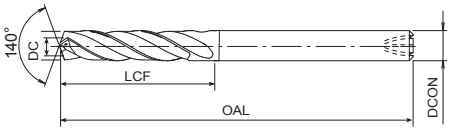
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8720850 | 8,5 | 43 | 101 | 10 |
| 8720860 | 8,6 | 43 | 101 | 10 |
| 8720870 | 8,7 | 44 | 101 | 10 |
| 8720880 | 8,8 | 44 | 101 | 10 |
| 8720890 | 8,9 | 45 | 101 | 10 |
| 8720900 | 9 | 45 | 101 | 10 |
| 8720910 | 9,1 | 46 | 106 | 10 |
| 8720920 | 9,2 | 46 | 106 | 10 |
| 8720925 | 9,25 | 47 | 106 | 10 |
| 8720930 | 9,3 | 47 | 106 | 10 |
| 8720938 | 9,38 | 47 | 106 | 10 |
| 8720940 | 9,4 | 47 | 106 | 10 |
| 8720950 | 9,5 | 48 | 106 | 10 |
| 8720960 | 9,6 | 48 | 106 | 10 |
| 8720970 | 9,7 | 49 | 106 | 10 |
| 8720980 | 9,8 | 49 | 106 | 10 |
| 8720990 | 9,9 | 50 | 106 | 10 |
| 8721000 | 10 | 50 | 106 | 10 |
| 8721010 | 10,1 | 51 | 113 | 12 |
| 8721020 | 10,2 | 51 | 113 | 12 |
| 8721030 | 10,3 | 52 | 113 | 12 |
| 8721040 | 10,4 | 52 | 113 | 12 |
| 8721050 | 10,5 | 53 | 113 | 12 |
| 8721060 | 10,6 | 53 | 113 | 12 |
| 8721070 | 10,7 | 54 | 113 | 12 |
| 8721080 | 10,8 | 54 | 113 | 12 |
| 8721090 | 10,9 | 55 | 113 | 12 |
| 8721100 | 11 | 55 | 113 | 12 |
| 8721110 | 11,1 | 56 | 120 | 12 |
| 8721120 | 11,2 | 56 | 120 | 12 |
| 8721125 | 11,25 | 57 | 120 | 12 |
| 8721130 | 11,3 | 57 | 120 | 12 |
| 8721138 | 11,38 | 57 | 120 | 12 |
| 8721140 | 11,4 | 57 | 120 | 12 |
| 8721150 | 11,5 | 58 | 120 | 12 |
| 8721160 | 11,6 | 58 | 120 | 12 |
| 8721170 | 11,7 | 59 | 120 | 12 |
| 8721180 | 11,8 | 59 | 120 | 12 |
| 8721190 | 11,9 | 60 | 120 | 12 |
| 8721200 | 12 | 60 | 120 | 12 |
| 8721250 | 12,5 | 63 | 128 | 14 |
| 8721300 | 13 | 65 | 128 | 14 |
| 8721325 | 13,25 | 67 | 134 | 14 |
| 8721330 | 13,3 | 67 | 134 | 14 |
| 8721338 | 13,38 | 67 | 134 | 14 |
| 8721350 | 13,5 | 68 | 134 | 14 |

# ADO-TRS-3D

**Drilling | Solid carbide | 3xD**

INDEX






- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes

| P | P | P | P | M | K | K | N | N | S | H | H | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AI | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.499

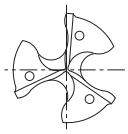
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8721400 | 14 | 70 | 134 | 14 |
| 8721410 | 14,1 | 71 | 140 | 16 |
| 8721420 | 14,2 | 71 | 140 | 16 |
| 8721430 | 14,3 | 72 | 140 | 16 |
| 8721450 | 14,5 | 73 | 140 | 16 |
| 8721500 | 15 | 75 | 140 | 16 |
| 8721520 | 15,2 | 76 | 145 | 16 |
| 8721530 | 15,3 | 77 | 145 | 16 |
| 8721550 | 15,5 | 78 | 145 | 16 |
| 8721600 | 16 | 80 | 145 | 16 |
| 8721650 | 16,5 | 83 | 150 | 18 |
| 8721700 | 17 | 85 | 150 | 18 |
| 8721725 | 17,25 | 87 | 155 | 18 |
| 8721750 | 17,5 | 88 | 155 | 18 |
| 8721800 | 18 | 90 | 155 | 18 |
| 8721850 | 18,5 | 93 | 160 | 20 |
| 8721900 | 19 | 95 | 160 | 20 |
| 8721925 | 19,25 | 97 | 165 | 20 |
| 8721950 | 19,5 | 98 | 165 | 20 |
| 8722000 | 20 | 100 | 165 | 20 |

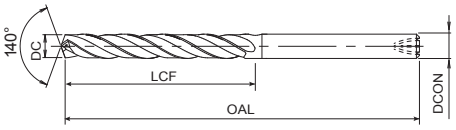
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-TRS-5D

**Drilling | Solid carbide | 5xD**

INDEX






- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.499

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8722300 | 3 | 27 | 78 | 3 |
| 8722330 | 3,3 | 30 | 86 | 4 |
| 8722350 | 3,5 | 32 | 86 | 4 |
| 8722366 | 3,66 | 33 | 86 | 4 |
| 8722400 | 4 | 36 | 86 | 4 |
| 8722420 | 4,2 | 38 | 95 | 6 |
| 8722450 | 4,5 | 41 | 95 | 6 |
| 8722460 | 4,6 | 42 | 95 | 6 |
| 8722500 | 5 | 45 | 95 | 6 |
| 8722510 | 5,1 | 41 | 100 | 6 |
| 8722520 | 5,2 | 42 | 100 | 6 |
| 8722530 | 5,3 | 43 | 100 | 6 |
| 8722540 | 5,4 | 44 | 100 | 6 |
| 8722550 | 5,5 | 44 | 100 | 6 |
| 48324555 | 5,55 | 45 | 100 | 6 |
| 8722560 | 5,6 | 45 | 100 | 6 |
| 8722570 | 5,7 | 46 | 100 | 6 |
| 8722580 | 5,8 | 47 | 100 | 6 |
| 8722590 | 5,9 | 48 | 100 | 6 |
| 8722600 | 6 | 48 | 100 | 6 |
| 8722610 | 6,1 | 49 | 109 | 8 |
| 8722620 | 6,2 | 50 | 109 | 8 |
| 8722630 | 6,3 | 51 | 109 | 8 |
| 8722640 | 6,4 | 52 | 109 | 8 |
| 8722650 | 6,5 | 52 | 109 | 8 |
| 8722660 | 6,6 | 53 | 109 | 8 |
| 8722670 | 6,7 | 54 | 109 | 8 |
| 8722680 | 6,8 | 55 | 109 | 8 |
| 8722690 | 6,9 | 56 | 109 | 8 |
| 8722700 | 7 | 56 | 109 | 8 |
| 8722710 | 7,1 | 57 | 118 | 8 |
| 8722720 | 7,2 | 58 | 118 | 8 |
| 8722730 | 7,3 | 59 | 118 | 8 |
| 8722738 | 7,38 | 60 | 118 | 8 |
| 8722740 | 7,4 | 60 | 118 | 8 |
| 48324745 | 7,45 | 60 | 118 | 8 |
| 8722750 | 7,5 | 60 | 118 | 8 |
| 8722760 | 7,6 | 61 | 118 | 8 |
| 8722770 | 7,7 | 62 | 118 | 8 |
| 8722780 | 7,8 | 63 | 118 | 8 |
| 8722790 | 7,9 | 64 | 118 | 8 |
| 8722800 | 8 | 64 | 118 | 8 |
| 8722810 | 8,1 | 65 | 128 | 10 |
| 8722820 | 8,2 | 66 | 128 | 10 |
| 8722830 | 8,3 | 67 | 128 | 10 |
| 8722840 | 8,4 | 68 | 128 | 10 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8722850 | 8,5 | 68 | 128 | 10 |
| 8722860 | 8,6 | 69 | 128 | 10 |
| 8722870 | 8,7 | 70 | 128 | 10 |
| 8722880 | 8,8 | 71 | 128 | 10 |
| 8722890 | 8,9 | 72 | 128 | 10 |
| 8722900 | 9 | 72 | 128 | 10 |
| 8722910 | 9,1 | 73 | 136 | 10 |
| 8722920 | 9,2 | 74 | 136 | 10 |
| 8722925 | 9,25 | 74 | 136 | 10 |
| 8722930 | 9,3 | 75 | 136 | 10 |
| 8722938 | 9,38 | 76 | 136 | 10 |
| 8722940 | 9,4 | 76 | 136 | 10 |
| 8722950 | 9,5 | 76 | 136 | 10 |
| 8722960 | 9,6 | 77 | 136 | 10 |
| 8722970 | 9,7 | 78 | 136 | 10 |
| 8722980 | 9,8 | 79 | 136 | 10 |
| 8722990 | 9,9 | 80 | 136 | 10 |
| 8723000 | 10 | 80 | 136 | 10 |
| 8723010 | 10,1 | 81 | 146 | 12 |
| 8723020 | 10,2 | 82 | 146 | 12 |
| 8723030 | 10,3 | 83 | 146 | 12 |
| 8723040 | 10,4 | 84 | 146 | 12 |
| 8723050 | 10,5 | 84 | 146 | 12 |
| 8723060 | 10,6 | 85 | 146 | 12 |
| 8723070 | 10,7 | 86 | 146 | 12 |
| 8723080 | 10,8 | 87 | 146 | 12 |
| 8723090 | 10,9 | 88 | 146 | 12 |
| 8723100 | 11 | 88 | 146 | 12 |
| 8723110 | 11,1 | 89 | 156 | 12 |
| 8723120 | 11,2 | 90 | 156 | 12 |
| 8723125 | 11,25 | 90 | 156 | 12 |
| 8723130 | 11,3 | 91 | 156 | 12 |
| 8723138 | 11,38 | 92 | 156 | 12 |
| 8723140 | 11,4 | 92 | 156 | 12 |
| 8723150 | 11,5 | 92 | 156 | 12 |
| 8723160 | 11,6 | 93 | 156 | 12 |
| 8723170 | 11,7 | 94 | 156 | 12 |
| 8723180 | 11,8 | 95 | 156 | 12 |
| 8723190 | 11,9 | 96 | 156 | 12 |
| 8723200 | 12 | 96 | 156 | 12 |
| 8723250 | 12,5 | 100 | 167 | 14 |
| 8723300 | 13 | 104 | 167 | 14 |
| 8723325 | 13,25 | 106 | 176 | 14 |
| 8723330 | 13,3 | 107 | 176 | 14 |
| 8723338 | 13,38 | 108 | 176 | 14 |
| 8723350 | 13,5 | 108 | 176 | 14 |

# ADO-TRS-5D

**Drilling | Solid carbide | 5xD**

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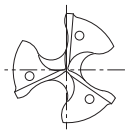

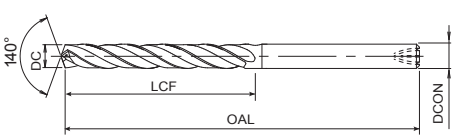


- First choice in quality and performance
- 3 flute carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 112 sizes

| P | P | P | P | M | K | K | N | N | H |
|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AI | AC, ADC | 25-35 HRC |

| A | CARBIDE | EgiAs | 30° | SHRINK FIT | | 140° | h8 | B.499 |
|---|---|---|---|---|---|---|---|---|

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8723400 | 14 | 112 | 176 | 14 |
| 8723410 | 14,1 | 113 | 185 | 16 |
| 8723420 | 14,2 | 114 | 185 | 16 |
| 8723430 | 14,3 | 115 | 185 | 16 |
| 8723450 | 14,5 | 116 | 185 | 16 |
| 8723500 | 15 | 120 | 185 | 16 |
| 8723520 | 15,2 | 122 | 193 | 16 |
| 8723530 | 15,3 | 123 | 193 | 16 |
| 8723550 | 15,5 | 124 | 193 | 16 |
| 8723600 | 16 | 128 | 193 | 16 |
| 8723650 | 16,5 | 132 | 201 | 18 |
| 8723700 | 17 | 136 | 201 | 18 |
| 8723725 | 17,25 | 138 | 209 | 18 |
| 8723750 | 17,5 | 140 | 209 | 18 |
| 8723800 | 18 | 144 | 209 | 18 |
| 8723850 | 18,5 | 148 | 217 | 20 |
| 8723900 | 19 | 152 | 217 | 20 |
| 8723925 | 19,25 | 154 | 225 | 20 |
| 8723950 | 19,5 | 156 | 225 | 20 |
| 8724000 | 20 | 160 | 225 | 20 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# TRS-HO-10D

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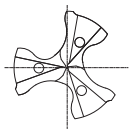
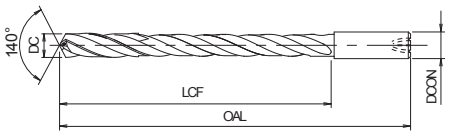
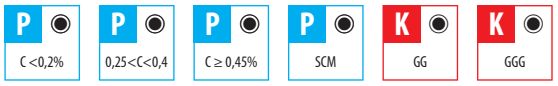
**Drilling | Solid carbide | 10xD**






- First choice in quality and performance
- 3 flutes carbide drill with internal coolant, WDI coating
- Up to 10xD
- Allows high feed 1.000mm/min process in steel and cast iron
- 11 sizes



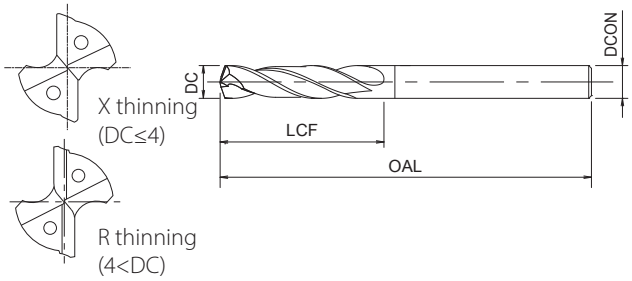
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48159050 | 5 | 65 | 115 | 6 |
| 8664055 | 5,5 | 78 | 128 | 6 |
| 8664060 | 6 | 78 | 128 | 6 |
| 48159065 | 6,5 | 87 | 140 | 8 |
| 48159070 | 7 | 90 | 140 | 8 |
| 8664075 | 7,5 | 100 | 155 | 8 |
| 8664080 | 8 | 105 | 155 | 8 |
| 48159085 | 8,5 | 110 | 165 | 10 |
| 48159090 | 9 | 115 | 165 | 10 |
| 8664100 | 10 | 130 | 190 | 10 |
| 8664120 | 12 | 155 | 215 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-PLT



**Drilling | Solid carbide | Pilot drills**




- First choice in quality and performance
- Carbide pilot drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- 15 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ◉ 35-45 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 160° | h8

B.498

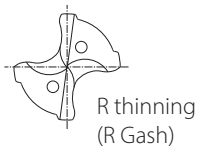
| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 8688903 | 3,03 | 9,1 | 15 | 65 | 3 |
| 8688923 | 3,53 | 11 | 18 | 70 | 4 |
| 8688904 | 4,03 | 12,1 | 20 | 70 | 4 |
| 8688924 | 4,53 | 14 | 23 | 75 | 5 |
| 8688905 | 5,03 | 15,1 | 25 | 75 | 5 |
| 8688925 | 5,53 | 17 | 28 | 80 | 6 |
| 8688906 | 6,03 | 18,1 | 30 | 80 | 6 |
| 8688926 | 6,53 | 20 | 33 | 85 | 7 |
| 8688907 | 7,03 | 21,1 | 35 | 85 | 7 |
| 8688908 | 8,03 | 24,1 | 40 | 90 | 8 |
| 8688928 | 8,53 | 26 | 43 | 95 | 9 |
| 8688909 | 9,03 | 27,1 | 45 | 95 | 9 |
| 8688910 | 10,03 | 30,1 | 50 | 100 | 10 |
| 8688911 | 11,03 | 33,1 | 55 | 115 | 11 |
| 8688912 | 12,03 | 36,1 | 60 | 120 | 12 |

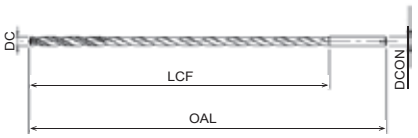
| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|

# ADO-10D

**Drilling | Solid carbide | 10xD**

INDEX




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 10xD
- For general purpose steels and cast iron
- 102 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | e8 | B.500

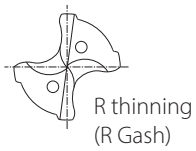
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8696200 | 2 | 26 | 75 | 3 |
| 8696210 | 2,1 | 33 | 75 | 3 |
| 8696220 | 2,2 | 33 | 75 | 3 |
| 8696230 | 2,3 | 33 | 75 | 3 |
| 8696240 | 2,4 | 33 | 75 | 3 |
| 8696250 | 2,5 | 33 | 75 | 3 |
| 8696260 | 2,6 | 40 | 90 | 3 |
| 8696270 | 2,7 | 40 | 90 | 3 |
| 8696280 | 2,8 | 40 | 90 | 3 |
| 8696290 | 2,9 | 40 | 90 | 3 |
| 8696300 | 3 | 40 | 90 | 3 |
| 8696310 | 3,1 | 45 | 100 | 4 |
| 8696320 | 3,2 | 45 | 100 | 4 |
| 8696330 | 3,3 | 45 | 100 | 4 |
| 8696340 | 3,4 | 50 | 100 | 4 |
| 8696350 | 3,5 | 50 | 100 | 4 |
| 8696360 | 3,6 | 50 | 100 | 4 |
| 8696370 | 3,7 | 50 | 100 | 4 |
| 8696380 | 3,8 | 50 | 100 | 4 |
| 8696390 | 3,9 | 50 | 100 | 4 |
| 8696400 | 4 | 50 | 100 | 4 |
| 8710410 | 4,1 | 55 | 115 | 6 |
| 8710420 | 4,2 | 55 | 115 | 6 |
| 8710430 | 4,3 | 60 | 115 | 6 |
| 8710440 | 4,4 | 60 | 115 | 6 |
| 8710450 | 4,5 | 60 | 115 | 6 |
| 8710460 | 4,6 | 60 | 115 | 6 |
| 8710470 | 4,7 | 65 | 115 | 6 |
| 8710480 | 4,8 | 65 | 115 | 6 |
| 8710490 | 4,9 | 65 | 115 | 6 |
| 8710500 | 5 | 65 | 115 | 6 |
| 8710510 | 5,1 | 70 | 128 | 6 |
| 8710520 | 5,2 | 70 | 128 | 6 |
| 8710530 | 5,3 | 70 | 128 | 6 |
| 8710540 | 5,4 | 78 | 128 | 6 |
| 8696550 | 5,5 | 78 | 128 | 6 |
| 8710560 | 5,6 | 78 | 128 | 6 |
| 8710570 | 5,7 | 78 | 128 | 6 |
| 8710580 | 5,8 | 78 | 128 | 6 |
| 8710590 | 5,9 | 78 | 128 | 6 |
| 8696600 | 6 | 78 | 128 | 6 |
| 8710610 | 6,1 | 87 | 140 | 8 |
| 8710620 | 6,2 | 87 | 140 | 8 |
| 8710630 | 6,3 | 87 | 140 | 8 |
| 8710640 | 6,4 | 87 | 140 | 8 |
| 8710650 | 6,5 | 87 | 140 | 8 |

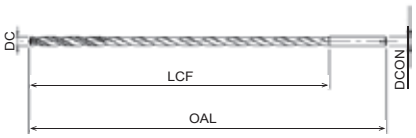
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8710660 | 6,6 | 87 | 140 | 8 |
| 8710670 | 6,7 | 87 | 140 | 8 |
| 8710680 | 6,8 | 90 | 140 | 8 |
| 8710690 | 6,9 | 90 | 140 | 8 |
| 8710700 | 7 | 90 | 140 | 8 |
| 8710710 | 7,1 | 100 | 155 | 8 |
| 8710720 | 7,2 | 100 | 155 | 8 |
| 8710730 | 7,3 | 100 | 155 | 8 |
| 8710740 | 7,4 | 100 | 155 | 8 |
| 8696750 | 7,5 | 100 | 155 | 8 |
| 8710760 | 7,6 | 105 | 155 | 8 |
| 8710770 | 7,7 | 105 | 155 | 8 |
| 8710780 | 7,8 | 105 | 155 | 8 |
| 8710790 | 7,9 | 105 | 155 | 8 |
| 8696800 | 8 | 105 | 155 | 8 |
| 8710810 | 8,1 | 110 | 165 | 10 |
| 8710820 | 8,2 | 110 | 165 | 10 |
| 8710830 | 8,3 | 110 | 165 | 10 |
| 8710840 | 8,4 | 110 | 165 | 10 |
| 8710850 | 8,5 | 110 | 165 | 10 |
| 8710860 | 8,6 | 115 | 165 | 10 |
| 8710870 | 8,7 | 115 | 165 | 10 |
| 8710880 | 8,8 | 115 | 165 | 10 |
| 8710890 | 8,9 | 115 | 165 | 10 |
| 8710900 | 9 | 115 | 165 | 10 |
| 8710910 | 9,1 | 125 | 190 | 10 |
| 8710920 | 9,2 | 125 | 190 | 10 |
| 8710930 | 9,3 | 125 | 190 | 10 |
| 8710940 | 9,4 | 125 | 190 | 10 |
| 8696950 | 9,5 | 125 | 190 | 10 |
| 8710960 | 9,6 | 130 | 190 | 10 |
| 8710970 | 9,7 | 130 | 190 | 10 |
| 8710980 | 9,8 | 130 | 190 | 10 |
| 8710990 | 9,9 | 130 | 190 | 10 |
| 8697000 | 10 | 130 | 190 | 10 |
| 8711010 | 10,1 | 140 | 205 | 12 |
| 8711020 | 10,2 | 140 | 205 | 12 |
| 8711030 | 10,3 | 140 | 205 | 12 |
| 8711040 | 10,4 | 140 | 205 | 12 |
| 8711050 | 10,5 | 140 | 205 | 12 |
| 8711060 | 10,6 | 140 | 205 | 12 |
| 8711070 | 10,7 | 140 | 205 | 12 |
| 8711080 | 10,8 | 145 | 205 | 12 |
| 8711090 | 10,9 | 145 | 205 | 12 |
| 8711100 | 11 | 145 | 205 | 12 |
| 8711110 | 11,1 | 155 | 215 | 12 |

# ADO-10D

**Drilling | Solid carbide | 10xD**

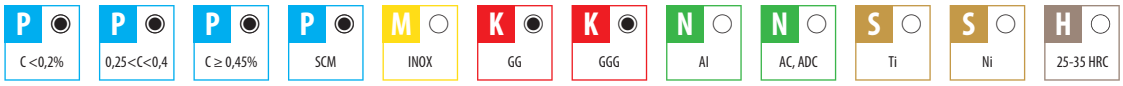
INDEX




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 10xD
- For general purpose steels and cast iron
- 102 sizes



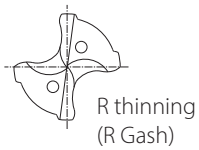
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8711120 | 11,2 | 155 | 215 | 12 |
| 8711130 | 11,3 | 155 | 215 | 12 |
| 8711140 | 11,4 | 155 | 215 | 12 |
| 8711150 | 11,5 | 155 | 215 | 12 |
| 8711160 | 11,6 | 155 | 215 | 12 |
| 8711170 | 11,7 | 155 | 215 | 12 |
| 8711180 | 11,8 | 155 | 215 | 12 |
| 8711190 | 11,9 | 155 | 215 | 12 |
| 8697200 | 12 | 155 | 215 | 12 |
| 8711250 | 12,5 | 155 | 215 | 14 |

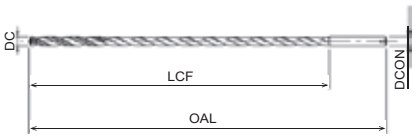
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-15D

**Drilling | Solid carbide | 15xD**

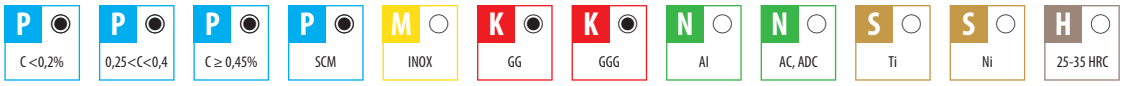
INDEX




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 15xD
- For general purpose steels and cast iron
- 102 sizes



| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48338120 | 2 | 36 | 90 | 3 |
| 48338121 | 2,1 | 38 | 90 | 3 |
| 48338122 | 2,2 | 40 | 90 | 3 |
| 48338123 | 2,3 | 42 | 90 | 3 |
| 48338124 | 2,4 | 44 | 90 | 3 |
| 48338125 | 2,5 | 45 | 96 | 3 |
| 48338126 | 2,6 | 47 | 96 | 3 |
| 48338127 | 2,7 | 49 | 96 | 3 |
| 48338128 | 2,8 | 51 | 96 | 3 |
| 48338129 | 2,9 | 53 | 96 | 3 |
| 8698300 | 3 | 55 | 105 | 3 |
| 8698310 | 3,1 | 60 | 125 | 4 |
| 8698320 | 3,2 | 60 | 125 | 4 |
| 8698330 | 3,3 | 60 | 125 | 4 |
| 8698340 | 3,4 | 65 | 125 | 4 |
| 8698350 | 3,5 | 65 | 125 | 4 |
| 8698360 | 3,6 | 65 | 125 | 4 |
| 8698370 | 3,7 | 65 | 125 | 4 |
| 8698380 | 3,8 | 75 | 125 | 4 |
| 8698390 | 3,9 | 75 | 125 | 4 |
| 8698400 | 4 | 75 | 125 | 4 |
| 8712410 | 4,1 | 75 | 140 | 6 |
| 8712420 | 4,2 | 75 | 140 | 6 |
| 8712430 | 4,3 | 85 | 140 | 6 |
| 8712440 | 4,4 | 85 | 140 | 6 |
| 8712450 | 4,5 | 85 | 140 | 6 |
| 8712460 | 4,6 | 85 | 140 | 6 |
| 8712470 | 4,7 | 85 | 140 | 6 |
| 8712480 | 4,8 | 90 | 140 | 6 |
| 8712490 | 4,9 | 90 | 140 | 6 |
| 8712500 | 5 | 90 | 140 | 6 |
| 8712510 | 5,1 | 95 | 160 | 6 |
| 8712520 | 5,2 | 95 | 160 | 6 |
| 8712530 | 5,3 | 95 | 160 | 6 |
| 8712540 | 5,4 | 110 | 160 | 6 |
| 8698550 | 5,5 | 110 | 160 | 6 |
| 8712560 | 5,6 | 110 | 160 | 6 |
| 8712570 | 5,7 | 110 | 160 | 6 |
| 8712580 | 5,8 | 110 | 160 | 6 |
| 8712590 | 5,9 | 110 | 160 | 6 |
| 8698600 | 6 | 110 | 160 | 6 |
| 8712610 | 6,1 | 120 | 175 | 8 |
| 8712620 | 6,2 | 120 | 175 | 8 |
| 8712630 | 6,3 | 120 | 175 | 8 |
| 8712640 | 6,4 | 120 | 175 | 8 |
| 8712650 | 6,5 | 120 | 175 | 8 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8712660 | 6,6 | 120 | 175 | 8 |
| 8712670 | 6,7 | 120 | 175 | 8 |
| 8712680 | 6,8 | 125 | 175 | 8 |
| 8712690 | 6,9 | 125 | 175 | 8 |
| 8712700 | 7 | 125 | 175 | 8 |
| 8712710 | 7,1 | 135 | 195 | 8 |
| 8712720 | 7,2 | 135 | 195 | 8 |
| 8712730 | 7,3 | 135 | 195 | 8 |
| 8712740 | 7,4 | 135 | 195 | 8 |
| 8698750 | 7,5 | 135 | 195 | 8 |
| 8712760 | 7,6 | 145 | 195 | 8 |
| 8712770 | 7,7 | 145 | 195 | 8 |
| 8712780 | 7,8 | 145 | 195 | 8 |
| 8712790 | 7,9 | 145 | 195 | 8 |
| 8698800 | 8 | 145 | 195 | 8 |
| 8712810 | 8,1 | 155 | 210 | 10 |
| 8712820 | 8,2 | 155 | 210 | 10 |
| 8712830 | 8,3 | 155 | 210 | 10 |
| 8712840 | 8,4 | 155 | 210 | 10 |
| 8712850 | 8,5 | 155 | 210 | 10 |
| 8712860 | 8,6 | 160 | 210 | 10 |
| 8712870 | 8,7 | 160 | 210 | 10 |
| 8712880 | 8,8 | 160 | 210 | 10 |
| 8712890 | 8,9 | 160 | 210 | 10 |
| 8712900 | 9 | 160 | 210 | 10 |
| 8712910 | 9,1 | 170 | 240 | 10 |
| 8712920 | 9,2 | 170 | 240 | 10 |
| 8712930 | 9,3 | 170 | 240 | 10 |
| 8712940 | 9,4 | 170 | 240 | 10 |
| 8698950 | 9,5 | 170 | 240 | 10 |
| 8712960 | 9,6 | 180 | 240 | 10 |
| 8712970 | 9,7 | 180 | 240 | 10 |
| 8712980 | 9,8 | 180 | 240 | 10 |
| 8712990 | 9,9 | 180 | 240 | 10 |
| 8699000 | 10 | 180 | 240 | 10 |
| 8713010 | 10,1 | 190 | 260 | 12 |
| 8713020 | 10,2 | 190 | 260 | 12 |
| 8713030 | 10,3 | 190 | 260 | 12 |
| 8713040 | 10,4 | 190 | 260 | 12 |
| 8713050 | 10,5 | 190 | 260 | 12 |
| 8713060 | 10,6 | 190 | 260 | 12 |
| 8713070 | 10,7 | 200 | 260 | 12 |
| 8713080 | 10,8 | 200 | 260 | 12 |
| 8713090 | 10,9 | 200 | 260 | 12 |
| 8713100 | 11 | 200 | 260 | 12 |
| 8713110 | 11,1 | 210 | 280 | 12 |

# ADO-15D

**Drilling | Solid carbide | 15xD**

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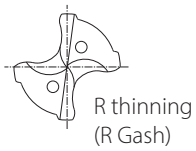


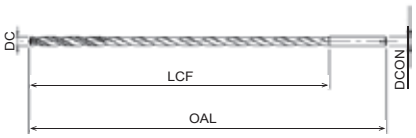


Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 15xD
- For general purpose steels and cast iron
- 102 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | e8 | B.500

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8713120 | 11,2 | 210 | 280 | 12 |
| 8713130 | 11,3 | 210 | 280 | 12 |
| 8713140 | 11,4 | 210 | 280 | 12 |
| 8713150 | 11,5 | 210 | 280 | 12 |
| 8713160 | 11,6 | 210 | 280 | 12 |
| 8713170 | 11,7 | 210 | 280 | 12 |
| 8713180 | 11,8 | 210 | 280 | 12 |
| 8713190 | 11,9 | 215 | 280 | 12 |
| 8699200 | 12 | 215 | 280 | 12 |
| 8713250 | 12,5 | 225 | 290 | 14 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-20D

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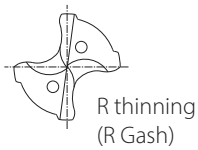
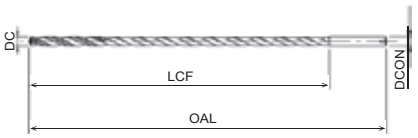
**Drilling | Solid carbide | 20xD**

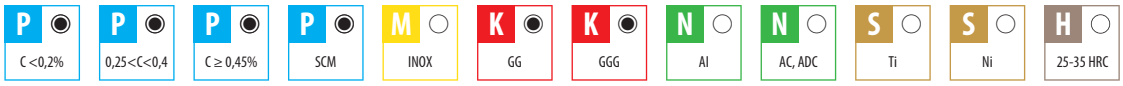


R thinning
(R Gash)




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 20xD
- For general purpose steels and cast iron
- 102 sizes



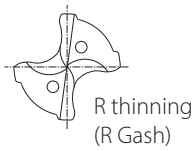
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48338220 | 2 | 46 | 100 | 3 |
| 48338221 | 2,1 | 49 | 100 | 3 |
| 48338222 | 2,2 | 51 | 100 | 3 |
| 48338223 | 2,3 | 53 | 100 | 3 |
| 48338224 | 2,4 | 56 | 100 | 3 |
| 48338225 | 2,5 | 58 | 109 | 3 |
| 48338226 | 2,6 | 60 | 109 | 3 |
| 48338227 | 2,7 | 63 | 109 | 3 |
| 48338228 | 2,8 | 65 | 109 | 3 |
| 48338229 | 2,9 | 67 | 109 | 3 |
| 8706300 | 3 | 70 | 120 | 3 |
| 8706310 | 3,1 | 80 | 140 | 4 |
| 8706320 | 3,2 | 80 | 140 | 4 |
| 8706330 | 3,3 | 80 | 140 | 4 |
| 8706340 | 3,4 | 85 | 140 | 4 |
| 8706350 | 3,5 | 85 | 140 | 4 |
| 8706360 | 3,6 | 85 | 140 | 4 |
| 8706370 | 3,7 | 85 | 140 | 4 |
| 8706380 | 3,8 | 90 | 140 | 4 |
| 8706390 | 3,9 | 90 | 140 | 4 |
| 8706400 | 4 | 90 | 140 | 4 |
| 8714410 | 4,1 | 100 | 165 | 6 |
| 8714420 | 4,2 | 100 | 165 | 6 |
| 8714430 | 4,3 | 110 | 165 | 6 |
| 8714440 | 4,4 | 110 | 165 | 6 |
| 8714450 | 4,5 | 110 | 165 | 6 |
| 8714460 | 4,6 | 110 | 165 | 6 |
| 8714470 | 4,7 | 110 | 165 | 6 |
| 8714480 | 4,8 | 115 | 165 | 6 |
| 8714490 | 4,9 | 115 | 165 | 6 |
| 8714500 | 5 | 115 | 165 | 6 |
| 8714510 | 5,1 | 120 | 190 | 6 |
| 8714520 | 5,2 | 120 | 190 | 6 |
| 8714530 | 5,3 | 120 | 190 | 6 |
| 8714540 | 5,4 | 140 | 190 | 6 |
| 8706550 | 5,5 | 140 | 190 | 6 |
| 8714560 | 5,6 | 140 | 190 | 6 |
| 8714570 | 5,7 | 140 | 190 | 6 |
| 8714580 | 5,8 | 140 | 190 | 6 |
| 8714590 | 5,9 | 140 | 190 | 6 |
| 8706600 | 6 | 140 | 190 | 6 |
| 8714610 | 6,1 | 155 | 210 | 8 |
| 8714620 | 6,2 | 155 | 210 | 8 |
| 8714630 | 6,3 | 155 | 210 | 8 |
| 8714640 | 6,4 | 155 | 210 | 8 |
| 8714650 | 6,5 | 155 | 210 | 8 |

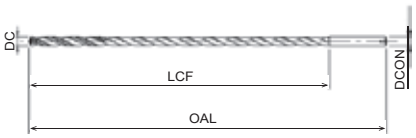
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8714660 | 6,6 | 155 | 210 | 8 |
| 8714670 | 6,7 | 155 | 210 | 8 |
| 8714680 | 6,8 | 160 | 210 | 8 |
| 8714690 | 6,9 | 160 | 210 | 8 |
| 8714700 | 7 | 160 | 210 | 8 |
| 8714710 | 7,1 | 170 | 230 | 8 |
| 8714720 | 7,2 | 170 | 230 | 8 |
| 8714730 | 7,3 | 170 | 230 | 8 |
| 8714740 | 7,4 | 170 | 230 | 8 |
| 8706750 | 7,5 | 170 | 230 | 8 |
| 8714760 | 7,6 | 180 | 230 | 8 |
| 8714770 | 7,7 | 180 | 230 | 8 |
| 8714780 | 7,8 | 180 | 230 | 8 |
| 8714790 | 7,9 | 180 | 230 | 8 |
| 8706800 | 8 | 180 | 230 | 8 |
| 8714810 | 8,1 | 195 | 260 | 10 |
| 8714820 | 8,2 | 195 | 260 | 10 |
| 8714830 | 8,3 | 195 | 260 | 10 |
| 8714840 | 8,4 | 195 | 260 | 10 |
| 8714850 | 8,5 | 195 | 260 | 10 |
| 8714860 | 8,6 | 210 | 260 | 10 |
| 8714870 | 8,7 | 210 | 260 | 10 |
| 8714880 | 8,8 | 210 | 260 | 10 |
| 8714890 | 8,9 | 210 | 260 | 10 |
| 8714900 | 9 | 210 | 260 | 10 |
| 8714910 | 9,1 | 220 | 290 | 10 |
| 8714920 | 9,2 | 220 | 290 | 10 |
| 8714930 | 9,3 | 220 | 290 | 10 |
| 8714940 | 9,4 | 220 | 290 | 10 |
| 8706950 | 9,5 | 220 | 290 | 10 |
| 8714960 | 9,6 | 230 | 290 | 10 |
| 8714970 | 9,7 | 230 | 290 | 10 |
| 8714980 | 9,8 | 230 | 290 | 10 |
| 8714990 | 9,9 | 230 | 290 | 10 |
| 8707000 | 10 | 230 | 290 | 10 |
| 8715010 | 10,1 | 250 | 310 | 12 |
| 8715020 | 10,2 | 250 | 310 | 12 |
| 8715030 | 10,3 | 250 | 310 | 12 |
| 8715040 | 10,4 | 250 | 310 | 12 |
| 8715050 | 10,5 | 250 | 310 | 12 |
| 8715060 | 10,6 | 250 | 310 | 12 |
| 8715070 | 10,7 | 250 | 310 | 12 |
| 8715080 | 10,8 | 250 | 310 | 12 |
| 8715090 | 10,9 | 250 | 310 | 12 |
| 8715100 | 11 | 250 | 310 | 12 |
| 8715110 | 11,1 | 270 | 330 | 12 |

# ADO-20D



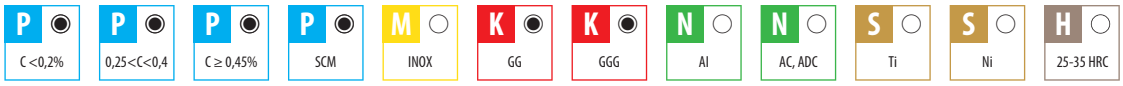
**Drilling | Solid carbide | 20xD**




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 20xD
- For general purpose steels and cast iron
- 102 sizes



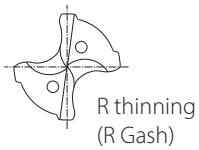
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8715120 | 11,2 | 270 | 330 | 12 |
| 8715130 | 11,3 | 270 | 330 | 12 |
| 8715140 | 11,4 | 270 | 330 | 12 |
| 8715150 | 11,5 | 270 | 330 | 12 |
| 8715160 | 11,6 | 270 | 330 | 12 |
| 8715170 | 11,7 | 270 | 330 | 12 |
| 8715180 | 11,8 | 270 | 330 | 12 |
| 8715190 | 11,9 | 270 | 330 | 12 |
| 8707200 | 12 | 270 | 330 | 12 |
| 8715250 | 12,5 | 280 | 330 | 14 |

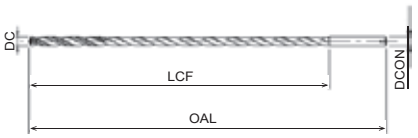
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADO-25D

**Drilling | Solid carbide | 25xD**

INDEX




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 25xD
- For general purpose steels and cast iron
- 92 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | e8 | B.500

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48338325 | 2,5 | 70 | 121 | 3 |
| 8726300 | 3 | 85 | 135 | 3 |
| 8724310 | 3,1 | 95 | 165 | 4 |
| 8724320 | 3,2 | 95 | 165 | 4 |
| 8724330 | 3,3 | 95 | 165 | 4 |
| 8724340 | 3,4 | 105 | 165 | 4 |
| 8724350 | 3,5 | 105 | 165 | 4 |
| 8724360 | 3,6 | 105 | 165 | 4 |
| 8724370 | 3,7 | 105 | 165 | 4 |
| 8724380 | 3,8 | 115 | 165 | 4 |
| 8724390 | 3,9 | 115 | 165 | 4 |
| 8724400 | 4 | 115 | 165 | 4 |
| 8724410 | 4,1 | 120 | 190 | 6 |
| 8724420 | 4,2 | 120 | 190 | 6 |
| 8724430 | 4,3 | 135 | 190 | 6 |
| 8724440 | 4,4 | 135 | 190 | 6 |
| 8724450 | 4,5 | 135 | 190 | 6 |
| 8724460 | 4,6 | 135 | 190 | 6 |
| 8724470 | 4,7 | 135 | 190 | 6 |
| 8724480 | 4,8 | 140 | 190 | 6 |
| 8724490 | 4,9 | 140 | 190 | 6 |
| 8724500 | 5 | 140 | 190 | 6 |
| 8724510 | 5,1 | 150 | 220 | 6 |
| 8724520 | 5,2 | 150 | 220 | 6 |
| 8724530 | 5,3 | 150 | 220 | 6 |
| 8724540 | 5,4 | 170 | 220 | 6 |
| 8724550 | 5,5 | 170 | 220 | 6 |
| 8724560 | 5,6 | 170 | 220 | 6 |
| 8724570 | 5,7 | 170 | 220 | 6 |
| 8724580 | 5,8 | 170 | 220 | 6 |
| 8724590 | 5,9 | 170 | 220 | 6 |
| 8724600 | 6 | 170 | 220 | 6 |
| 8724610 | 6,1 | 190 | 250 | 8 |
| 8724620 | 6,2 | 190 | 250 | 8 |
| 8724630 | 6,3 | 190 | 250 | 8 |
| 8724640 | 6,4 | 190 | 250 | 8 |
| 8724650 | 6,5 | 190 | 250 | 8 |
| 8724660 | 6,6 | 190 | 250 | 8 |
| 8724670 | 6,7 | 190 | 250 | 8 |
| 8724680 | 6,8 | 200 | 250 | 8 |
| 8724690 | 6,9 | 200 | 250 | 8 |
| 8724700 | 7 | 200 | 250 | 8 |
| 8724710 | 7,1 | 210 | 275 | 8 |
| 8724720 | 7,2 | 210 | 275 | 8 |
| 8724730 | 7,3 | 210 | 275 | 8 |
| 8724740 | 7,4 | 210 | 275 | 8 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8724750 | 7,5 | 210 | 275 | 8 |
| 8724760 | 7,6 | 225 | 275 | 8 |
| 8724770 | 7,7 | 225 | 275 | 8 |
| 8724780 | 7,8 | 225 | 275 | 8 |
| 8724790 | 7,9 | 225 | 275 | 8 |
| 8724800 | 8 | 225 | 275 | 8 |
| 8724810 | 8,1 | 240 | 305 | 10 |
| 8724820 | 8,2 | 240 | 305 | 10 |
| 8724830 | 8,3 | 240 | 305 | 10 |
| 8724840 | 8,4 | 240 | 305 | 10 |
| 8724850 | 8,5 | 240 | 305 | 10 |
| 8724860 | 8,6 | 255 | 305 | 10 |
| 8724870 | 8,7 | 255 | 305 | 10 |
| 8724880 | 8,8 | 255 | 305 | 10 |
| 8724890 | 8,9 | 255 | 305 | 10 |
| 8724900 | 9 | 255 | 305 | 10 |
| 8724910 | 9,1 | 270 | 340 | 10 |
| 8724920 | 9,2 | 270 | 340 | 10 |
| 8724930 | 9,3 | 270 | 340 | 10 |
| 8724940 | 9,4 | 270 | 340 | 10 |
| 8724950 | 9,5 | 270 | 340 | 10 |
| 8724960 | 9,6 | 280 | 340 | 10 |
| 8724970 | 9,7 | 280 | 340 | 10 |
| 8724980 | 9,8 | 280 | 340 | 10 |
| 8724990 | 9,9 | 280 | 340 | 10 |
| 8725000 | 10 | 280 | 340 | 10 |
| 8725010 | 10,1 | 310 | 370 | 12 |
| 8725020 | 10,2 | 310 | 370 | 12 |
| 8725030 | 10,3 | 310 | 370 | 12 |
| 8725040 | 10,4 | 310 | 370 | 12 |
| 8725050 | 10,5 | 310 | 370 | 12 |
| 8725060 | 10,6 | 310 | 370 | 12 |
| 8725070 | 10,7 | 310 | 370 | 12 |
| 8725080 | 10,8 | 310 | 370 | 12 |
| 8725090 | 10,9 | 310 | 370 | 12 |
| 8725100 | 11 | 310 | 370 | 12 |
| 8725110 | 11,1 | 340 | 400 | 12 |
| 8725120 | 11,2 | 340 | 400 | 12 |
| 8725130 | 11,3 | 340 | 400 | 12 |
| 8725140 | 11,4 | 340 | 400 | 12 |
| 8725150 | 11,5 | 340 | 400 | 12 |
| 8725160 | 11,6 | 340 | 400 | 12 |
| 8725170 | 11,7 | 340 | 400 | 12 |
| 8725180 | 11,8 | 340 | 400 | 12 |
| 8725190 | 11,9 | 340 | 400 | 12 |
| 8725200 | 12 | 340 | 400 | 12 |

# ADO-30D

**Drilling | Solid carbide | 30xD**

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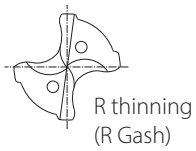


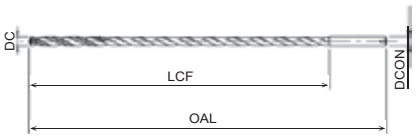


Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 30xD
- For general purpose steels and cast iron
- 81 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | e8 | B.500

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48338420 | 2 | 66 | 120 | 3 |
| 48338421 | 2,1 | 70 | 120 | 3 |
| 48338422 | 2,2 | 73 | 120 | 3 |
| 48338423 | 2,3 | 76 | 120 | 3 |
| 48338424 | 2,4 | 80 | 120 | 3 |
| 48338425 | 2,5 | 83 | 134 | 3 |
| 48338426 | 2,6 | 86 | 134 | 3 |
| 48338427 | 2,7 | 90 | 134 | 3 |
| 48338428 | 2,8 | 93 | 134 | 3 |
| 48338429 | 2,9 | 96 | 134 | 3 |
| 8708300 | 3 | 100 | 150 | 3 |
| 8708310 | 3,1 | 102 | 185 | 4 |
| 8708320 | 3,2 | 105 | 185 | 4 |
| 8708330 | 3,3 | 109 | 185 | 4 |
| 8708340 | 3,4 | 112 | 185 | 4 |
| 8708350 | 3,5 | 116 | 185 | 4 |
| 8708360 | 3,6 | 116 | 185 | 4 |
| 8708370 | 3,7 | 116 | 185 | 4 |
| 8708380 | 3,8 | 132 | 185 | 4 |
| 8708390 | 3,9 | 132 | 185 | 4 |
| 8708400 | 4 | 132 | 185 | 4 |
| 8716410 | 4,1 | 140 | 215 | 6 |
| 8716420 | 4,2 | 140 | 215 | 6 |
| 8716430 | 4,3 | 150 | 215 | 6 |
| 8716440 | 4,4 | 150 | 215 | 6 |
| 8716450 | 4,5 | 150 | 215 | 6 |
| 8716460 | 4,6 | 150 | 215 | 6 |
| 8716470 | 4,7 | 150 | 215 | 6 |
| 8716480 | 4,8 | 165 | 215 | 6 |
| 8716490 | 4,9 | 165 | 215 | 6 |
| 8716500 | 5 | 165 | 215 | 6 |
| 8716510 | 5,1 | 180 | 250 | 6 |
| 8716520 | 5,2 | 180 | 250 | 6 |
| 8716530 | 5,3 | 180 | 250 | 6 |
| 8716540 | 5,4 | 200 | 250 | 6 |
| 8708550 | 5,5 | 200 | 250 | 6 |
| 8716560 | 5,6 | 200 | 250 | 6 |
| 8716570 | 5,7 | 200 | 250 | 6 |
| 8716580 | 5,8 | 200 | 250 | 6 |
| 8716590 | 5,9 | 200 | 250 | 6 |
| 8708600 | 6 | 200 | 250 | 6 |
| 8716610 | 6,1 | 215 | 280 | 8 |
| 8716620 | 6,2 | 215 | 280 | 8 |
| 8716630 | 6,3 | 215 | 280 | 8 |
| 8716640 | 6,4 | 215 | 280 | 8 |
| 8716650 | 6,5 | 215 | 280 | 8 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8716660 | 6,6 | 215 | 280 | 8 |
| 8716670 | 6,7 | 215 | 280 | 8 |
| 8716680 | 6,8 | 230 | 280 | 8 |
| 8716690 | 6,9 | 230 | 280 | 8 |
| 8716700 | 7 | 230 | 280 | 8 |
| 8716710 | 7,1 | 250 | 315 | 8 |
| 8716720 | 7,2 | 250 | 315 | 8 |
| 8716730 | 7,3 | 250 | 315 | 8 |
| 8716740 | 7,4 | 250 | 315 | 8 |
| 8708750 | 7,5 | 250 | 315 | 8 |
| 8716760 | 7,6 | 265 | 315 | 8 |
| 8716770 | 7,7 | 265 | 315 | 8 |
| 8716780 | 7,8 | 265 | 315 | 8 |
| 8716790 | 7,9 | 265 | 315 | 8 |
| 8708800 | 8 | 265 | 315 | 8 |
| 8716810 | 8,1 | 280 | 350 | 10 |
| 8716820 | 8,2 | 280 | 350 | 10 |
| 8716830 | 8,3 | 280 | 350 | 10 |
| 8716840 | 8,4 | 280 | 350 | 10 |
| 8716850 | 8,5 | 280 | 350 | 10 |
| 8716860 | 8,6 | 300 | 350 | 10 |
| 8716870 | 8,7 | 300 | 350 | 10 |
| 8716880 | 8,8 | 300 | 350 | 10 |
| 8716890 | 8,9 | 300 | 350 | 10 |
| 8716900 | 9 | 300 | 350 | 10 |
| 8716910 | 9,1 | 315 | 390 | 10 |
| 8716920 | 9,2 | 315 | 390 | 10 |
| 8716930 | 9,3 | 315 | 390 | 10 |
| 8716940 | 9,4 | 315 | 390 | 10 |
| 8708950 | 9,5 | 315 | 390 | 10 |
| 8716960 | 9,6 | 330 | 390 | 10 |
| 8716970 | 9,7 | 330 | 390 | 10 |
| 8716980 | 9,8 | 330 | 390 | 10 |
| 8716990 | 9,9 | 330 | 390 | 10 |
| 8709000 | 10 | 330 | 390 | 10 |

# ADO-40D

**Drilling | Solid carbide | 40xD**

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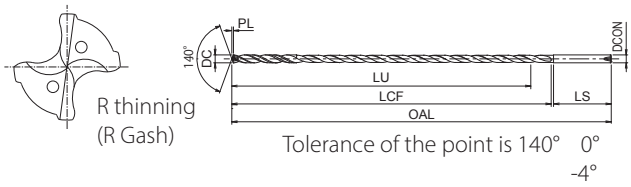


- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 40xD
- For general purpose steels and cast iron
- 23 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | ±25° | SHRINK FIT | 140° | e8 -0.01 | B.500

| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 8717300 | 3 | 120 | 129 | 179 | 3 |
| 8717320 | 3,2 | 128 | 138 | 188 | 4 |
| 8717350 | 3,5 | 140 | 151 | 210 | 4 |
| 8717400 | 4 | 160 | 172 | 222 | 4 |
| 8717450 | 4,5 | 180 | 194 | 256 | 6 |
| 8717480 | 4,8 | 192 | 207 | 265 | 6 |
| 8717500 | 5 | 200 | 215 | 265 | 5 |
| 8719501 | 5 | 200 | 215 | 265 | 6 |
| 8717550 | 5,5 | 220 | 237 | 296 | 6 |
| 8717600 | 6 | 240 | 258 | 308 | 6 |
| 8717630 | 6,3 | 252 | 271 | 329 | 8 |
| 8717635 | 6,35 | 254 | 274 | 329 | 8 |
| 8717650 | 6,5 | 260 | 280 | 342 | 8 |
| 8717680 | 6,8 | 272 | 293 | 351 | 8 |
| 8717700 | 7 | 280 | 301 | 351 | 8 |
| 8717750 | 7,5 | 300 | 323 | 382 | 8 |
| 8717790 | 7,9 | 316 | 340 | 394 | 8 |
| 8717800 | 8 | 320 | 344 | 394 | 8 |
| 8717820 | 8,2 | 328 | 353 | 408 | 10 |
| 8717830 | 8,3 | 332 | 357 | 417 | 10 |
| 8717850 | 8,5 | 340 | 366 | 430 | 10 |
| 8717900 | 9 | 360 | 387 | 442 | 10 |
| 8718000 | 10 | 400 | 430 | 490 | 10 |

| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|

# ADO-50D

**Drilling | Solid carbide | 50xD**

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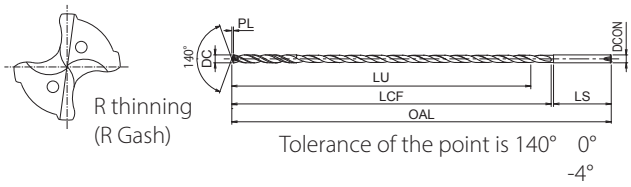


- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- Double margin, up to 50xD
- For general purpose steels and cast iron
- 26 sizes

| P | P | P | P | M | K | K | N | N | S | S | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | Al | AC, ADC | Ti | Ni | 25-35 HRC |

A | CARBIDE | EgiAs | ±25° | SHRINK FIT | 140° | e8 -0.01 | B.500

| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 8718300 | 3 | 150 | 159 | 209 | 3 |
| 8718301 | 3,175 | 159 | 169 | 220 | 4 |
| 8718320 | 3,2 | 160 | 170 | 220 | 4 |
| 8718350 | 3,5 | 175 | 186 | 247 | 4 |
| 8718400 | 4 | 200 | 212 | 262 | 4 |
| 8718450 | 4,5 | 225 | 239 | 303 | 6 |
| 8718500 | 5 | 250 | 265 | 315 | 5 |
| 8718501 | 5 | 250 | 265 | 315 | 6 |
| 8718540 | 5,4 | 270 | 287 | 337 | 6 |
| 8718550 | 5,5 | 275 | 292 | 353 | 6 |
| 8718570 | 5,7 | 285 | 303 | 353 | 6 |
| 8718600 | 6 | 300 | 318 | 368 | 6 |
| 8718620 | 6,2 | 310 | 329 | 382 | 8 |
| 8718630 | 6,3 | 315 | 334 | 393 | 8 |
| 8718635 | 6,35 | 318 | 337 | 393 | 8 |
| 8718640 | 6,4 | 320 | 340 | 393 | 8 |
| 8718650 | 6,5 | 325 | 345 | 409 | 8 |
| 8718680 | 6,8 | 340 | 361 | 421 | 8 |
| 8718700 | 7 | 350 | 371 | 421 | 8 |
| 8718750 | 7,5 | 375 | 398 | 459 | 8 |
| 8718770 | 7,7 | 385 | 409 | 459 | 8 |
| 8718800 | 8 | 400 | 424 | 474 | 8 |
| 8718820 | 8,2 | 410 | 435 | 490 | 10 |
| 8718830 | 8,3 | 415 | 440 | 500 | 10 |
| 8718840 | 8,4 | 420 | 446 | 500 | 10 |
| 8718850 | 8,5 | 425 | 450 | 500 | 10 |

| EDP | DC | LU | LCF | OAL | DCON |
|---|---|---|---|---|---|

# ADOX-3D

**Drilling | Solid carbide | 3xD**

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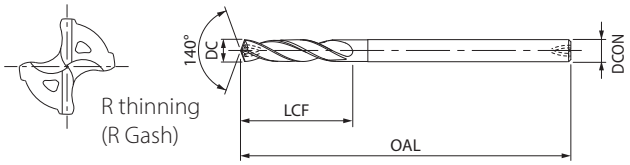
**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Mega Cooler oil hole for optimized coolant flow

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8

B.515

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8733200 | 2 | 12 | 66 | 3 |
| 8733230 | 2,3 | 14 | 66 | 3 |
| 8733250 | 2,5 | 15 | 66 | 3 |
| 8733260 | 2,6 | 16 | 66 | 3 |
| 8733276 | 2,76 | 17 | 66 | 3 |
| 8733278 | 2,78 | 17 | 66 | 3 |
| 8733280 | 2,8 | 17 | 66 | 3 |
| 8733290 | 2,9 | 18 | 66 | 3 |
| 8733300 | 3 | 18 | 66 | 3 |
| 8733320 | 3,2 | 20 | 74 | 4 |
| 8733330 | 3,3 | 20 | 74 | 4 |
| 8733340 | 3,4 | 21 | 74 | 4 |
| 8733350 | 3,5 | 21 | 74 | 4 |
| 8733360 | 3,6 | 22 | 74 | 4 |
| 8733366 | 3,66 | 22 | 74 | 4 |
| 8733368 | 3,68 | 23 | 74 | 4 |
| 8733370 | 3,7 | 23 | 74 | 4 |
| 8733375 | 3,75 | 23 | 74 | 4 |
| 8733390 | 3,9 | 24 | 74 | 4 |
| 8733420 | 4,2 | 26 | 80 | 6 |
| 8733430 | 4,3 | 26 | 80 | 6 |
| 8733450 | 4,5 | 27 | 80 | 6 |
| 8733460 | 4,6 | 28 | 80 | 6 |
| 8733462 | 4,62 | 28 | 80 | 6 |
| 8733464 | 4,64 | 28 | 80 | 6 |
| 8733490 | 4,9 | 30 | 80 | 6 |
| 8733500 | 5 | 25 | 80 | 6 |
| 8733510 | 5,1 | 26 | 82 | 6 |
| 8733520 | 5,2 | 26 | 82 | 6 |
| 8733525 | 5,25 | 27 | 82 | 6 |
| 8733552 | 5,52 | 28 | 82 | 6 |
| 8733554 | 5,54 | 28 | 82 | 6 |
| 8733560 | 5,6 | 28 | 82 | 6 |
| 8733600 | 6 | 30 | 82 | 6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-5D

**Drilling | Solid carbide | 5xD**

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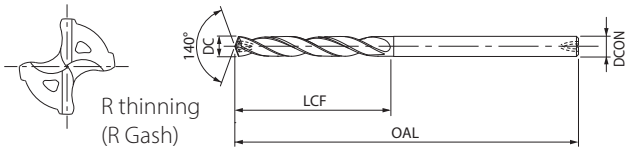
**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Mega Cooler oil hole for optimized coolant flow

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8 | B.515

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8734200 | 2 | 18 | 70 | 3 |
| 8734230 | 2,3 | 21 | 70 | 3 |
| 8734250 | 2,5 | 23 | 70 | 3 |
| 8734260 | 2,6 | 24 | 78 | 3 |
| 8734270 | 2,7 | 25 | 78 | 3 |
| 8734280 | 2,8 | 26 | 78 | 3 |
| 8734290 | 2,9 | 27 | 78 | 3 |
| 8734300 | 3 | 27 | 78 | 3 |
| 8734320 | 3,2 | 29 | 86 | 4 |
| 8734330 | 3,3 | 30 | 86 | 4 |
| 8734340 | 3,4 | 31 | 86 | 4 |
| 8734350 | 3,5 | 32 | 86 | 4 |
| 8734360 | 3,6 | 33 | 86 | 4 |
| 8734380 | 3,8 | 35 | 86 | 4 |
| 8734390 | 3,9 | 36 | 86 | 4 |
| 8734400 | 4 | 36 | 86 | 4 |
| 8734410 | 4,1 | 37 | 95 | 6 |
| 8734420 | 4,2 | 38 | 95 | 6 |
| 8734430 | 4,3 | 39 | 95 | 6 |
| 8734450 | 4,5 | 41 | 95 | 6 |
| 8734460 | 4,6 | 42 | 95 | 6 |
| 8734480 | 4,8 | 44 | 95 | 6 |
| 8734490 | 4,9 | 45 | 95 | 6 |
| 8734500 | 5 | 45 | 95 | 6 |
| 8734510 | 5,1 | 41 | 100 | 6 |
| 8734520 | 5,2 | 42 | 100 | 6 |
| 8734530 | 5,3 | 43 | 100 | 6 |
| 8734550 | 5,5 | 44 | 100 | 6 |
| 8734560 | 5,6 | 45 | 100 | 6 |
| 8734580 | 5,8 | 47 | 100 | 6 |
| 8734600 | 6 | 48 | 100 | 6 |

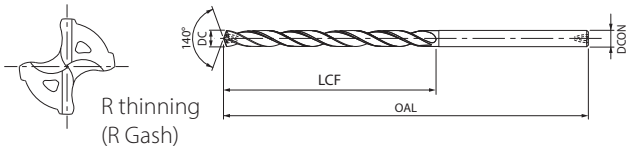
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-8D

**Drilling | Solid carbide | 8xD**

INDEX

**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | h8 | B.515

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8735200 | 2 | 22 | 75 | 3 |
| 8735210 | 2,1 | 24 | 75 | 3 |
| 8735220 | 2,2 | 25 | 75 | 3 |
| 8735230 | 2,3 | 26 | 75 | 3 |
| 8735280 | 2,8 | 31 | 80 | 3 |
| 8735300 | 3 | 33 | 80 | 3 |
| 8735330 | 3,3 | 36 | 95 | 4 |
| 8735340 | 3,4 | 37 | 95 | 4 |
| 8735380 | 3,8 | 42 | 95 | 4 |
| 8735500 | 5 | 55 | 105 | 6 |
| 8735540 | 5,4 | 59 | 115 | 6 |
| 8735550 | 5,5 | 61 | 115 | 6 |
| 8735600 | 6 | 66 | 115 | 6 |

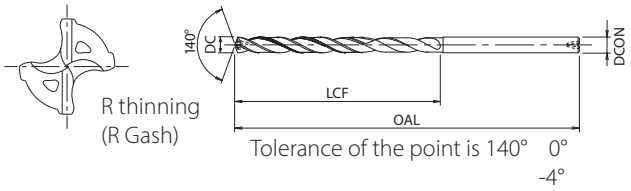
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-10D

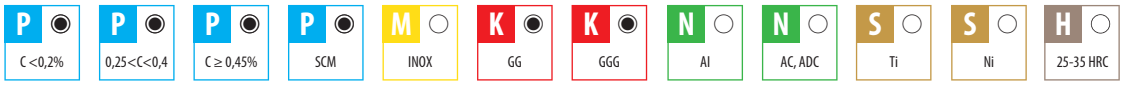
**Drilling | Solid carbide | 10xD**

INDEX

**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow



| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8736240 | 2,4 | 33 | 75 | 3 |
| 8736250 | 2,5 | 33 | 75 | 3 |
| 8736260 | 2,6 | 40 | 90 | 3 |
| 8736280 | 2,8 | 40 | 90 | 3 |
| 8736290 | 2,9 | 40 | 90 | 3 |
| 8736300 | 3 | 40 | 90 | 3 |
| 8736310 | 3,1 | 45 | 100 | 4 |
| 8736320 | 3,2 | 45 | 100 | 4 |
| 8736330 | 3,3 | 45 | 100 | 4 |
| 8736340 | 3,4 | 50 | 100 | 4 |
| 8736370 | 3,7 | 50 | 100 | 4 |
| 8736380 | 3,8 | 50 | 100 | 4 |
| 8736400 | 4 | 50 | 100 | 4 |
| 8736420 | 4,2 | 55 | 115 | 6 |
| 8736430 | 4,3 | 60 | 115 | 6 |
| 8736440 | 4,4 | 60 | 115 | 6 |
| 8736470 | 4,7 | 65 | 115 | 6 |
| 8736480 | 4,8 | 65 | 115 | 6 |
| 8736500 | 5 | 65 | 115 | 6 |
| 8736530 | 5,3 | 70 | 128 | 6 |
| 8736560 | 5,6 | 78 | 128 | 6 |
| 8736600 | 6 | 78 | 128 | 6 |

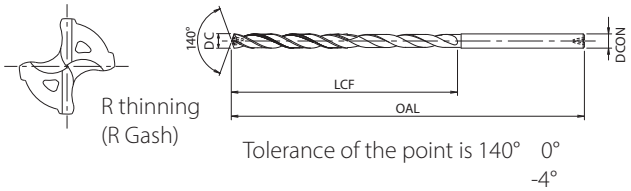
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-15D

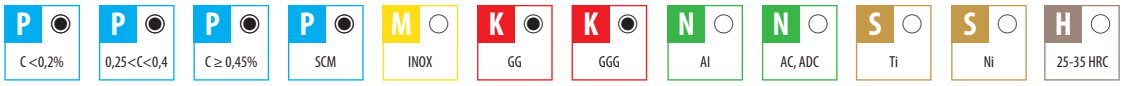
**Drilling | Solid carbide | 15xD**

INDEX

**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow



| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8737230 | 2,3 | 42 | 90 | 3 |
| 8737240 | 2,4 | 44 | 90 | 3 |
| 8737250 | 2,5 | 45 | 96 | 3 |
| 8737260 | 2,6 | 47 | 96 | 3 |
| 8737270 | 2,7 | 49 | 96 | 3 |
| 8737280 | 2,8 | 51 | 96 | 3 |
| 8737290 | 2,9 | 53 | 96 | 3 |
| 8737300 | 3 | 55 | 105 | 3 |
| 8737310 | 3,1 | 60 | 125 | 4 |
| 8737320 | 3,2 | 60 | 125 | 4 |
| 8737330 | 3,3 | 60 | 125 | 4 |
| 8737350 | 3,5 | 65 | 125 | 4 |
| 8737360 | 3,6 | 65 | 125 | 4 |
| 8737400 | 4 | 75 | 125 | 4 |
| 8737420 | 4,2 | 75 | 140 | 6 |
| 8737430 | 4,3 | 85 | 140 | 6 |
| 8737470 | 4,7 | 85 | 140 | 6 |
| 8737480 | 4,8 | 90 | 140 | 6 |
| 8737490 | 4,9 | 90 | 140 | 6 |
| 8737510 | 5,1 | 95 | 160 | 6 |
| 8737520 | 5,2 | 95 | 160 | 6 |
| 8737550 | 5,5 | 110 | 160 | 6 |
| 8737580 | 5,8 | 110 | 160 | 6 |
| 8737600 | 6 | 110 | 160 | 6 |

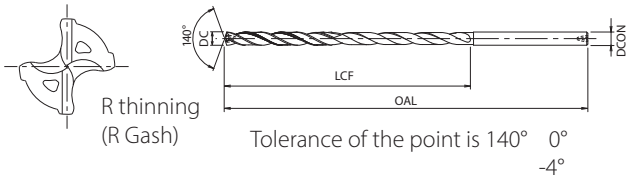
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-20D

**Drilling | Solid carbide | 20xD**

INDEX

**NEW**




- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow

| P ◉ | P ◉ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | N ○ | N ○ | S ○ | S ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | Al | AC, ADC | Ti | Ni | 25-35 HRC |

| A | CARBIDE | EgiAs | 30° | SHRINK FIT | | 140° | e8 | B.515 |
|---|---|---|---|---|---|---|---|---|

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8738230 | 2,3 | 53 | 100 | 3 |
| 8738240 | 2,4 | 56 | 100 | 3 |
| 8738250 | 2,5 | 58 | 109 | 3 |
| 8738260 | 2,6 | 60 | 109 | 3 |
| 8738270 | 2,7 | 63 | 109 | 3 |
| 8738280 | 2,8 | 65 | 109 | 3 |
| 8738290 | 2,9 | 67 | 109 | 3 |
| 8738300 | 3 | 70 | 120 | 3 |
| 8738310 | 3,1 | 80 | 140 | 4 |
| 8738320 | 3,2 | 80 | 140 | 4 |
| 8738330 | 3,3 | 80 | 140 | 4 |
| 8738340 | 3,4 | 85 | 140 | 4 |
| 8738350 | 3,5 | 85 | 140 | 4 |
| 8738400 | 4 | 90 | 140 | 4 |
| 8738420 | 4,2 | 100 | 165 | 6 |
| 8738450 | 4,5 | 110 | 165 | 6 |
| 8738480 | 4,8 | 115 | 165 | 6 |
| 8738500 | 5 | 115 | 165 | 6 |
| 8738510 | 5,1 | 120 | 190 | 6 |
| 8738560 | 5,6 | 140 | 190 | 6 |
| 8738570 | 5,7 | 140 | 190 | 6 |
| 8738600 | 6 | 140 | 190 | 6 |

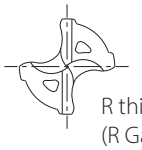
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-25D

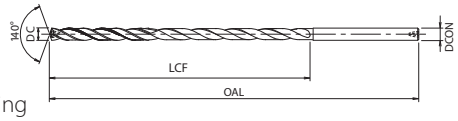
**Drilling | Solid carbide | 25xD**

INDEX

**NEW**

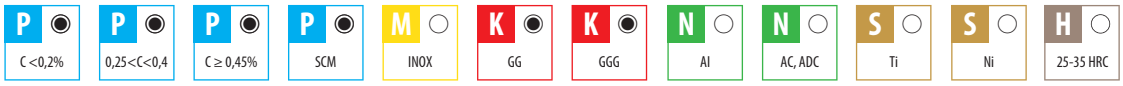


R thinning
(R Gash)




Tolerance of the point is 140° 0° -4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow



| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8739230 | 2,3 | 65 | 110 | 3 |
| 8739240 | 2,4 | 68 | 110 | 3 |
| 8739250 | 2,5 | 70 | 122 | 3 |
| 8739260 | 2,6 | 73 | 122 | 3 |
| 8739270 | 2,7 | 76 | 122 | 3 |
| 8739280 | 2,8 | 79 | 122 | 3 |
| 8739290 | 2,9 | 82 | 122 | 3 |
| 8739300 | 3 | 85 | 135 | 3 |
| 8739340 | 3,4 | 105 | 165 | 4 |
| 8739500 | 5 | 140 | 190 | 6 |
| 8739600 | 6 | 170 | 220 | 6 |

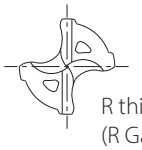
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# ADOX-30D

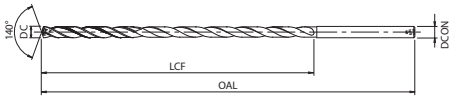
**Drilling | Solid carbide | 30xD**

INDEX

**NEW**



R thinning
(R Gash)




Tolerance of the point is 140° 0°
-4°

- First choice in quality and performance
- Carbide drill with internal coolant, EgiAs coating
- For general purpose steels and cast iron
- Double margin
- Mega Cooler oil hole for optimized coolant flow

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

A | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | e8

B.515

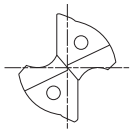
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8740230 | 2,3 | 76 | 120 | 3 |
| 8740240 | 2,4 | 80 | 120 | 3 |
| 8740250 | 2,5 | 83 | 134 | 3 |
| 8740260 | 2,6 | 86 | 134 | 3 |
| 8740270 | 2,7 | 90 | 134 | 3 |
| 8740280 | 2,8 | 93 | 134 | 3 |
| 8740290 | 2,9 | 96 | 134 | 3 |
| 8740300 | 3 | 100 | 150 | 3 |
| 8740310 | 3,1 | 102 | 185 | 4 |
| 8740320 | 3,2 | 105 | 185 | 4 |
| 8740350 | 3,5 | 116 | 185 | 4 |
| 8740370 | 3,7 | 116 | 185 | 4 |
| 8740400 | 4 | 132 | 185 | 4 |
| 8740420 | 4,2 | 140 | 215 | 6 |
| 8740480 | 4,8 | 165 | 215 | 6 |
| 8740500 | 5 | 165 | 215 | 6 |
| 8740600 | 6 | 200 | 250 | 6 |

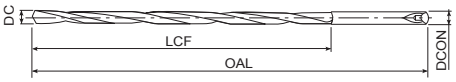
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# CAO-GDXL



**Drilling | Solid carbide | 15xD / 20xD / 30xD**






- Carbide drill with internal coolant, bright finish
- Up to 15xD, 20xD and 30xD
- For aluminium and cast aluminium
- 23 sizes

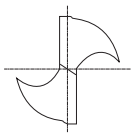
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8567130 | 3 | 55 | 105 | 3 |
| 8567140 | 4 | 75 | 125 | 4 |
| 8567340 | 4 | 90 | 140 | 4 |
| 8567345 | 4,5 | 110 | 165 | 5 |
| 8567150 | 5 | 90 | 140 | 5 |
| 8567350 | 5 | 115 | 165 | 5 |
| 8567450 | 5 | 165 | 215 | 5 |
| 8567355 | 5,5 | 140 | 190 | 6 |
| 8567455 | 5,5 | 200 | 250 | 6 |
| 8567160 | 6 | 110 | 160 | 6 |
| 8567360 | 6 | 140 | 190 | 6 |
| 8567460 | 6 | 200 | 250 | 6 |
| 8567165 | 6,5 | 120 | 175 | 7 |
| 8567170 | 7 | 125 | 175 | 7 |
| 8567370 | 7 | 160 | 210 | 7 |
| 8567470 | 7 | 230 | 280 | 7 |
| 8567180 | 8 | 145 | 195 | 8 |
| 8567380 | 8 | 180 | 230 | 8 |
| 8567480 | 8 | 265 | 315 | 8 |
| 8567190 | 9 | 160 | 210 | 9 |
| 8567390 | 9 | 210 | 260 | 9 |
| 8567200 | 10 | 180 | 240 | 10 |
| 8567400 | 10 | 230 | 290 | 10 |

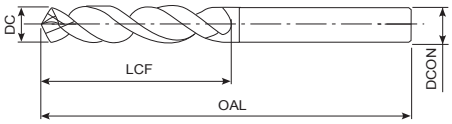
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# HYP-HP-3D

INDEX

**Drilling | Solid carbide | 3xD**






- Carbide drill with EgiAs coating
- Up to 3xD
- General purpose
- 154 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ AI | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7

B.501

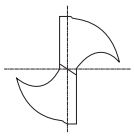
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30200100 | 1 | - | 7 | 35 | 3 |
| 30200110 | 1,1 | - | 7 | 35 | 3 |
| 30200120 | 1,2 | - | 8 | 35 | 3 |
| 30200130 | 1,3 | - | 8 | 35 | 3 |
| 30200140 | 1,4 | - | 9 | 35 | 3 |
| 30200150 | 1,5 | - | 9 | 40 | 3 |
| 30200160 | 1,6 | - | 10 | 40 | 3 |
| 30200170 | 1,7 | - | 10 | 40 | 3 |
| 30200180 | 1,8 | - | 11 | 40 | 3 |
| 30200190 | 1,9 | - | 11 | 40 | 3 |
| 30200200 | 2 | - | 13 | 45 | 3 |
| 30200210 | 2,1 | - | 13 | 45 | 3 |
| 30200220 | 2,2 | - | 13 | 45 | 3 |
| 30200230 | 2,3 | - | 13 | 45 | 3 |
| 30200240 | 2,4 | - | 15 | 45 | 3 |
| 30200250 | 2,5 | - | 15 | 50 | 3 |
| 30200260 | 2,6 | - | 15 | 50 | 3 |
| 30200270 | 2,7 | - | 17 | 50 | 3 |
| 30200280 | 2,8 | - | 17 | 50 | 3 |
| 30200290 | 2,9 | - | 17 | 50 | 3 |
| 30200300 | 3 | - | 20 | 62 | 6 |
| 30200310 | 3,1 | - | 20 | 62 | 6 |
| 30200317 | 3,17 | 1/8 | 20 | 62 | 6 |
| 30200320 | 3,2 | - | 20 | 62 | 6 |
| 30200330 | 3,3 | - | 20 | 62 | 6 |
| 30200340 | 3,4 | - | 20 | 62 | 6 |
| 30200350 | 3,5 | - | 20 | 62 | 6 |
| 30200357 | 3,57 | 9/64 | 20 | 62 | 6 |
| 30200360 | 3,6 | - | 20 | 62 | 6 |
| 30200370 | 3,7 | - | 20 | 62 | 6 |
| 30200380 | 3,8 | - | 24 | 66 | 6 |
| 30200390 | 3,9 | - | 24 | 66 | 6 |
| 30200397 | 3,97 | 5/32 | 24 | 66 | 6 |
| 30200400 | 4 | - | 24 | 66 | 6 |
| 30200410 | 4,1 | - | 24 | 66 | 6 |
| 30200420 | 4,2 | - | 24 | 66 | 6 |
| 30200430 | 4,3 | - | 24 | 66 | 6 |
| 30200437 | 4,37 | 11/64 | 24 | 66 | 6 |
| 30200440 | 4,4 | - | 24 | 66 | 6 |
| 30200450 | 4,5 | - | 24 | 66 | 6 |
| 30200460 | 4,6 | - | 24 | 66 | 6 |
| 30200470 | 4,7 | - | 24 | 66 | 6 |
| 30200476 | 4,76 | 3/16 | 24 | 66 | 6 |
| 30200480 | 4,8 | - | 28 | 66 | 6 |
| 30200490 | 4,9 | - | 28 | 66 | 6 |
| 30200500 | 5 | - | 28 | 66 | 6 |

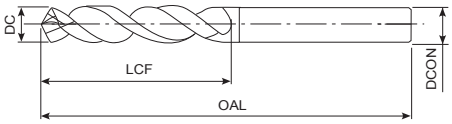
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30200510 | 5,1 | - | 28 | 66 | 6 |
| 30200516 | 5,16 | 13/64 | 28 | 66 | 6 |
| 30200520 | 5,2 | - | 28 | 66 | 6 |
| 30200530 | 5,3 | - | 28 | 66 | 6 |
| 30200540 | 5,4 | - | 28 | 66 | 6 |
| 30200550 | 5,5 | - | 28 | 66 | 6 |
| 30200556 | 5,56 | 7/32 | 28 | 66 | 6 |
| 30200560 | 5,6 | - | 28 | 66 | 6 |
| 30200570 | 5,7 | - | 28 | 66 | 6 |
| 30200580 | 5,8 | - | 28 | 66 | 6 |
| 30200590 | 5,9 | - | 28 | 66 | 6 |
| 30200595 | 5,95 | 15/64 | 28 | 66 | 6 |
| 30200600 | 6 | - | 28 | 66 | 6 |
| 30200610 | 6,1 | - | 34 | 79 | 8 |
| 30200620 | 6,2 | - | 34 | 79 | 8 |
| 30200630 | 6,3 | - | 34 | 79 | 8 |
| 30200635 | 6,35 | 1/4 | 34 | 79 | 8 |
| 30200640 | 6,4 | - | 34 | 79 | 8 |
| 30200650 | 6,5 | - | 34 | 79 | 8 |
| 30200660 | 6,6 | - | 34 | 79 | 8 |
| 30200670 | 6,7 | - | 34 | 79 | 8 |
| 30200675 | 6,75 | 17/64 | 34 | 79 | 8 |
| 30200680 | 6,8 | - | 34 | 79 | 8 |
| 30200690 | 6,9 | - | 34 | 79 | 8 |
| 30200700 | 7 | - | 34 | 79 | 8 |
| 30200710 | 7,1 | - | 41 | 79 | 8 |
| 30200714 | 7,14 | 9/32 | 41 | 79 | 8 |
| 30200720 | 7,2 | - | 41 | 79 | 8 |
| 30200730 | 7,3 | - | 41 | 79 | 8 |
| 30200740 | 7,4 | - | 41 | 79 | 8 |
| 30200750 | 7,5 | - | 41 | 79 | 8 |
| 30200754 | 7,54 | 19/64 | 41 | 79 | 8 |
| 30200760 | 7,6 | - | 41 | 79 | 8 |
| 30200770 | 7,7 | - | 41 | 79 | 8 |
| 30200780 | 7,8 | - | 41 | 79 | 8 |
| 30200790 | 7,9 | - | 41 | 79 | 8 |
| 30200794 | 7,94 | 5/16 | 41 | 79 | 8 |
| 30200800 | 8 | - | 41 | 79 | 8 |
| 30200810 | 8,1 | - | 47 | 89 | 10 |
| 30200820 | 8,2 | - | 47 | 89 | 10 |
| 30200830 | 8,3 | - | 47 | 89 | 10 |
| 30200833 | 8,33 | 21/64 | 47 | 89 | 10 |
| 30200840 | 8,4 | - | 47 | 89 | 10 |
| 30200850 | 8,5 | - | 47 | 89 | 10 |
| 30200860 | 8,6 | - | 47 | 89 | 10 |
| 30200870 | 8,7 | - | 47 | 89 | 10 |

# HYP-HP-3D

INDEX

**Drilling | Solid carbide | 3xD**






- Carbide drill with EgiAs coating
- Up to 3xD
- General purpose
- 154 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7

B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30200873 | 8,73 | 11/32 | 47 | 89 | 10 |
| 30200880 | 8,8 | - | 47 | 89 | 10 |
| 30200890 | 8,9 | - | 47 | 89 | 10 |
| 30200900 | 9 | - | 47 | 89 | 10 |
| 30200910 | 9,1 | - | 47 | 89 | 10 |
| 30200913 | 9,13 | 23/64 | 47 | 89 | 10 |
| 30200920 | 9,2 | - | 47 | 89 | 10 |
| 30200930 | 9,3 | - | 47 | 89 | 10 |
| 30200940 | 9,4 | - | 47 | 89 | 10 |
| 30200950 | 9,5 | - | 47 | 89 | 10 |
| 30200952 | 9,52 | 3/8 | 47 | 89 | 10 |
| 30200960 | 9,6 | - | 47 | 89 | 10 |
| 30200970 | 9,7 | - | 47 | 89 | 10 |
| 30200980 | 9,8 | - | 47 | 89 | 10 |
| 30200990 | 9,9 | - | 47 | 89 | 10 |
| 30200992 | 9,92 | 25/64 | 47 | 89 | 10 |
| 30201000 | 10 | - | 47 | 89 | 10 |
| 30201010 | 10,1 | - | 55 | 102 | 12 |
| 30201020 | 10,2 | - | 55 | 102 | 12 |
| 30201030 | 10,3 | - | 55 | 102 | 12 |
| 30201032 | 10,32 | 13/32 | 55 | 102 | 12 |
| 30201040 | 10,4 | - | 55 | 102 | 12 |
| 30201050 | 10,5 | - | 55 | 102 | 12 |
| 30201060 | 10,6 | - | 55 | 102 | 12 |
| 30201070 | 10,7 | - | 55 | 102 | 12 |
| 30201072 | 10,72 | 27/64 | 55 | 102 | 12 |
| 30201080 | 10,8 | - | 55 | 102 | 12 |
| 30201090 | 10,9 | - | 55 | 102 | 12 |
| 30201100 | 11 | - | 55 | 102 | 12 |
| 30201110 | 11,1 | - | 55 | 102 | 12 |
| 30201111 | 11,11 | 7/16 | 55 | 102 | 12 |
| 30201120 | 11,2 | - | 55 | 102 | 12 |
| 30201130 | 11,3 | - | 55 | 102 | 12 |
| 30201140 | 11,4 | - | 55 | 102 | 12 |
| 30201150 | 11,5 | - | 55 | 102 | 12 |
| 30201151 | 11,51 | 29/64 | 55 | 102 | 12 |
| 30201160 | 11,6 | - | 55 | 102 | 12 |
| 30201170 | 11,7 | - | 55 | 102 | 12 |
| 30201180 | 11,8 | - | 55 | 102 | 12 |
| 30201190 | 11,9 | - | 55 | 102 | 12 |
| 30201191 | 11,91 | 15/32 | 55 | 102 | 12 |
| 30201200 | 12 | - | 55 | 102 | 12 |
| 30201230 | 12,3 | 31/64 | 60 | 107 | 14 |
| 30201250 | 12,5 | - | 60 | 107 | 14 |
| 30201270 | 12,7 | 1/2 | 60 | 107 | 14 |
| 30201300 | 13 | - | 60 | 107 | 14 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30201350 | 13,5 | - | 60 | 107 | 14 |
| 30201400 | 14 | - | 60 | 107 | 14 |
| 30201429 | 14,29 | 9/16 | 65 | 115 | 16 |
| 30201450 | 14,5 | - | 65 | 115 | 16 |
| 30201500 | 15 | - | 65 | 115 | 16 |
| 30201550 | 15,5 | - | 65 | 115 | 16 |
| 30201587 | 15,87 | 5/8 | 65 | 115 | 16 |
| 30201600 | 16 | - | 65 | 115 | 16 |
| 30201650 | 16,5 | - | 73 | 123 | 18 |
| 30201700 | 17 | - | 73 | 123 | 18 |
| 30201750 | 17,5 | - | 73 | 123 | 18 |
| 30201800 | 18 | - | 73 | 123 | 18 |
| 30201850 | 18,5 | - | 79 | 131 | 20 |
| 30201900 | 19 | - | 79 | 131 | 20 |
| 30201950 | 19,5 | - | 79 | 131 | 20 |
| 30202000 | 20 | - | 79 | 131 | 20 |

# HYP-HP-SC-3D

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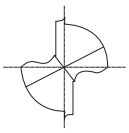
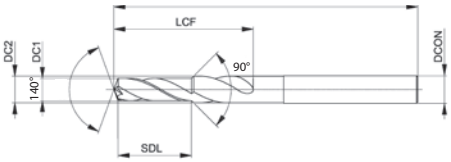
**Drilling | Solid carbide | 3xD**






- Carbide step drill with EgiAs coating
- 3xD step length
- General purpose
- For tap drill holes

| P ○ | P ◉ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | N ○ | N ○ | H ◉ | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | Al | AC, ADC | 25-35 HRC | 35-45 HRC | 45-52 HRC |

HYPRO | CARBIDE | EgiAs | ±25° | SHRINK FIT | 140° | h8

B.501

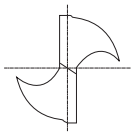
| EDP | Thread | DC1 | DC2 | DCON | SDL | LCF | OAL |
|---|---|---|---|---|---|---|---|
| EP0201138 | M3x0,5 | 2,5 | 6 | 6 | 9 | 13 | 66 |
| EP0201144 | M4x0,7 | 3,3 | 6 | 6 | 12 | 16 | 66 |
| EP0201149 | M5x0,8 | 4,2 | 6 | 6 | 15 | 18 | 66 |
| EP0201155 | M6x1 | 5 | 8 | 8 | 18 | 23 | 79 |
| EP0201161 | M8x1,25 | 6,8 | 10 | 10 | 24 | 29 | 89 |
| EP0201169 | M10x1,5 | 8,5 | 12 | 12 | 30 | 35 | 89 |
| EP0201179 | M12x1,75 | 10,2 | 14 | 14 | 36 | 41 | 112 |

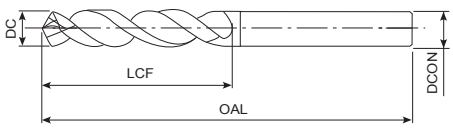
| EDP | DC1 | DC2 | DCON | SDL | LCF | OAL |
|---|---|---|---|---|---|---|

# HYP-HP-5D

**Drilling | Solid carbide | 5xD**

INDEX






- Carbide drill with EgiAs coating
- Up to 5xD
- General purpose
- 154 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ AI | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7

B.501

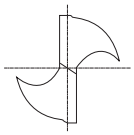
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 31200100 | 1 | - | 9 | 38 | 3 |
| 31200110 | 1,1 | - | 9 | 38 | 3 |
| 31200120 | 1,2 | - | 11 | 38 | 3 |
| 31200130 | 1,3 | - | 11 | 38 | 3 |
| 31200140 | 1,4 | - | 12 | 38 | 3 |
| 31200150 | 1,5 | - | 12 | 45 | 3 |
| 31200160 | 1,6 | - | 14 | 45 | 3 |
| 31200170 | 1,7 | - | 14 | 45 | 3 |
| 31200180 | 1,8 | - | 16 | 45 | 3 |
| 31200190 | 1,9 | - | 16 | 45 | 3 |
| 31200200 | 2 | - | 18 | 52 | 3 |
| 31200210 | 2,1 | - | 18 | 52 | 3 |
| 31200220 | 2,2 | - | 20 | 52 | 3 |
| 31200230 | 2,3 | - | 20 | 52 | 3 |
| 31200240 | 2,4 | - | 22 | 52 | 3 |
| 31200250 | 2,5 | - | 22 | 56 | 3 |
| 31200260 | 2,6 | - | 22 | 56 | 3 |
| 31200270 | 2,7 | - | 23 | 56 | 3 |
| 31200280 | 2,8 | - | 23 | 56 | 3 |
| 31200290 | 2,9 | - | 23 | 56 | 3 |
| 31200300 | 3 | - | 28 | 66 | 6 |
| 31200310 | 3,1 | - | 28 | 66 | 6 |
| 31200317 | 3,17 | 1/8 | 28 | 66 | 6 |
| 31200320 | 3,2 | - | 28 | 66 | 6 |
| 31200330 | 3,3 | - | 28 | 66 | 6 |
| 31200340 | 3,4 | - | 28 | 66 | 6 |
| 31200350 | 3,5 | - | 28 | 66 | 6 |
| 31200357 | 3,57 | 9/64 | 28 | 66 | 6 |
| 31200360 | 3,6 | - | 28 | 66 | 6 |
| 31200370 | 3,7 | - | 28 | 66 | 6 |
| 31200380 | 3,8 | - | 36 | 74 | 6 |
| 31200390 | 3,9 | - | 36 | 74 | 6 |
| 31200397 | 3,97 | 5/32 | 36 | 74 | 6 |
| 31200400 | 4 | - | 36 | 74 | 6 |
| 31200410 | 4,1 | - | 36 | 74 | 6 |
| 31200420 | 4,2 | - | 36 | 74 | 6 |
| 31200430 | 4,3 | - | 36 | 74 | 6 |
| 31200437 | 4,37 | 11/64 | 36 | 74 | 6 |
| 31200440 | 4,4 | - | 36 | 74 | 6 |
| 31200450 | 4,5 | - | 36 | 74 | 6 |
| 31200460 | 4,6 | - | 36 | 74 | 6 |
| 31200470 | 4,7 | - | 36 | 74 | 6 |
| 31200476 | 4,76 | 3/16 | 44 | 82 | 6 |
| 31200480 | 4,8 | - | 44 | 82 | 6 |
| 31200490 | 4,9 | - | 44 | 82 | 6 |
| 31200500 | 5 | - | 44 | 82 | 6 |

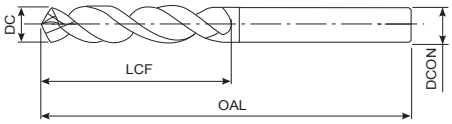
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 31200510 | 5,1 | - | 44 | 82 | 6 |
| 31200516 | 5,16 | 13/64 | 44 | 82 | 6 |
| 31200520 | 5,2 | - | 44 | 82 | 6 |
| 31200530 | 5,3 | - | 44 | 82 | 6 |
| 31200540 | 5,4 | - | 44 | 82 | 6 |
| 31200550 | 5,5 | - | 44 | 82 | 6 |
| 31200556 | 5,56 | 7/32 | 44 | 82 | 6 |
| 31200560 | 5,6 | - | 44 | 82 | 6 |
| 31200570 | 5,7 | - | 44 | 82 | 6 |
| 31200580 | 5,8 | - | 44 | 82 | 6 |
| 31200590 | 5,9 | - | 44 | 82 | 6 |
| 31200595 | 5,95 | 15/64 | 44 | 82 | 6 |
| 31200600 | 6 | - | 44 | 82 | 6 |
| 31200610 | 6,1 | - | 53 | 91 | 8 |
| 31200620 | 6,2 | - | 53 | 91 | 8 |
| 31200630 | 6,3 | - | 53 | 91 | 8 |
| 31200635 | 6,35 | 1/4 | 53 | 91 | 8 |
| 31200640 | 6,4 | - | 53 | 91 | 8 |
| 31200650 | 6,5 | - | 53 | 91 | 8 |
| 31200660 | 6,6 | - | 53 | 91 | 8 |
| 31200670 | 6,7 | - | 53 | 91 | 8 |
| 31200675 | 6,75 | 17/64 | 53 | 91 | 8 |
| 31200680 | 6,8 | - | 53 | 91 | 8 |
| 31200690 | 6,9 | - | 53 | 91 | 8 |
| 31200700 | 7 | - | 53 | 91 | 8 |
| 31200710 | 7,1 | - | 53 | 91 | 8 |
| 31200714 | 7,14 | 9/32 | 53 | 91 | 8 |
| 31200720 | 7,2 | - | 53 | 91 | 8 |
| 31200730 | 7,3 | - | 53 | 91 | 8 |
| 31200740 | 7,4 | - | 53 | 91 | 8 |
| 31200750 | 7,5 | - | 53 | 91 | 8 |
| 31200754 | 7,54 | 19/64 | 53 | 91 | 8 |
| 31200760 | 7,6 | - | 53 | 91 | 8 |
| 31200770 | 7,7 | - | 53 | 91 | 8 |
| 31200780 | 7,8 | - | 53 | 91 | 8 |
| 31200790 | 7,9 | - | 53 | 91 | 8 |
| 31200794 | 7,94 | 5/16 | 53 | 91 | 8 |
| 31200800 | 8 | - | 53 | 91 | 8 |
| 31200810 | 8,1 | - | 61 | 103 | 10 |
| 31200820 | 8,2 | - | 61 | 103 | 10 |
| 31200830 | 8,3 | - | 61 | 103 | 10 |
| 31200833 | 8,33 | 21/64 | 61 | 103 | 10 |
| 31200840 | 8,4 | - | 61 | 103 | 10 |
| 31200850 | 8,5 | - | 61 | 103 | 10 |
| 31200860 | 8,6 | - | 61 | 103 | 10 |
| 31200870 | 8,7 | - | 61 | 103 | 10 |

# HYP-HP-5D

INDEX

**Drilling | Solid carbide | 5xD**






- Carbide drill with EgiAs coating
- Up to 5xD
- General purpose
- 154 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ AI | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7

B.501

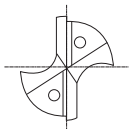
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 31200873 | 8,73 | 11/32 | 61 | 103 | 10 |
| 31200880 | 8,8 | - | 61 | 103 | 10 |
| 31200890 | 8,9 | - | 61 | 103 | 10 |
| 31200900 | 9 | - | 61 | 103 | 10 |
| 31200910 | 9,1 | - | 61 | 103 | 10 |
| 31200913 | 9,13 | 23/64 | 61 | 103 | 10 |
| 31200920 | 9,2 | - | 61 | 103 | 10 |
| 31200930 | 9,3 | - | 61 | 103 | 10 |
| 31200940 | 9,4 | - | 61 | 103 | 10 |
| 31200950 | 9,5 | - | 61 | 103 | 10 |
| 31200952 | 9,52 | 3/8 | 61 | 103 | 10 |
| 31200960 | 9,6 | - | 61 | 103 | 10 |
| 31200970 | 9,7 | - | 61 | 103 | 10 |
| 31200980 | 9,8 | - | 61 | 103 | 10 |
| 31200990 | 9,9 | - | 61 | 103 | 10 |
| 31200992 | 9,92 | 25/64 | 61 | 103 | 10 |
| 31201000 | 10 | - | 61 | 103 | 10 |
| 31201010 | 10,1 | - | 71 | 118 | 12 |
| 31201020 | 10,2 | - | 71 | 118 | 12 |
| 31201030 | 10,3 | - | 71 | 118 | 12 |
| 31201032 | 10,32 | 13/32 | 71 | 118 | 12 |
| 31201040 | 10,4 | - | 71 | 118 | 12 |
| 31201050 | 10,5 | - | 71 | 118 | 12 |
| 31201060 | 10,6 | - | 71 | 118 | 12 |
| 31201070 | 10,7 | - | 71 | 118 | 12 |
| 31201072 | 10,72 | 27/64 | 71 | 118 | 12 |
| 31201080 | 10,8 | - | 71 | 118 | 12 |
| 31201090 | 10,9 | - | 71 | 118 | 12 |
| 31201100 | 11 | - | 71 | 118 | 12 |
| 31201110 | 11,1 | - | 71 | 118 | 12 |
| 31201111 | 11,11 | 7/16 | 71 | 118 | 12 |
| 31201120 | 11,2 | - | 71 | 118 | 12 |
| 31201130 | 11,3 | - | 71 | 118 | 12 |
| 31201140 | 11,4 | - | 71 | 118 | 12 |
| 31201150 | 11,5 | - | 71 | 118 | 12 |
| 31201151 | 11,51 | 29/64 | 71 | 118 | 12 |
| 31201160 | 11,6 | - | 71 | 118 | 12 |
| 31201170 | 11,7 | - | 71 | 118 | 12 |
| 31201180 | 11,8 | - | 71 | 118 | 12 |
| 31201190 | 11,9 | - | 71 | 118 | 12 |
| 31201191 | 11,91 | 15/32 | 71 | 118 | 12 |
| 31201200 | 12 | - | 71 | 118 | 12 |
| 31201230 | 12,3 | 31/64 | 77 | 124 | 14 |
| 31201250 | 12,5 | - | 77 | 124 | 14 |
| 31201270 | 12,7 | 1/2 | 77 | 124 | 14 |
| 31201300 | 13 | - | 77 | 124 | 14 |

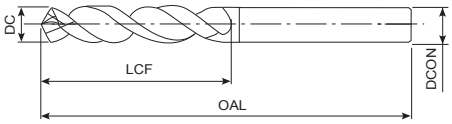
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 31201350 | 13,5 | - | 77 | 124 | 14 |
| 31201400 | 14 | - | 77 | 124 | 14 |
| 31201429 | 14,29 | 9/16 | 83 | 133 | 16 |
| 31201450 | 14,5 | - | 83 | 133 | 16 |
| 31201500 | 15 | - | 83 | 133 | 16 |
| 31201550 | 15,5 | - | 83 | 133 | 16 |
| 31201587 | 15,87 | 5/8 | 83 | 133 | 16 |
| 31201600 | 16 | - | 83 | 133 | 16 |
| 31201650 | 16,5 | - | 93 | 143 | 18 |
| 31201700 | 17 | - | 93 | 143 | 18 |
| 31201750 | 17,5 | - | 93 | 143 | 18 |
| 31201800 | 18 | - | 93 | 143 | 18 |
| 31201850 | 18,5 | - | 101 | 153 | 20 |
| 31201900 | 19 | - | 101 | 153 | 20 |
| 31201950 | 19,5 | - | 101 | 153 | 20 |
| 31202000 | 20 | - | 101 | 153 | 20 |

# HYP-HPO-3D



**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- General purpose
- 136 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7 | B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210300 | 3 | - | 20 | 62 | 6 |
| 30210310 | 3,1 | - | 20 | 62 | 6 |
| 30210317 | 3,17 | 1/8 | 20 | 62 | 6 |
| 30210320 | 3,2 | - | 20 | 62 | 6 |
| 30210330 | 3,3 | - | 20 | 62 | 6 |
| 30210340 | 3,4 | - | 20 | 62 | 6 |
| 30210350 | 3,5 | - | 20 | 62 | 6 |
| 30210357 | 3,57 | 9/64 | 20 | 62 | 6 |
| 30210360 | 3,6 | - | 20 | 62 | 6 |
| 30210370 | 3,7 | - | 20 | 62 | 6 |
| 30210380 | 3,8 | - | 24 | 66 | 6 |
| 30210390 | 3,9 | - | 24 | 66 | 6 |
| 30210397 | 3,97 | 5/32 | 24 | 66 | 6 |
| 30210400 | 4 | - | 24 | 66 | 6 |
| 30210410 | 4,1 | - | 24 | 66 | 6 |
| 30210420 | 4,2 | - | 24 | 66 | 6 |
| 30210430 | 4,3 | - | 24 | 66 | 6 |
| 30210437 | 4,37 | 11/64 | 24 | 66 | 6 |
| 30210440 | 4,4 | - | 24 | 66 | 6 |
| 30210450 | 4,5 | - | 24 | 66 | 6 |
| 30210460 | 4,6 | - | 24 | 66 | 6 |
| 30210465 | 4,65 | - | 24 | 66 | 6 |
| 30210470 | 4,7 | - | 24 | 66 | 6 |
| 30210476 | 4,76 | 3/16 | 24 | 66 | 6 |
| 30210480 | 4,8 | - | 28 | 66 | 6 |
| 30210490 | 4,9 | - | 28 | 66 | 6 |
| 30210500 | 5 | - | 28 | 66 | 6 |
| 30210510 | 5,1 | - | 28 | 66 | 6 |
| 30210516 | 5,16 | 13/64 | 28 | 66 | 6 |
| 30210520 | 5,2 | - | 28 | 66 | 6 |
| 30210530 | 5,3 | - | 28 | 66 | 6 |
| 30210540 | 5,4 | - | 28 | 66 | 6 |
| 30210550 | 5,5 | - | 28 | 66 | 6 |
| 30210555 | 5,55 | - | 28 | 66 | 6 |
| 30210556 | 5,56 | 7/32 | 28 | 66 | 6 |
| 30210560 | 5,6 | - | 28 | 66 | 6 |
| 30210570 | 5,7 | - | 28 | 66 | 6 |
| 30210580 | 5,8 | - | 28 | 66 | 6 |
| 30210590 | 5,9 | - | 28 | 66 | 6 |
| 30210595 | 5,95 | 15/64 | 28 | 66 | 6 |
| 30210600 | 6 | - | 28 | 66 | 6 |
| 30210610 | 6,1 | - | 34 | 79 | 8 |
| 30210620 | 6,2 | - | 34 | 79 | 8 |
| 30210630 | 6,3 | - | 34 | 79 | 8 |
| 30210635 | 6,35 | 1/4 | 34 | 79 | 8 |
| 30210640 | 6,4 | - | 34 | 79 | 8 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210650 | 6,5 | - | 34 | 79 | 8 |
| 30210660 | 6,6 | - | 34 | 79 | 8 |
| 30210670 | 6,7 | - | 34 | 79 | 8 |
| 30210675 | 6,75 | 17/64 | 34 | 79 | 8 |
| 30210680 | 6,8 | - | 34 | 79 | 8 |
| 30210690 | 6,9 | - | 34 | 79 | 8 |
| 30210700 | 7 | - | 34 | 79 | 8 |
| 30210710 | 7,1 | - | 41 | 79 | 8 |
| 30210714 | 7,14 | 9/32 | 41 | 79 | 8 |
| 30210720 | 7,2 | - | 41 | 79 | 8 |
| 30210730 | 7,3 | - | 41 | 79 | 8 |
| 30210740 | 7,4 | - | 41 | 79 | 8 |
| 30210750 | 7,5 | - | 41 | 79 | 8 |
| 30210754 | 7,54 | 19/64 | 41 | 79 | 8 |
| 30210760 | 7,6 | - | 41 | 79 | 8 |
| 30210770 | 7,7 | - | 41 | 79 | 8 |
| 30210780 | 7,8 | - | 41 | 79 | 8 |
| 30210790 | 7,9 | - | 41 | 79 | 8 |
| 30210794 | 7,94 | 5/16 | 41 | 79 | 8 |
| 30210800 | 8 | - | 41 | 79 | 8 |
| 30210810 | 8,1 | - | 47 | 89 | 10 |
| 30210820 | 8,2 | - | 47 | 89 | 10 |
| 30210830 | 8,3 | - | 47 | 89 | 10 |
| 30210833 | 8,33 | 21/64 | 47 | 89 | 10 |
| 30210840 | 8,4 | - | 47 | 89 | 10 |
| 30210850 | 8,5 | - | 47 | 89 | 10 |
| 30210860 | 8,6 | - | 47 | 89 | 10 |
| 30210870 | 8,7 | - | 47 | 89 | 10 |
| 30210873 | 8,73 | 11/32 | 47 | 89 | 10 |
| 30210880 | 8,8 | - | 47 | 89 | 10 |
| 30210890 | 8,9 | - | 47 | 89 | 10 |
| 30210900 | 9 | - | 47 | 89 | 10 |
| 30210910 | 9,1 | - | 47 | 89 | 10 |
| 30210913 | 9,13 | 23/64 | 47 | 89 | 10 |
| 30210920 | 9,2 | - | 47 | 89 | 10 |
| 30210930 | 9,3 | - | 47 | 89 | 10 |
| 30210940 | 9,4 | - | 47 | 89 | 10 |
| 30210950 | 9,5 | - | 47 | 89 | 10 |
| 30210952 | 9,52 | 3/8 | 47 | 89 | 10 |
| 30210960 | 9,6 | - | 47 | 89 | 10 |
| 30210970 | 9,7 | - | 47 | 89 | 10 |
| 30210980 | 9,8 | - | 47 | 89 | 10 |
| 30210990 | 9,9 | - | 47 | 89 | 10 |
| 30210992 | 9,92 | 25/64 | 47 | 89 | 10 |
| 30211000 | 10 | - | 47 | 89 | 10 |
| 30211010 | 10,1 | - | 55 | 102 | 12 |

# HYP-HPO-3D

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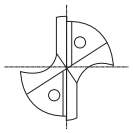
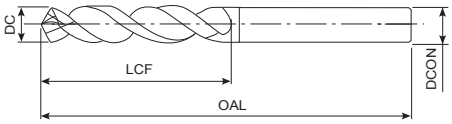
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- General purpose
- 136 sizes

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30211020 | 10,2 | - | 55 | 102 | 12 |
| 30211030 | 10,3 | - | 55 | 102 | 12 |
| 30211032 | 10,32 | 13/32 | 55 | 102 | 12 |
| 30211040 | 10,4 | - | 55 | 102 | 12 |
| 30211050 | 10,5 | - | 55 | 102 | 12 |
| 30211060 | 10,6 | - | 55 | 102 | 12 |
| 30211070 | 10,7 | - | 55 | 102 | 12 |
| 30211072 | 10,72 | 27/64 | 55 | 102 | 12 |
| 30211080 | 10,8 | - | 55 | 102 | 12 |
| 30211090 | 10,9 | - | 55 | 102 | 12 |
| 30211100 | 11 | - | 55 | 102 | 12 |
| 30211110 | 11,1 | - | 55 | 102 | 12 |
| 30211111 | 11,11 | 7/16 | 55 | 102 | 12 |
| 30211120 | 11,2 | - | 55 | 102 | 12 |
| 30211130 | 11,3 | - | 55 | 102 | 12 |
| 30211140 | 11,4 | - | 55 | 102 | 12 |
| 30211150 | 11,5 | - | 55 | 102 | 12 |
| 30211151 | 11,51 | 29/64 | 55 | 102 | 12 |
| 30211160 | 11,6 | - | 55 | 102 | 12 |
| 30211170 | 11,7 | - | 55 | 102 | 12 |
| 30211180 | 11,8 | - | 55 | 102 | 12 |
| 30211190 | 11,9 | - | 55 | 102 | 12 |
| 30211191 | 11,91 | 15/32 | 55 | 102 | 12 |
| 30211200 | 12 | - | 55 | 102 | 12 |
| 30211230 | 12,3 | 31/64 | 60 | 107 | 14 |
| 30211250 | 12,5 | - | 60 | 107 | 14 |
| 30211270 | 12,7 | 1/2 | 60 | 107 | 14 |
| 30211300 | 13 | - | 60 | 107 | 14 |
| 30211350 | 13,5 | - | 60 | 107 | 14 |
| 30211400 | 14 | - | 60 | 107 | 14 |
| 30211429 | 14,29 | 9/16 | 65 | 115 | 16 |
| 30211450 | 14,5 | - | 65 | 115 | 16 |
| 30211500 | 15 | - | 65 | 115 | 16 |
| 30211550 | 15,5 | - | 65 | 115 | 16 |
| 30211587 | 15,87 | 5/8 | 65 | 115 | 16 |
| 30211600 | 16 | - | 65 | 115 | 16 |
| 30211650 | 16,5 | - | 73 | 123 | 18 |
| 30211700 | 17 | - | 73 | 123 | 18 |
| 30211750 | 17,5 | - | 73 | 123 | 18 |
| 30211800 | 18 | - | 73 | 123 | 18 |
| 30211850 | 18,5 | - | 79 | 131 | 20 |
| 30211900 | 19 | - | 79 | 131 | 20 |
| 30211950 | 19,5 | - | 79 | 131 | 20 |
| 30212000 | 20 | - | 79 | 131 | 20 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-HPO-3D-HE

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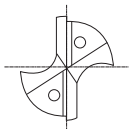
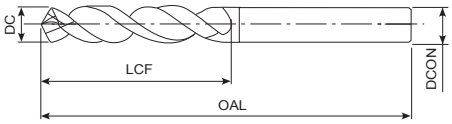
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- With Whistle Notch shank for general purpose
- 134 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | 140° | m7 | B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210300-HE | 3 | - | 20 | 62 | 6 |
| 30210310-HE | 3,1 | - | 20 | 62 | 6 |
| 30210317-HE | 3,17 | 1/8 | 20 | 62 | 6 |
| 30210320-HE | 3,2 | - | 20 | 62 | 6 |
| 30210330-HE | 3,3 | - | 20 | 62 | 6 |
| 30210340-HE | 3,4 | - | 20 | 62 | 6 |
| 30210350-HE | 3,5 | - | 20 | 62 | 6 |
| 30210357-HE | 3,57 | 9/64 | 20 | 62 | 6 |
| 30210360-HE | 3,6 | - | 20 | 62 | 6 |
| 30210370-HE | 3,7 | - | 20 | 62 | 6 |
| 30210380-HE | 3,8 | - | 24 | 66 | 6 |
| 30210390-HE | 3,9 | - | 24 | 66 | 6 |
| 30210397-HE | 3,97 | 5/32 | 24 | 66 | 6 |
| 30210400-HE | 4 | - | 24 | 66 | 6 |
| 30210410-HE | 4,1 | - | 24 | 66 | 6 |
| 30210420-HE | 4,2 | - | 24 | 66 | 6 |
| 30210430-HE | 4,3 | - | 24 | 66 | 6 |
| 30210437-HE | 4,37 | 11/64 | 24 | 66 | 6 |
| 30210440-HE | 4,4 | - | 24 | 66 | 6 |
| 30210450-HE | 4,5 | - | 24 | 66 | 6 |
| 30210460-HE | 4,6 | - | 24 | 66 | 6 |
| 30210470-HE | 4,7 | - | 24 | 66 | 6 |
| 30210476-HE | 4,76 | 3/16 | 24 | 66 | 6 |
| 30210480-HE | 4,8 | - | 28 | 66 | 6 |
| 30210490-HE | 4,9 | - | 28 | 66 | 6 |
| 30210500-HE | 5 | - | 28 | 66 | 6 |
| 30210510-HE | 5,1 | - | 28 | 66 | 6 |
| 30210516-HE | 5,16 | 13/64 | 28 | 66 | 6 |
| 30210520-HE | 5,2 | - | 28 | 66 | 6 |
| 30210530-HE | 5,3 | - | 28 | 66 | 6 |
| 30210540-HE | 5,4 | - | 28 | 66 | 6 |
| 30210550-HE | 5,5 | - | 28 | 66 | 6 |
| 30210556-HE | 5,56 | 7/32 | 28 | 66 | 6 |
| 30210560-HE | 5,6 | - | 28 | 66 | 6 |
| 30210570-HE | 5,7 | - | 28 | 66 | 6 |
| 30210580-HE | 5,8 | - | 28 | 66 | 6 |
| 30210590-HE | 5,9 | - | 28 | 66 | 6 |
| 30210595-HE | 5,95 | 15/64 | 28 | 66 | 6 |
| 30210600-HE | 6 | - | 28 | 66 | 6 |
| 30210610-HE | 6,1 | - | 34 | 79 | 8 |
| 30210620-HE | 6,2 | - | 34 | 79 | 8 |
| 30210630-HE | 6,3 | - | 34 | 79 | 8 |
| 30210635-HE | 6,35 | 1/4 | 34 | 79 | 8 |
| 30210640-HE | 6,4 | - | 34 | 79 | 8 |
| 30210650-HE | 6,5 | - | 34 | 79 | 8 |
| 30210660-HE | 6,6 | - | 34 | 79 | 8 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210670-HE | 6,7 | - | 34 | 79 | 8 |
| 30210675-HE | 6,75 | 17/64 | 34 | 79 | 8 |
| 30210680-HE | 6,8 | - | 34 | 79 | 8 |
| 30210690-HE | 6,9 | - | 34 | 79 | 8 |
| 30210700-HE | 7 | - | 34 | 79 | 8 |
| 30210710-HE | 7,1 | - | 41 | 79 | 8 |
| 30210714-HE | 7,14 | 9/32 | 41 | 79 | 8 |
| 30210720-HE | 7,2 | - | 41 | 79 | 8 |
| 30210730-HE | 7,3 | - | 41 | 79 | 8 |
| 30210740-HE | 7,4 | - | 41 | 79 | 8 |
| 30210750-HE | 7,5 | - | 41 | 79 | 8 |
| 30210754-HE | 7,54 | 19/64 | 41 | 79 | 8 |
| 30210760-HE | 7,6 | - | 41 | 79 | 8 |
| 30210770-HE | 7,7 | - | 41 | 79 | 8 |
| 30210780-HE | 7,8 | - | 41 | 79 | 8 |
| 30210790-HE | 7,9 | - | 41 | 79 | 8 |
| 30210794-HE | 7,94 | 5/16 | 41 | 79 | 8 |
| 30210800-HE | 8 | - | 41 | 79 | 8 |
| 30210810-HE | 8,1 | - | 47 | 89 | 10 |
| 30210820-HE | 8,2 | - | 47 | 89 | 10 |
| 30210830-HE | 8,3 | - | 47 | 89 | 10 |
| 30210833-HE | 8,33 | 21/64 | 47 | 89 | 10 |
| 30210840-HE | 8,4 | - | 47 | 89 | 10 |
| 30210850-HE | 8,5 | - | 47 | 89 | 10 |
| 30210860-HE | 8,6 | - | 47 | 89 | 10 |
| 30210870-HE | 8,7 | - | 47 | 89 | 10 |
| 30210873-HE | 8,73 | 11/32 | 47 | 89 | 10 |
| 30210880-HE | 8,8 | - | 47 | 89 | 10 |
| 30210890-HE | 8,9 | - | 47 | 89 | 10 |
| 30210900-HE | 9 | - | 47 | 89 | 10 |
| 30210910-HE | 9,1 | - | 47 | 89 | 10 |
| 30210913-HE | 9,13 | 23/64 | 47 | 89 | 10 |
| 30210920-HE | 9,2 | - | 47 | 89 | 10 |
| 30210930-HE | 9,3 | - | 47 | 89 | 10 |
| 30210940-HE | 9,4 | - | 47 | 89 | 10 |
| 30210950-HE | 9,5 | - | 47 | 89 | 10 |
| 30210952-HE | 9,52 | 3/8 | 47 | 89 | 10 |
| 30210960-HE | 9,6 | - | 47 | 89 | 10 |
| 30210970-HE | 9,7 | - | 47 | 89 | 10 |
| 30210980-HE | 9,8 | - | 47 | 89 | 10 |
| 30210990-HE | 9,9 | - | 47 | 89 | 10 |
| 30210992-HE | 9,92 | 25/64 | 47 | 89 | 10 |
| 30211000-HE | 10 | - | 47 | 89 | 10 |
| 30211010-HE | 10,1 | - | 47 | 89 | 12 |
| 30211020-HE | 10,2 | - | 55 | 102 | 12 |
| 30211030-HE | 10,3 | - | 55 | 102 | 12 |

# HYP-HPO-3D-HE

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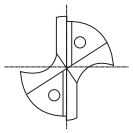
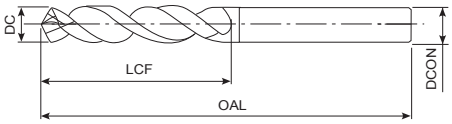
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- With Whistle Notch shank for general purpose
- 134 sizes

| P ○ | P ◉ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | N ○ | N ○ | H ◉ | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | AI | AC, ADC | 25-35 HRC | 35-45 HRC | 45-52 HRC |

HYPRO | CARBIDE | EgiAs | 30° | 140° | m7 | B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30211032-HE | 10,32 | 13/32 | 55 | 102 | 12 |
| 30211040-HE | 10,4 | - | 55 | 102 | 12 |
| 30211050-HE | 10,5 | - | 55 | 102 | 12 |
| 30211060-HE | 10,6 | - | 55 | 102 | 12 |
| 30211070-HE | 10,7 | - | 55 | 102 | 12 |
| 30211072-HE | 10,72 | 27/64 | 55 | 102 | 12 |
| 30211080-HE | 10,8 | - | 55 | 102 | 12 |
| 30211090-HE | 10,9 | - | 55 | 102 | 12 |
| 30211100-HE | 11 | - | 55 | 102 | 12 |
| 30211110-HE | 11,1 | - | 55 | 102 | 12 |
| 30211111-HE | 11,11 | 7/16 | 55 | 102 | 12 |
| 30211120-HE | 11,2 | - | 55 | 102 | 12 |
| 30211130-HE | 11,3 | - | 55 | 102 | 12 |
| 30211140-HE | 11,4 | - | 55 | 102 | 12 |
| 30211150-HE | 11,5 | - | 55 | 102 | 12 |
| 30211151-HE | 11,51 | 29/64 | 55 | 102 | 12 |
| 30211160-HE | 11,6 | - | 55 | 102 | 12 |
| 30211170-HE | 11,7 | - | 55 | 102 | 12 |
| 30211180-HE | 11,8 | - | 55 | 102 | 12 |
| 30211190-HE | 11,9 | - | 55 | 102 | 12 |
| 30211191-HE | 11,91 | 15/32 | 55 | 102 | 12 |
| 30211200-HE | 12 | - | 55 | 102 | 12 |
| 30211230-HE | 12,3 | 31/64 | 60 | 107 | 14 |
| 30211250-HE | 12,5 | - | 60 | 107 | 14 |
| 30211270-HE | 12,7 | 1/2 | 60 | 107 | 14 |
| 30211300-HE | 13 | - | 60 | 107 | 14 |
| 30211350-HE | 13,5 | - | 60 | 107 | 14 |
| 30211400-HE | 14 | - | 60 | 107 | 14 |
| 30211429-HE | 14,29 | 9/16 | 65 | 115 | 16 |
| 30211450-HE | 14,5 | - | 65 | 115 | 16 |
| 30211500-HE | 15 | - | 65 | 115 | 16 |
| 30211550-HE | 15,5 | - | 65 | 115 | 16 |
| 30211587-HE | 15,87 | 5/8 | 65 | 115 | 16 |
| 30211600-HE | 16 | - | 65 | 115 | 16 |
| 30211650-HE | 16,5 | - | 73 | 123 | 18 |
| 30211700-HE | 17 | - | 73 | 123 | 18 |
| 30211750-HE | 17,5 | - | 73 | 123 | 18 |
| 30211800-HE | 18 | - | 73 | 123 | 18 |
| 30211850-HE | 18,5 | - | 79 | 131 | 20 |
| 30211900-HE | 19 | - | 79 | 131 | 20 |
| 30211950-HE | 19,5 | - | 79 | 131 | 20 |
| 30212000-HE | 20 | - | 79 | 131 | 20 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-HPO-3D-HB

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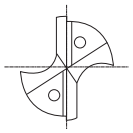
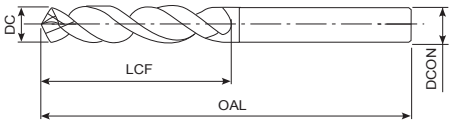
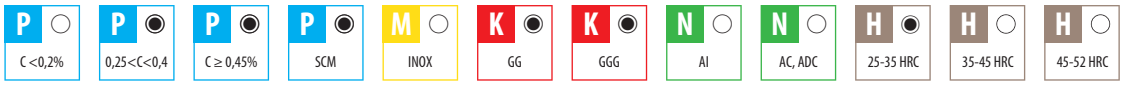
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- With Weldon shank for general purpose
- 136 sizes



| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210300-HB | 3 | - | 20 | 62 | 6 |
| 30210310-HB | 3,1 | - | 20 | 62 | 6 |
| 30210317-HB | 3,17 | 1/8 | 20 | 62 | 6 |
| 30210320-HB | 3,2 | - | 20 | 62 | 6 |
| 30210330-HB | 3,3 | - | 20 | 62 | 6 |
| 30210340-HB | 3,4 | - | 20 | 62 | 6 |
| 30210350-HB | 3,5 | - | 20 | 62 | 6 |
| 30210357-HB | 3,57 | 9/64 | 20 | 62 | 6 |
| 30210360-HB | 3,6 | - | 20 | 62 | 6 |
| 30210370-HB | 3,7 | - | 20 | 62 | 6 |
| 30210380-HB | 3,8 | - | 24 | 66 | 6 |
| 30210390-HB | 3,9 | - | 24 | 66 | 6 |
| 30210397-HB | 3,97 | 5/32 | 24 | 66 | 6 |
| 30210400-HB | 4 | - | 24 | 66 | 6 |
| 30210410-HB | 4,1 | - | 24 | 66 | 6 |
| 30210420-HB | 4,2 | - | 24 | 66 | 6 |
| 30210430-HB | 4,3 | - | 24 | 66 | 6 |
| 30210437-HB | 4,37 | 11/64 | 24 | 66 | 6 |
| 30210440-HB | 4,4 | - | 24 | 66 | 6 |
| 30210450-HB | 4,5 | - | 24 | 66 | 6 |
| 30210460-HB | 4,6 | - | 24 | 66 | 6 |
| 30210465-HB | 4,65 | - | 24 | 66 | 6 |
| 30210470-HB | 4,7 | - | 24 | 66 | 6 |
| 30210476-HB | 4,76 | 3/16 | 24 | 66 | 6 |
| 30210480-HB | 4,8 | - | 28 | 66 | 6 |
| 30210490-HB | 4,9 | - | 28 | 66 | 6 |
| 30210500-HB | 5 | - | 28 | 66 | 6 |
| 30210510-HB | 5,1 | - | 28 | 66 | 6 |
| 30210516-HB | 5,16 | 13/64 | 28 | 66 | 6 |
| 30210520-HB | 5,2 | - | 28 | 66 | 6 |
| 30210530-HB | 5,3 | - | 28 | 66 | 6 |
| 30210540-HB | 5,4 | - | 28 | 66 | 6 |
| 30210550-HB | 5,5 | - | 28 | 66 | 6 |
| 30210555-HB | 5,55 | - | 28 | 66 | 6 |
| 30210556-HB | 5,56 | 7/32 | 28 | 66 | 6 |
| 30210560-HB | 5,6 | - | 28 | 66 | 6 |
| 30210570-HB | 5,7 | - | 28 | 66 | 6 |
| 30210580-HB | 5,8 | - | 28 | 66 | 6 |
| 30210590-HB | 5,9 | - | 28 | 66 | 6 |
| 30210595-HB | 5,95 | 15/64 | 28 | 66 | 6 |
| 30210600-HB | 6 | - | 28 | 66 | 6 |
| 30210610-HB | 6,1 | - | 34 | 79 | 8 |
| 30210620-HB | 6,2 | - | 34 | 79 | 8 |
| 30210630-HB | 6,3 | - | 34 | 79 | 8 |
| 30210635-HB | 6,35 | 1/4 | 34 | 79 | 8 |
| 30210640-HB | 6,4 | - | 34 | 79 | 8 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30210650-HB | 6,5 | - | 34 | 79 | 8 |
| 30210660-HB | 6,6 | - | 34 | 79 | 8 |
| 30210670-HB | 6,7 | - | 34 | 79 | 8 |
| 30210675-HB | 6,75 | 17/64 | 34 | 79 | 8 |
| 30210680-HB | 6,8 | - | 34 | 79 | 8 |
| 30210690-HB | 6,9 | - | 34 | 79 | 8 |
| 30210700-HB | 7 | - | 34 | 79 | 8 |
| 30210710-HB | 7,1 | - | 41 | 79 | 8 |
| 30210714-HB | 7,14 | 9/32 | 41 | 79 | 8 |
| 30210720-HB | 7,2 | - | 41 | 79 | 8 |
| 30210730-HB | 7,3 | - | 41 | 79 | 8 |
| 30210740-HB | 7,4 | - | 41 | 79 | 8 |
| 30210750-HB | 7,5 | - | 41 | 79 | 8 |
| 30210754-HB | 7,54 | 19/64 | 41 | 79 | 8 |
| 30210760-HB | 7,6 | - | 41 | 79 | 8 |
| 30210770-HB | 7,7 | - | 41 | 79 | 8 |
| 30210780-HB | 7,8 | - | 41 | 79 | 8 |
| 30210790-HB | 7,9 | - | 41 | 79 | 8 |
| 30210794-HB | 7,94 | 5/16 | 41 | 79 | 8 |
| 30210800-HB | 8 | - | 41 | 79 | 8 |
| 30210810-HB | 8,1 | - | 47 | 89 | 10 |
| 30210820-HB | 8,2 | - | 47 | 89 | 10 |
| 30210830-HB | 8,3 | - | 47 | 89 | 10 |
| 30210833-HB | 8,33 | 21/64 | 47 | 89 | 10 |
| 30210840-HB | 8,4 | - | 47 | 89 | 10 |
| 30210850-HB | 8,5 | - | 47 | 89 | 10 |
| 30210860-HB | 8,6 | - | 47 | 89 | 10 |
| 30210870-HB | 8,7 | - | 47 | 89 | 10 |
| 30210873-HB | 8,73 | 11/32 | 47 | 89 | 10 |
| 30210880-HB | 8,8 | - | 47 | 89 | 10 |
| 30210890-HB | 8,9 | - | 47 | 89 | 10 |
| 30210900-HB | 9 | - | 47 | 89 | 10 |
| 30210910-HB | 9,1 | - | 47 | 89 | 10 |
| 30210913-HB | 9,13 | 23/64 | 47 | 89 | 10 |
| 30210920-HB | 9,2 | - | 47 | 89 | 10 |
| 30210930-HB | 9,3 | - | 47 | 89 | 10 |
| 30210940-HB | 9,4 | - | 47 | 89 | 10 |
| 30210950-HB | 9,5 | - | 47 | 89 | 10 |
| 30210952-HB | 9,52 | 3/8 | 47 | 89 | 10 |
| 30210960-HB | 9,6 | - | 47 | 89 | 10 |
| 30210970-HB | 9,7 | - | 47 | 89 | 10 |
| 30210980-HB | 9,8 | - | 47 | 89 | 10 |
| 30210990-HB | 9,9 | - | 47 | 89 | 10 |
| 30210992-HB | 9,92 | 25/64 | 47 | 89 | 10 |
| 30211000-HB | 10 | - | 47 | 89 | 10 |
| 30211010-HB | 10,1 | - | 55 | 102 | 12 |

# HYP-HPO-3D-HB

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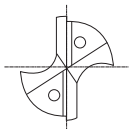
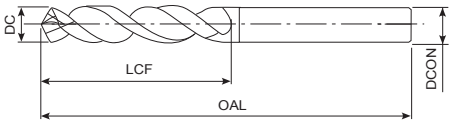
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 3xD
- With Weldon shank for general purpose
- 136 sizes

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30211020-HB | 10,2 | - | 55 | 102 | 12 |
| 30211030-HB | 10,3 | - | 55 | 102 | 12 |
| 30211032-HB | 10,32 | 13/32 | 55 | 102 | 12 |
| 30211040-HB | 10,4 | - | 55 | 102 | 12 |
| 30211050-HB | 10,5 | - | 55 | 102 | 12 |
| 30211060-HB | 10,6 | - | 55 | 102 | 12 |
| 30211070-HB | 10,7 | - | 55 | 102 | 12 |
| 30211072-HB | 10,72 | 27/64 | 55 | 102 | 12 |
| 30211080-HB | 10,8 | - | 55 | 102 | 12 |
| 30211090-HB | 10,9 | - | 55 | 102 | 12 |
| 30211100-HB | 11 | - | 55 | 102 | 12 |
| 30211110-HB | 11,1 | - | 55 | 102 | 12 |
| 30211111-HB | 11,11 | 7/16 | 55 | 102 | 12 |
| 30211120-HB | 11,2 | - | 55 | 102 | 12 |
| 30211130-HB | 11,3 | - | 55 | 102 | 12 |
| 30211140-HB | 11,4 | - | 55 | 102 | 12 |
| 30211150-HB | 11,5 | - | 55 | 102 | 12 |
| 30211151-HB | 11,51 | 29/64 | 55 | 102 | 12 |
| 30211160-HB | 11,6 | - | 55 | 102 | 12 |
| 30211170-HB | 11,7 | - | 55 | 102 | 12 |
| 30211180-HB | 11,8 | - | 55 | 102 | 12 |
| 30211190-HB | 11,9 | - | 55 | 102 | 12 |
| 30211191-HB | 11,91 | 15/32 | 55 | 102 | 12 |
| 30211200-HB | 12 | - | 55 | 102 | 12 |
| 30211230-HB | 12,3 | 31/64 | 60 | 107 | 14 |
| 30211250-HB | 12,5 | - | 60 | 107 | 14 |
| 30211270-HB | 12,7 | 1/2 | 60 | 107 | 14 |
| 30211300-HB | 13 | - | 60 | 107 | 14 |
| 30211350-HB | 13,5 | - | 60 | 107 | 14 |
| 30211400-HB | 14 | - | 60 | 107 | 14 |
| 30211429-HB | 14,29 | 9/16 | 65 | 115 | 16 |
| 30211450-HB | 14,5 | - | 65 | 115 | 16 |
| 30211500-HB | 15 | - | 65 | 115 | 16 |
| 30211550-HB | 15,5 | - | 65 | 115 | 16 |
| 30211587-HB | 15,87 | 5/8 | 65 | 115 | 16 |
| 30211600-HB | 16 | - | 65 | 115 | 16 |
| 30211650-HB | 16,5 | - | 73 | 123 | 18 |
| 30211700-HB | 17 | - | 73 | 123 | 18 |
| 30211750-HB | 17,5 | - | 73 | 123 | 18 |
| 30211800-HB | 18 | - | 73 | 123 | 18 |
| 30211850-HB | 18,5 | - | 79 | 131 | 20 |
| 30211900-HB | 19 | - | 79 | 131 | 20 |
| 30211950-HB | 19,5 | - | 79 | 131 | 20 |
| 30212000-HB | 20 | - | 79 | 131 | 20 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-HPO-SC-3D

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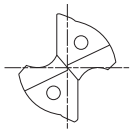
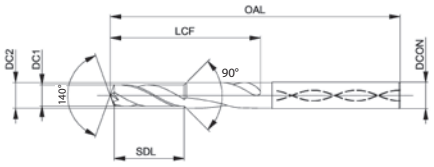
**Drilling | Solid carbide | 3xD**






- Carbide drill with internal coolant, EgiAs coating
- 3xD step length
- General purpose
- For tap drill holes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | ±25° | SHRINK FIT | 140° | h8

B.501

| EDP | Thread | DC1 | DC2 | DCON | SDL | LCF | OAL |
|---|---|---|---|---|---|---|---|
| EP0202144 | M4x0,7 | 3,3 | 6 | 6 | 12 | 16 | 66 |
| EP0202149 | M5x0,8 | 4,2 | 6 | 6 | 15 | 18 | 66 |
| EP0202155 | M6x1 | 5 | 8 | 8 | 18 | 23 | 79 |
| EP0202161 | M8x1,25 | 6,8 | 10 | 10 | 24 | 29 | 89 |
| EP0202169 | M10x1,5 | 8,5 | 12 | 12 | 30 | 35 | 89 |
| EP0202179 | M12x1,75 | 10,2 | 14 | 14 | 36 | 41 | 112 |

| EDP | DC1 | DC2 | DCON | SDL | LCF | OAL |
|---|---|---|---|---|---|---|

# HYP-HPO-5D

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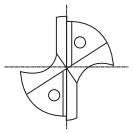
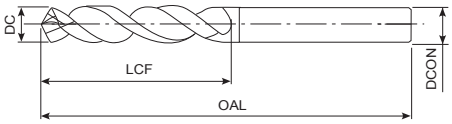
**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- General purpose
- 156 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7 | B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220100 | 1 | - | 8 | 55 | 3 |
| 30220110 | 1,1 | - | 12 | 55 | 3 |
| 30220120 | 1,2 | - | 12 | 55 | 3 |
| 30220130 | 1,3 | - | 12 | 55 | 3 |
| 30220140 | 1,4 | - | 12 | 55 | 3 |
| 30220150 | 1,5 | - | 16 | 55 | 3 |
| 30220160 | 1,6 | - | 16 | 55 | 3 |
| 30220170 | 1,7 | - | 16 | 55 | 3 |
| 30220180 | 1,8 | - | 16 | 55 | 3 |
| 30220190 | 1,9 | - | 16 | 55 | 3 |
| 30220200 | 2 | - | 21 | 57 | 4 |
| 30220210 | 2,1 | - | 21 | 57 | 4 |
| 30220220 | 2,2 | - | 21 | 57 | 4 |
| 30220230 | 2,3 | - | 21 | 57 | 4 |
| 30220240 | 2,4 | - | 21 | 57 | 4 |
| 30220250 | 2,5 | - | 21 | 57 | 4 |
| 30220260 | 2,6 | - | 21 | 57 | 4 |
| 30220270 | 2,7 | - | 21 | 57 | 4 |
| 30220280 | 2,8 | - | 21 | 57 | 4 |
| 30220290 | 2,9 | - | 21 | 57 | 4 |
| 30220300 | 3 | - | 28 | 66 | 6 |
| 30220310 | 3,1 | - | 28 | 66 | 6 |
| 30220317 | 3,17 | 1/8 | 28 | 66 | 6 |
| 30220320 | 3,2 | - | 28 | 66 | 6 |
| 30220330 | 3,3 | - | 28 | 66 | 6 |
| 30220340 | 3,4 | - | 28 | 66 | 6 |
| 30220350 | 3,5 | - | 28 | 66 | 6 |
| 30220357 | 3,57 | 9/64 | 28 | 66 | 6 |
| 30220360 | 3,6 | - | 28 | 66 | 6 |
| 30220370 | 3,7 | - | 28 | 66 | 6 |
| 30220380 | 3,8 | - | 36 | 74 | 6 |
| 30220390 | 3,9 | - | 36 | 74 | 6 |
| 30220397 | 3,97 | 5/32 | 36 | 74 | 6 |
| 30220400 | 4 | - | 36 | 74 | 6 |
| 30220410 | 4,1 | - | 36 | 74 | 6 |
| 30220420 | 4,2 | - | 36 | 74 | 6 |
| 30220430 | 4,3 | - | 36 | 74 | 6 |
| 30220437 | 4,37 | 11/64 | 36 | 74 | 6 |
| 30220440 | 4,4 | - | 36 | 74 | 6 |
| 30220450 | 4,5 | - | 36 | 74 | 6 |
| 30220460 | 4,6 | - | 36 | 74 | 6 |
| 30220465 | 4,65 | - | 36 | 74 | 6 |
| 30220470 | 4,7 | - | 36 | 74 | 6 |
| 30220476 | 4,76 | 3/16 | 44 | 82 | 6 |
| 30220480 | 4,8 | - | 44 | 82 | 6 |
| 30220490 | 4,9 | - | 44 | 82 | 6 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220500 | 5 | - | 44 | 82 | 6 |
| 30220510 | 5,1 | - | 44 | 82 | 6 |
| 30220516 | 5,16 | 13/64 | 44 | 82 | 6 |
| 30220520 | 5,2 | - | 44 | 82 | 6 |
| 30220530 | 5,3 | - | 44 | 82 | 6 |
| 30220540 | 5,4 | - | 44 | 82 | 6 |
| 30220550 | 5,5 | - | 44 | 82 | 6 |
| 30220555 | 5,55 | - | 44 | 82 | 6 |
| 30220556 | 5,56 | 7/32 | 44 | 82 | 6 |
| 30220560 | 5,6 | - | 44 | 82 | 6 |
| 30220570 | 5,7 | - | 44 | 82 | 6 |
| 30220580 | 5,8 | - | 44 | 82 | 6 |
| 30220590 | 5,9 | - | 44 | 82 | 6 |
| 30220595 | 5,95 | 15/54 | 44 | 82 | 6 |
| 30220600 | 6 | - | 44 | 82 | 6 |
| 30220610 | 6,1 | - | 53 | 91 | 8 |
| 30220620 | 6,2 | - | 53 | 91 | 8 |
| 30220630 | 6,3 | - | 53 | 91 | 8 |
| 30220635 | 6,35 | 1/4 | 53 | 91 | 8 |
| 30220640 | 6,4 | - | 53 | 91 | 8 |
| 30220650 | 6,5 | - | 53 | 91 | 8 |
| 30220660 | 6,6 | - | 53 | 91 | 8 |
| 30220670 | 6,7 | - | 53 | 91 | 8 |
| 30220675 | 6,75 | 17/64 | 53 | 91 | 8 |
| 30220680 | 6,8 | - | 53 | 91 | 8 |
| 30220690 | 6,9 | - | 53 | 91 | 8 |
| 30220700 | 7 | - | 53 | 91 | 8 |
| 30220710 | 7,1 | - | 53 | 91 | 8 |
| 30220714 | 7,14 | 9/32 | 53 | 91 | 8 |
| 30220720 | 7,2 | - | 53 | 91 | 8 |
| 30220730 | 7,3 | - | 53 | 91 | 8 |
| 30220740 | 7,4 | - | 53 | 91 | 8 |
| 30220750 | 7,5 | - | 53 | 91 | 8 |
| 30220754 | 7,54 | 19/64 | 53 | 91 | 8 |
| 30220760 | 7,6 | - | 53 | 91 | 8 |
| 30220770 | 7,7 | - | 53 | 91 | 8 |
| 30220780 | 7,8 | - | 53 | 91 | 8 |
| 30220790 | 7,9 | - | 53 | 91 | 8 |
| 30220794 | 7,94 | 5/16 | 53 | 91 | 8 |
| 30220800 | 8 | - | 53 | 91 | 8 |
| 30220810 | 8,1 | - | 61 | 103 | 10 |
| 30220820 | 8,2 | - | 61 | 103 | 10 |
| 30220830 | 8,3 | - | 61 | 103 | 10 |
| 30220833 | 8,33 | 21/64 | 61 | 103 | 10 |
| 30220840 | 8,4 | - | 61 | 103 | 10 |
| 30220850 | 8,5 | - | 61 | 103 | 10 |

# HYP-HPO-5D

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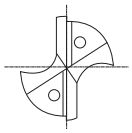
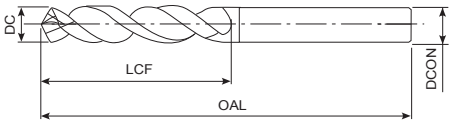
**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- General purpose
- 156 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7 | B.501

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220860 | 8,6 | - | 61 | 103 | 10 |
| 30220870 | 8,7 | - | 61 | 103 | 10 |
| 30220873 | 8,73 | 11/32 | 61 | 103 | 10 |
| 30220880 | 8,8 | - | 61 | 103 | 10 |
| 30220890 | 8,9 | - | 61 | 103 | 10 |
| 30220900 | 9 | - | 61 | 103 | 10 |
| 30220910 | 9,1 | - | 61 | 103 | 10 |
| 30220913 | 9,13 | 23/64 | 61 | 103 | 10 |
| 30220920 | 9,2 | - | 61 | 103 | 10 |
| 30220930 | 9,3 | - | 61 | 103 | 10 |
| 30220940 | 9,4 | - | 61 | 103 | 10 |
| 30220950 | 9,5 | - | 61 | 103 | 10 |
| 30220952 | 9,52 | 3/8 | 61 | 103 | 10 |
| 30220960 | 9,6 | - | 61 | 103 | 10 |
| 30220970 | 9,7 | - | 61 | 103 | 10 |
| 30220980 | 9,8 | - | 61 | 103 | 10 |
| 30220990 | 9,9 | - | 61 | 103 | 10 |
| 30220992 | 9,92 | 25/64 | 61 | 103 | 10 |
| 30221000 | 10 | - | 61 | 103 | 10 |
| 30221010 | 10,1 | - | 71 | 118 | 12 |
| 30221020 | 10,2 | - | 71 | 118 | 12 |
| 30221030 | 10,3 | - | 71 | 118 | 12 |
| 30221032 | 10,32 | 13/32 | 71 | 118 | 12 |
| 30221040 | 10,4 | - | 71 | 118 | 12 |
| 30221050 | 10,5 | - | 71 | 118 | 12 |
| 30221060 | 10,6 | - | 71 | 118 | 12 |
| 30221070 | 10,7 | - | 71 | 118 | 12 |
| 30221072 | 10,72 | 27/64 | 71 | 118 | 12 |
| 30221080 | 10,8 | - | 71 | 118 | 12 |
| 30221090 | 10,9 | - | 71 | 118 | 12 |
| 30221100 | 11 | - | 71 | 118 | 12 |
| 30221110 | 11,1 | - | 71 | 118 | 12 |
| 30221111 | 11,11 | 7/16 | 71 | 118 | 12 |
| 30221120 | 11,2 | - | 71 | 118 | 12 |
| 30221130 | 11,3 | - | 71 | 118 | 12 |
| 30221140 | 11,4 | - | 71 | 118 | 12 |
| 30221150 | 11,5 | - | 71 | 118 | 12 |
| 30221151 | 11,51 | 29/64 | 71 | 118 | 12 |
| 30221160 | 11,6 | - | 71 | 118 | 12 |
| 30221170 | 11,7 | - | 71 | 118 | 12 |
| 30221180 | 11,8 | - | 71 | 118 | 12 |
| 30221190 | 11,9 | - | 71 | 118 | 12 |
| 30221191 | 11,91 | 15/32 | 71 | 118 | 12 |
| 30221200 | 12 | - | 71 | 118 | 12 |
| 30221230 | 12,3 | 31/64 | 77 | 124 | 14 |
| 30221250 | 12,5 | - | 77 | 124 | 14 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30221270 | 12,7 | 1/2 | 77 | 124 | 14 |
| 30221300 | 13 | - | 77 | 124 | 14 |
| 30221350 | 13,5 | - | 77 | 124 | 14 |
| 30221400 | 14 | - | 77 | 124 | 14 |
| 30221429 | 14,29 | 9/16 | 83 | 133 | 16 |
| 30221450 | 14,5 | - | 83 | 133 | 16 |
| 30221500 | 15 | - | 83 | 133 | 16 |
| 30221550 | 15,5 | - | 83 | 133 | 16 |
| 30221587 | 15,87 | 5/8 | 83 | 133 | 16 |
| 30221600 | 16 | - | 83 | 133 | 16 |
| 30221650 | 16,5 | - | 93 | 143 | 18 |
| 30221700 | 17 | - | 93 | 143 | 18 |
| 30221750 | 17,5 | - | 93 | 143 | 18 |
| 30221800 | 18 | - | 93 | 143 | 18 |
| 30221850 | 18,5 | - | 101 | 153 | 20 |
| 30221900 | 19 | - | 101 | 153 | 20 |
| 30221950 | 19,5 | - | 101 | 153 | 20 |
| 30222000 | 20 | - | 101 | 153 | 20 |

# HYP-HPO-5D-HE

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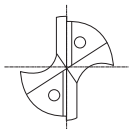
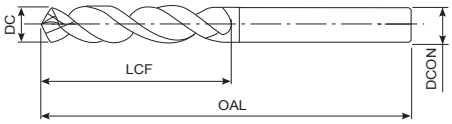
**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- With Whistle Notch shank for general purpose
- 134 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | 140° | m7 | B.501

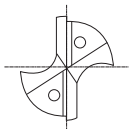
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220300-HE | 3 | - | 28 | 66 | 6 |
| 30220310-HE | 3,1 | - | 28 | 66 | 6 |
| 30220317-HE | 3,17 | 1/8 | 28 | 66 | 6 |
| 30220320-HE | 3,2 | - | 28 | 66 | 6 |
| 30220330-HE | 3,3 | - | 28 | 66 | 6 |
| 30220340-HE | 3,4 | - | 28 | 66 | 6 |
| 30220350-HE | 3,5 | - | 28 | 66 | 6 |
| 30220357-HE | 3,57 | 9/64 | 28 | 66 | 6 |
| 30220360-HE | 3,6 | - | 28 | 66 | 6 |
| 30220370-HE | 3,7 | - | 28 | 66 | 6 |
| 30220380-HE | 3,8 | - | 36 | 74 | 6 |
| 30220390-HE | 3,9 | - | 36 | 74 | 6 |
| 30220397-HE | 3,97 | 5/32 | 36 | 74 | 6 |
| 30220400-HE | 4 | - | 36 | 74 | 6 |
| 30220410-HE | 4,1 | - | 36 | 74 | 6 |
| 30220420-HE | 4,2 | - | 36 | 74 | 6 |
| 30220430-HE | 4,3 | - | 36 | 74 | 6 |
| 30220437-HE | 4,37 | 11/64 | 36 | 74 | 6 |
| 30220440-HE | 4,4 | - | 36 | 74 | 6 |
| 30220450-HE | 4,5 | - | 36 | 74 | 6 |
| 30220460-HE | 4,6 | - | 36 | 74 | 6 |
| 30220470-HE | 4,7 | - | 36 | 74 | 6 |
| 30220476-HE | 4,76 | 3/16 | 44 | 82 | 6 |
| 30220480-HE | 4,8 | - | 44 | 82 | 6 |
| 30220490-HE | 4,9 | - | 44 | 82 | 6 |
| 30220500-HE | 5 | - | 44 | 82 | 6 |
| 30220510-HE | 5,1 | - | 44 | 82 | 6 |
| 30220516-HE | 5,16 | 13/64 | 44 | 82 | 6 |
| 30220520-HE | 5,2 | - | 44 | 82 | 6 |
| 30220530-HE | 5,3 | - | 44 | 82 | 6 |
| 30220540-HE | 5,4 | - | 44 | 82 | 6 |
| 30220550-HE | 5,5 | - | 44 | 82 | 6 |
| 30220556-HE | 5,56 | 7/32 | 44 | 82 | 6 |
| 30220560-HE | 5,6 | - | 44 | 82 | 6 |
| 30220570-HE | 5,7 | - | 44 | 82 | 6 |
| 30220580-HE | 5,8 | - | 44 | 82 | 6 |
| 30220590-HE | 5,9 | - | 44 | 82 | 6 |
| 30220595-HE | 5,95 | 15/64 | 44 | 82 | 6 |
| 30220600-HE | 6 | - | 44 | 82 | 6 |
| 30220610-HE | 6,1 | - | 53 | 91 | 8 |
| 30220620-HE | 6,2 | - | 53 | 91 | 8 |
| 30220630-HE | 6,3 | - | 53 | 91 | 8 |
| 30220635-HE | 6,35 | 1/4 | 53 | 91 | 8 |
| 30220640-HE | 6,4 | - | 53 | 91 | 8 |
| 30220650-HE | 6,5 | - | 53 | 91 | 8 |
| 30220660-HE | 6,6 | - | 53 | 91 | 8 |

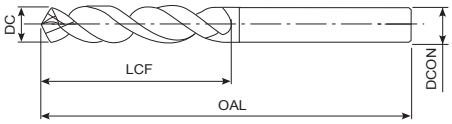
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220670-HE | 6,7 | - | 53 | 91 | 8 |
| 30220675-HE | 6,75 | 17/64 | 53 | 91 | 8 |
| 30220680-HE | 6,8 | - | 53 | 91 | 8 |
| 30220690-HE | 6,9 | - | 53 | 91 | 8 |
| 30220700-HE | 7 | - | 53 | 91 | 8 |
| 30220710-HE | 7,1 | - | 53 | 91 | 8 |
| 30220714-HE | 7,14 | 9/32 | 53 | 91 | 8 |
| 30220720-HE | 7,2 | - | 53 | 91 | 8 |
| 30220730-HE | 7,3 | - | 53 | 91 | 8 |
| 30220740-HE | 7,4 | - | 53 | 91 | 8 |
| 30220750-HE | 7,5 | - | 53 | 91 | 8 |
| 30220754-HE | 7,54 | 19/64 | 53 | 91 | 8 |
| 30220760-HE | 7,6 | - | 53 | 91 | 8 |
| 30220770-HE | 7,7 | - | 53 | 91 | 8 |
| 30220780-HE | 7,8 | - | 53 | 91 | 8 |
| 30220790-HE | 7,9 | - | 53 | 91 | 8 |
| 30220794-HE | 7,94 | 5/16 | 53 | 91 | 8 |
| 30220800-HE | 8 | - | 53 | 91 | 8 |
| 30220810-HE | 8,1 | - | 61 | 103 | 10 |
| 30220820-HE | 8,2 | - | 61 | 103 | 10 |
| 30220830-HE | 8,3 | - | 61 | 103 | 10 |
| 30220833-HE | 8,33 | 21/64 | 61 | 103 | 10 |
| 30220840-HE | 8,4 | - | 61 | 103 | 10 |
| 30220850-HE | 8,5 | - | 61 | 103 | 10 |
| 30220860-HE | 8,6 | - | 61 | 103 | 10 |
| 30220870-HE | 8,7 | - | 61 | 103 | 10 |
| 30220873-HE | 8,73 | 11/32 | 61 | 103 | 10 |
| 30220880-HE | 8,8 | - | 61 | 103 | 10 |
| 30220890-HE | 8,9 | - | 61 | 103 | 10 |
| 30220900-HE | 9 | - | 61 | 103 | 10 |
| 30220910-HE | 9,1 | - | 61 | 103 | 10 |
| 30220913-HE | 9,13 | 23/64 | 61 | 103 | 10 |
| 30220920-HE | 9,2 | - | 61 | 103 | 10 |
| 30220930-HE | 9,3 | - | 61 | 103 | 10 |
| 30220940-HE | 9,4 | - | 61 | 103 | 10 |
| 30220950-HE | 9,5 | - | 61 | 103 | 10 |
| 30220952-HE | 9,52 | 3/8 | 61 | 103 | 10 |
| 30220960-HE | 9,6 | - | 61 | 103 | 10 |
| 30220970-HE | 9,7 | - | 61 | 103 | 10 |
| 30220980-HE | 9,8 | - | 61 | 103 | 10 |
| 30220990-HE | 9,9 | - | 61 | 103 | 10 |
| 30220992-HE | 9,92 | 25/64 | 61 | 103 | 10 |
| 30221000-HE | 10 | - | 61 | 103 | 10 |
| 30221010-HE | 10,1 | - | 71 | 118 | 12 |
| 30221020-HE | 10,2 | - | 71 | 118 | 12 |
| 30221030-HE | 10,3 | - | 71 | 118 | 12 |

# HYP-HPO-5D-HE

INDEX

**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- With Whistle Notch shank for general purpose
- 134 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | K ◉ GGG | N ○ Al | N ○ AC, ADC | H ◉ 25-35 HRC | H ○ 35-45 HRC | H ○ 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | 140° | m7 | B.501

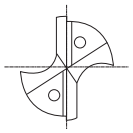
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30221032-HE | 10,32 | 13/32 | 71 | 118 | 12 |
| 30221040-HE | 10,4 | - | 71 | 118 | 12 |
| 30221050-HE | 10,5 | - | 71 | 118 | 12 |
| 30221060-HE | 10,6 | - | 71 | 118 | 12 |
| 30221070-HE | 10,7 | - | 71 | 118 | 12 |
| 30221072-HE | 10,72 | 27/64 | 71 | 118 | 12 |
| 30221080-HE | 10,8 | - | 71 | 118 | 12 |
| 30221090-HE | 10,9 | - | 71 | 118 | 12 |
| 30221100-HE | 11 | - | 71 | 118 | 12 |
| 30221110-HE | 11,1 | - | 71 | 118 | 12 |
| 30221111-HE | 11,11 | 7/16 | 71 | 118 | 12 |
| 30221120-HE | 11,2 | - | 71 | 118 | 12 |
| 30221130-HE | 11,3 | - | 71 | 118 | 12 |
| 30221140-HE | 11,4 | - | 71 | 118 | 12 |
| 30221150-HE | 11,5 | - | 71 | 118 | 12 |
| 30221151-HE | 11,51 | 29/64 | 71 | 118 | 12 |
| 30221160-HE | 11,6 | - | 71 | 118 | 12 |
| 30221170-HE | 11,7 | - | 71 | 118 | 12 |
| 30221180-HE | 11,8 | - | 71 | 118 | 12 |
| 30221190-HE | 11,9 | - | 71 | 118 | 12 |
| 30221191-HE | 11,91 | 15/32 | 71 | 118 | 12 |
| 30221200-HE | 12 | - | 71 | 118 | 12 |
| 30221230-HE | 12,3 | 31/64 | 77 | 124 | 14 |
| 30221250-HE | 12,5 | - | 77 | 124 | 14 |
| 30221270-HE | 12,7 | 1/2 | 77 | 124 | 14 |
| 30221300-HE | 13 | - | 77 | 124 | 14 |
| 30221350-HE | 13,5 | - | 77 | 124 | 14 |
| 30221400-HE | 14 | - | 77 | 124 | 14 |
| 30221429-HE | 14,29 | 9/16 | 83 | 133 | 16 |
| 30221450-HE | 14,5 | - | 83 | 133 | 16 |
| 30221500-HE | 15 | - | 83 | 133 | 16 |
| 30221550-HE | 15,5 | - | 83 | 133 | 16 |
| 30221587-HE | 15,87 | 5/8 | 83 | 133 | 16 |
| 30221600-HE | 16 | - | 83 | 133 | 16 |
| 30221650-HE | 16,5 | - | 93 | 143 | 18 |
| 30221700-HE | 17 | - | 93 | 143 | 18 |
| 30221750-HE | 17,5 | - | 93 | 143 | 18 |
| 30221800-HE | 18 | - | 93 | 143 | 18 |
| 30221850-HE | 18,5 | - | 101 | 153 | 20 |
| 30221900-HE | 19 | - | 101 | 153 | 20 |
| 30221950-HE | 19,5 | - | 101 | 153 | 20 |
| 30222000-HE | 20 | - | 101 | 153 | 20 |

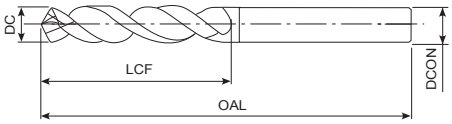
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-HPO-5D-HB

INDEX

**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- With Weldon shank for general purpose
- 136 sizes

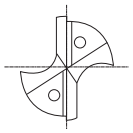
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220300-HB | 3 | - | 28 | 66 | 6 |
| 30220310-HB | 3,1 | - | 28 | 66 | 6 |
| 30220317-HB | 3,17 | 1/8 | 28 | 66 | 6 |
| 30220320-HB | 3,2 | - | 28 | 66 | 6 |
| 30220330-HB | 3,3 | - | 28 | 66 | 6 |
| 30220340-HB | 3,4 | - | 28 | 66 | 6 |
| 30220350-HB | 3,5 | - | 28 | 66 | 6 |
| 30220357-HB | 3,57 | 9/64 | 28 | 66 | 6 |
| 30220360-HB | 3,6 | - | 28 | 66 | 6 |
| 30220370-HB | 3,7 | - | 28 | 66 | 6 |
| 30220380-HB | 3,8 | - | 36 | 74 | 6 |
| 30220390-HB | 3,9 | - | 36 | 74 | 6 |
| 30220397-HB | 3,97 | 5/32 | 36 | 74 | 6 |
| 30220400-HB | 4 | - | 36 | 74 | 6 |
| 30220410-HB | 4,1 | - | 36 | 74 | 6 |
| 30220420-HB | 4,2 | - | 36 | 74 | 6 |
| 30220430-HB | 4,3 | - | 36 | 74 | 6 |
| 30220437-HB | 4,37 | 11/64 | 36 | 74 | 6 |
| 30220440-HB | 4,4 | - | 36 | 74 | 6 |
| 30220450-HB | 4,5 | - | 36 | 74 | 6 |
| 30220460-HB | 4,6 | - | 36 | 74 | 6 |
| 30220465-HB | 4,65 | - | 36 | 74 | 6 |
| 30220470-HB | 4,7 | - | 36 | 74 | 6 |
| 30220476-HB | 4,76 | 3/16 | 44 | 82 | 6 |
| 30220480-HB | 4,8 | - | 44 | 82 | 6 |
| 30220490-HB | 4,9 | - | 44 | 82 | 6 |
| 30220500-HB | 5 | - | 44 | 82 | 6 |
| 30220510-HB | 5,1 | - | 44 | 82 | 6 |
| 30220516-HB | 5,16 | 13/64 | 44 | 82 | 6 |
| 30220520-HB | 5,2 | - | 44 | 82 | 6 |
| 30220530-HB | 5,3 | - | 44 | 82 | 6 |
| 30220540-HB | 5,4 | - | 44 | 82 | 6 |
| 30220550-HB | 5,5 | - | 44 | 82 | 6 |
| 30220555-HB | 5,55 | - | 44 | 82 | 6 |
| 30220556-HB | 5,56 | 7/32 | 44 | 82 | 6 |
| 30220560-HB | 5,6 | - | 44 | 82 | 6 |
| 30220570-HB | 5,7 | - | 44 | 82 | 6 |
| 30220580-HB | 5,8 | - | 44 | 82 | 6 |
| 30220590-HB | 5,9 | - | 44 | 82 | 6 |
| 30220595-HB | 5,95 | 15/54 | 44 | 82 | 6 |
| 30220600-HB | 6 | - | 44 | 82 | 6 |
| 30220610-HB | 6,1 | - | 53 | 91 | 8 |
| 30220620-HB | 6,2 | - | 53 | 91 | 8 |
| 30220630-HB | 6,3 | - | 53 | 91 | 8 |
| 30220635-HB | 6,35 | 1/4 | 53 | 91 | 8 |
| 30220640-HB | 6,4 | - | 53 | 91 | 8 |

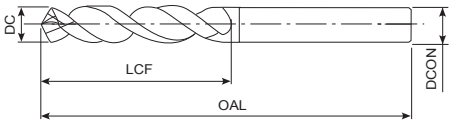
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30220650-HB | 6,5 | - | 53 | 91 | 8 |
| 30220660-HB | 6,6 | - | 53 | 91 | 8 |
| 30220670-HB | 6,7 | - | 53 | 91 | 8 |
| 30220675-HB | 6,75 | 17/64 | 53 | 91 | 8 |
| 30220680-HB | 6,8 | - | 53 | 91 | 8 |
| 30220690-HB | 6,9 | - | 53 | 91 | 8 |
| 30220700-HB | 7 | - | 53 | 91 | 8 |
| 30220710-HB | 7,1 | - | 53 | 91 | 8 |
| 30220714-HB | 7,14 | 9/32 | 53 | 91 | 8 |
| 30220720-HB | 7,2 | - | 53 | 91 | 8 |
| 30220730-HB | 7,3 | - | 53 | 91 | 8 |
| 30220740-HB | 7,4 | - | 53 | 91 | 8 |
| 30220750-HB | 7,5 | - | 53 | 91 | 8 |
| 30220754-HB | 7,54 | 19/64 | 53 | 91 | 8 |
| 30220760-HB | 7,6 | - | 53 | 91 | 8 |
| 30220770-HB | 7,7 | - | 53 | 91 | 8 |
| 30220780-HB | 7,8 | - | 53 | 91 | 8 |
| 30220790-HB | 7,9 | - | 53 | 91 | 8 |
| 30220794-HB | 7,94 | 5/16 | 53 | 91 | 8 |
| 30220800-HB | 8 | - | 53 | 91 | 8 |
| 30220810-HB | 8,1 | - | 61 | 103 | 10 |
| 30220820-HB | 8,2 | - | 61 | 103 | 10 |
| 30220830-HB | 8,3 | - | 61 | 103 | 10 |
| 30220833-HB | 8,33 | 21/64 | 61 | 103 | 10 |
| 30220840-HB | 8,4 | - | 61 | 103 | 10 |
| 30220850-HB | 8,5 | - | 61 | 103 | 10 |
| 30220860-HB | 8,6 | - | 61 | 103 | 10 |
| 30220870-HB | 8,7 | - | 61 | 103 | 10 |
| 30220873-HB | 8,73 | 11/32 | 61 | 103 | 10 |
| 30220880-HB | 8,8 | - | 61 | 103 | 10 |
| 30220890-HB | 8,9 | - | 61 | 103 | 10 |
| 30220900-HB | 9 | - | 61 | 103 | 10 |
| 30220910-HB | 9,1 | - | 61 | 103 | 10 |
| 30220913-HB | 9,13 | 23/64 | 61 | 103 | 10 |
| 30220920-HB | 9,2 | - | 61 | 103 | 10 |
| 30220930-HB | 9,3 | - | 61 | 103 | 10 |
| 30220940-HB | 9,4 | - | 61 | 103 | 10 |
| 30220950-HB | 9,5 | - | 61 | 103 | 10 |
| 30220952-HB | 9,52 | 3/8 | 61 | 103 | 10 |
| 30220960-HB | 9,6 | - | 61 | 103 | 10 |
| 30220970-HB | 9,7 | - | 61 | 103 | 10 |
| 30220980-HB | 9,8 | - | 61 | 103 | 10 |
| 30220990-HB | 9,9 | - | 61 | 103 | 10 |
| 30220992-HB | 9,92 | 25/64 | 61 | 103 | 10 |
| 30221000-HB | 10 | - | 61 | 103 | 10 |
| 30221010-HB | 10,1 | - | 71 | 118 | 12 |

# HYP-HPO-5D-HB

INDEX

**Drilling | Solid carbide | 5xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 5xD
- With Weldon shank for general purpose
- 136 sizes

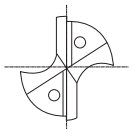
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 30221020-HB | 10,2 | - | 71 | 118 | 12 |
| 30221030-HB | 10,3 | - | 71 | 118 | 12 |
| 30221032-HB | 10,32 | 13/32 | 71 | 118 | 12 |
| 30221040-HB | 10,4 | - | 71 | 118 | 12 |
| 30221050-HB | 10,5 | - | 71 | 118 | 12 |
| 30221060-HB | 10,6 | - | 71 | 118 | 12 |
| 30221070-HB | 10,7 | - | 71 | 118 | 12 |
| 30221072-HB | 10,72 | 27/64 | 71 | 118 | 12 |
| 30221080-HB | 10,8 | - | 71 | 118 | 12 |
| 30221090-HB | 10,9 | - | 71 | 118 | 12 |
| 30221100-HB | 11 | - | 71 | 118 | 12 |
| 30221110-HB | 11,1 | - | 71 | 118 | 12 |
| 30221111-HB | 11,11 | 7/16 | 71 | 118 | 12 |
| 30221120-HB | 11,2 | - | 71 | 118 | 12 |
| 30221130-HB | 11,3 | - | 71 | 118 | 12 |
| 30221140-HB | 11,4 | - | 71 | 118 | 12 |
| 30221150-HB | 11,5 | - | 71 | 118 | 12 |
| 30221151-HB | 11,51 | 29/64 | 71 | 118 | 12 |
| 30221160-HB | 11,6 | - | 71 | 118 | 12 |
| 30221170-HB | 11,7 | - | 71 | 118 | 12 |
| 30221180-HB | 11,8 | - | 71 | 118 | 12 |
| 30221190-HB | 11,9 | - | 71 | 118 | 12 |
| 30221191-HB | 11,91 | 15/32 | 71 | 118 | 12 |
| 30221200-HB | 12 | - | 71 | 118 | 12 |
| 30221230-HB | 12,3 | 31/64 | 77 | 124 | 14 |
| 30221250-HB | 12,5 | - | 77 | 124 | 14 |
| 30221270-HB | 12,7 | 1/2 | 77 | 124 | 14 |
| 30221300-HB | 13 | - | 77 | 124 | 14 |
| 30221350-HB | 13,5 | - | 77 | 124 | 14 |
| 30221400-HB | 14 | - | 77 | 124 | 14 |
| 30221429-HB | 14,29 | 9/16 | 83 | 133 | 16 |
| 30221450-HB | 14,5 | - | 83 | 133 | 16 |
| 30221500-HB | 15 | - | 83 | 133 | 16 |
| 30221550-HB | 15,5 | - | 83 | 133 | 16 |
| 30221587-HB | 15,87 | 5/8 | 83 | 133 | 16 |
| 30221600-HB | 16 | - | 83 | 133 | 16 |
| 30221650-HB | 16,5 | - | 93 | 143 | 18 |
| 30221700-HB | 17 | - | 93 | 143 | 18 |
| 30221750-HB | 17,5 | - | 93 | 143 | 18 |
| 30221800-HB | 18 | - | 93 | 143 | 18 |
| 30221850-HB | 18,5 | - | 101 | 153 | 20 |
| 30221900-HB | 19 | - | 101 | 153 | 20 |
| 30221950-HB | 19,5 | - | 101 | 153 | 20 |
| 30222000-HB | 20 | - | 101 | 153 | 20 |

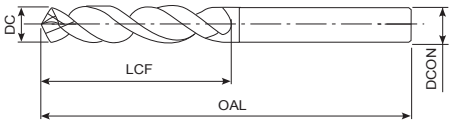
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-HPO-8D



**Drilling | Solid carbide | 8xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 8xD
- General purpose
- 134 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7 | B.501

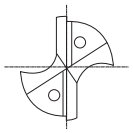
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 32210300 | 3 | - | 34 | 72 | 4 |
| 32210310 | 3,1 | - | 43 | 81 | 4 |
| 32210317 | 3,17 | 1/8 | 43 | 81 | 4 |
| 32210320 | 3,2 | - | 43 | 81 | 4 |
| 32210330 | 3,3 | - | 43 | 81 | 4 |
| 32210340 | 3,4 | - | 43 | 81 | 4 |
| 32210350 | 3,5 | - | 43 | 81 | 4 |
| 32210357 | 3,57 | 9/64 | 43 | 81 | 4 |
| 32210360 | 3,6 | - | 43 | 81 | 4 |
| 32210370 | 3,7 | - | 43 | 81 | 4 |
| 32210380 | 3,8 | - | 43 | 81 | 4 |
| 32210390 | 3,9 | - | 43 | 81 | 4 |
| 32210397 | 3,97 | 5/32 | 43 | 81 | 4 |
| 32210400 | 4 | - | 43 | 81 | 4 |
| 32210410 | 4,1 | - | 50 | 90 | 6 |
| 32210420 | 4,2 | - | 50 | 90 | 6 |
| 32210430 | 4,3 | - | 50 | 90 | 6 |
| 32210437 | 4,37 | 11/64 | 50 | 90 | 6 |
| 32210440 | 4,4 | - | 50 | 90 | 6 |
| 32210450 | 4,5 | - | 50 | 90 | 6 |
| 32210460 | 4,6 | - | 50 | 90 | 6 |
| 32210470 | 4,7 | - | 50 | 90 | 6 |
| 32210476 | 4,76 | 3/16 | 50 | 90 | 6 |
| 32210480 | 4,8 | - | 50 | 90 | 6 |
| 32210490 | 4,9 | - | 50 | 90 | 6 |
| 32210500 | 5 | - | 50 | 90 | 6 |
| 32210510 | 5,1 | - | 57 | 97 | 6 |
| 32210516 | 5,16 | 13/64 | 57 | 97 | 6 |
| 32210520 | 5,2 | - | 57 | 97 | 6 |
| 32210530 | 5,3 | - | 57 | 97 | 6 |
| 32210540 | 5,4 | - | 57 | 97 | 6 |
| 32210550 | 5,5 | - | 57 | 97 | 6 |
| 32210556 | 5,56 | 7/32 | 57 | 97 | 6 |
| 32210560 | 5,6 | - | 57 | 97 | 6 |
| 32210570 | 5,7 | - | 57 | 97 | 6 |
| 32210580 | 5,8 | - | 57 | 97 | 6 |
| 32210590 | 5,9 | - | 57 | 97 | 6 |
| 32210595 | 5,95 | 15/64 | 57 | 97 | 6 |
| 32210600 | 6 | - | 57 | 97 | 6 |
| 32210610 | 6,1 | - | 66 | 106 | 8 |
| 32210620 | 6,2 | - | 66 | 106 | 8 |
| 32210630 | 6,3 | - | 66 | 106 | 8 |
| 32210635 | 6,35 | 1/4 | 66 | 106 | 8 |
| 32210640 | 6,4 | - | 66 | 106 | 8 |
| 32210650 | 6,5 | - | 66 | 106 | 8 |
| 32210660 | 6,6 | - | 66 | 106 | 8 |

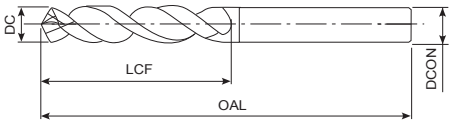
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 32210670 | 6,7 | - | 66 | 106 | 8 |
| 32210675 | 6,75 | 17/64 | 66 | 106 | 8 |
| 32210680 | 6,8 | - | 66 | 106 | 8 |
| 32210690 | 6,9 | - | 76 | 116 | 8 |
| 32210700 | 7 | - | 76 | 116 | 8 |
| 32210710 | 7,1 | - | 76 | 116 | 8 |
| 32210714 | 7,14 | 9/32 | 76 | 116 | 8 |
| 32210720 | 7,2 | - | 76 | 116 | 8 |
| 32210730 | 7,3 | - | 76 | 116 | 8 |
| 32210740 | 7,4 | - | 76 | 116 | 8 |
| 32210750 | 7,5 | - | 76 | 116 | 8 |
| 32210754 | 7,54 | 19/64 | 76 | 116 | 8 |
| 32210760 | 7,6 | - | 76 | 116 | 8 |
| 32210770 | 7,7 | - | 76 | 116 | 8 |
| 32210780 | 7,8 | - | 76 | 116 | 8 |
| 32210790 | 7,9 | - | 76 | 116 | 8 |
| 32210794 | 7,94 | 5/16 | 76 | 116 | 8 |
| 32210800 | 8 | - | 76 | 116 | 8 |
| 32210810 | 8,1 | - | 87 | 131 | 10 |
| 32210820 | 8,2 | - | 87 | 131 | 10 |
| 32210830 | 8,3 | - | 87 | 131 | 10 |
| 32210833 | 8,33 | 21/64 | 87 | 131 | 10 |
| 32210840 | 8,4 | - | 87 | 131 | 10 |
| 32210850 | 8,5 | - | 87 | 131 | 10 |
| 32210860 | 8,6 | - | 87 | 131 | 10 |
| 32210870 | 8,7 | - | 87 | 131 | 10 |
| 32210873 | 8,73 | 11/32 | 87 | 131 | 10 |
| 32210880 | 8,8 | - | 87 | 131 | 10 |
| 32210890 | 8,9 | - | 87 | 131 | 10 |
| 32210900 | 9 | - | 87 | 131 | 10 |
| 32210910 | 9,1 | - | 95 | 139 | 10 |
| 32210913 | 9,13 | 23/64 | 95 | 139 | 10 |
| 32210920 | 9,2 | - | 95 | 139 | 10 |
| 32210930 | 9,3 | - | 95 | 139 | 10 |
| 32210940 | 9,4 | - | 95 | 139 | 10 |
| 32210950 | 9,5 | - | 95 | 139 | 10 |
| 32210952 | 9,52 | 3/8 | 95 | 139 | 10 |
| 32210960 | 9,6 | - | 95 | 139 | 10 |
| 32210970 | 9,7 | - | 95 | 139 | 10 |
| 32210980 | 9,8 | - | 95 | 139 | 10 |
| 32210990 | 9,9 | - | 95 | 139 | 10 |
| 32210992 | 9,92 | 25/64 | 95 | 139 | 10 |
| 32211000 | 10 | - | 95 | 139 | 10 |
| 32211010 | 10,1 | - | 106 | 155 | 12 |
| 32211020 | 10,2 | - | 106 | 155 | 12 |
| 32211030 | 10,3 | - | 106 | 155 | 12 |

# HYP-HPO-8D

INDEX

**Drilling | Solid carbide | 8xD**






- Carbide drill with internal coolant, EgiAs coating
- Up to 8xD
- General purpose
- 134 sizes

| P ○ | P ◉ | P ◉ | P ◉ | M ○ | K ◉ | K ◉ | N ○ | N ○ | H ◉ | H ○ | H ○ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | GGG | Al | AC, ADC | 25-35 HRC | 35-45 HRC | 45-52 HRC |

HYPRO | CARBIDE | EgiAs | 30° | SHRINK FIT | 140° | m7 | B.501

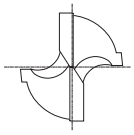
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 32211032 | 10,32 | 13/32 | 106 | 155 | 12 |
| 32211040 | 10,4 | - | 106 | 155 | 12 |
| 32211050 | 10,5 | - | 106 | 155 | 12 |
| 32211060 | 10,6 | - | 106 | 155 | 12 |
| 32211070 | 10,7 | - | 106 | 155 | 12 |
| 32211072 | 10,72 | 27/64 | 106 | 155 | 12 |
| 32211080 | 10,8 | - | 106 | 155 | 12 |
| 32211090 | 10,9 | - | 106 | 155 | 12 |
| 32211100 | 11 | - | 106 | 155 | 12 |
| 32211110 | 11,1 | - | 114 | 163 | 12 |
| 32211111 | 11,11 | 7/16 | 114 | 163 | 12 |
| 32211120 | 11,2 | - | 114 | 163 | 12 |
| 32211130 | 11,3 | - | 114 | 163 | 12 |
| 32211140 | 11,4 | - | 114 | 163 | 12 |
| 32211150 | 11,5 | - | 114 | 163 | 12 |
| 32211151 | 11,51 | 29/64 | 114 | 163 | 12 |
| 32211160 | 11,6 | - | 114 | 163 | 12 |
| 32211170 | 11,7 | - | 114 | 163 | 12 |
| 32211180 | 11,8 | - | 114 | 163 | 12 |
| 32211190 | 11,9 | - | 114 | 163 | 12 |
| 32211191 | 11,91 | 15/32 | 114 | 163 | 12 |
| 32211200 | 12 | - | 114 | 163 | 12 |
| 32211230 | 12,3 | 31/64 | 133 | 182 | 14 |
| 32211250 | 12,5 | - | 133 | 182 | 14 |
| 32211270 | 12,7 | 1/2 | 133 | 182 | 14 |
| 32211300 | 13 | - | 133 | 182 | 14 |
| 32211350 | 13,5 | - | 133 | 182 | 14 |
| 32211400 | 14 | - | 133 | 182 | 14 |
| 32211429 | 14,29 | 9/16 | 152 | 204 | 16 |
| 32211450 | 14,5 | - | 152 | 204 | 16 |
| 32211500 | 15 | - | 152 | 204 | 16 |
| 32211550 | 15,5 | - | 152 | 204 | 16 |
| 32211587 | 15,87 | 5/8 | 152 | 204 | 16 |
| 32211600 | 16 | - | 152 | 204 | 16 |
| 32211650 | 16,5 | - | 171 | 223 | 18 |
| 32211700 | 17 | - | 171 | 223 | 18 |
| 32211750 | 17,5 | - | 171 | 223 | 18 |
| 32211800 | 18 | - | 171 | 223 | 18 |
| 32211850 | 18,5 | - | 190 | 244 | 20 |
| 32211900 | 19 | - | 190 | 244 | 20 |
| 32211950 | 19,5 | - | 190 | 244 | 20 |
| 32212000 | 20 | - | 190 | 244 | 20 |

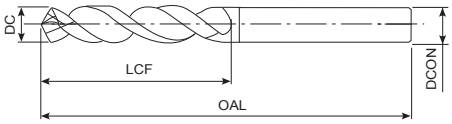
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# HYP-AL-3D

INDEX

**Drilling | 3xD**






- Carbide drill bright finish
- Up to 3xD
- For aluminium and cast aluminium
- 137 sizes

N AI

N AC, ADC

HYPRO | CARBIDE | 30° | SHRINK FIT | 130° | m7

B.502

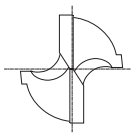
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 110301000 | 1 | 7 | 35 | 3 |
| 110301100 | 1,1 | 7 | 35 | 3 |
| 110301200 | 1,2 | 8 | 35 | 3 |
| 110301300 | 1,3 | 8 | 35 | 3 |
| 110301400 | 1,4 | 9 | 35 | 3 |
| 110301500 | 1,5 | 9 | 40 | 3 |
| 110301600 | 1,6 | 10 | 40 | 3 |
| 110301700 | 1,7 | 10 | 40 | 3 |
| 110301800 | 1,8 | 11 | 40 | 3 |
| 110301900 | 1,9 | 11 | 40 | 3 |
| 110302000 | 2 | 13 | 45 | 3 |
| 110302100 | 2,1 | 13 | 45 | 3 |
| 110302200 | 2,2 | 13 | 45 | 3 |
| 110302300 | 2,3 | 13 | 45 | 3 |
| 110302400 | 2,4 | 15 | 45 | 3 |
| 110302500 | 2,5 | 15 | 50 | 3 |
| 110302600 | 2,6 | 15 | 50 | 3 |
| 110302700 | 2,7 | 17 | 50 | 3 |
| 110302800 | 2,8 | 17 | 50 | 3 |
| 110302900 | 2,9 | 17 | 50 | 3 |
| 110303000 | 3 | 20 | 62 | 6 |
| 110303100 | 3,1 | 20 | 62 | 6 |
| 110303170 | 3,17 | 20 | 62 | 6 |
| 110303200 | 3,2 | 20 | 62 | 6 |
| 110303300 | 3,3 | 20 | 62 | 6 |
| 110303400 | 3,4 | 20 | 62 | 6 |
| 110303500 | 3,5 | 20 | 62 | 6 |
| 110303570 | 3,57 | 20 | 62 | 6 |
| 110303600 | 3,6 | 20 | 62 | 6 |
| 110303700 | 3,7 | 20 | 62 | 6 |
| 110303800 | 3,8 | 24 | 66 | 6 |
| 110303900 | 3,9 | 24 | 66 | 6 |
| 110303970 | 3,97 | 24 | 66 | 6 |
| 110304000 | 4 | 24 | 66 | 6 |
| 110304100 | 4,1 | 24 | 66 | 6 |
| 110304200 | 4,2 | 24 | 66 | 6 |
| 110304300 | 4,3 | 24 | 66 | 6 |
| 110304370 | 4,37 | 24 | 66 | 6 |
| 110304400 | 4,4 | 24 | 66 | 6 |
| 110304500 | 4,5 | 24 | 66 | 6 |
| 110304600 | 4,6 | 24 | 66 | 6 |
| 110304700 | 4,7 | 24 | 66 | 6 |
| 110304760 | 4,76 | 28 | 66 | 6 |
| 110304800 | 4,8 | 28 | 66 | 6 |
| 110304900 | 4,9 | 28 | 66 | 6 |
| 110305000 | 5 | 28 | 66 | 6 |

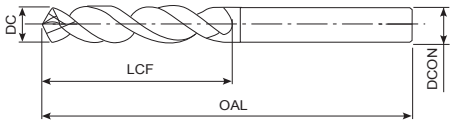
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 110305100 | 5,1 | 28 | 66 | 6 |
| 110305160 | 5,16 | 28 | 66 | 6 |
| 110305200 | 5,2 | 28 | 66 | 6 |
| 110305300 | 5,3 | 28 | 66 | 6 |
| 110305400 | 5,4 | 28 | 66 | 6 |
| 110305500 | 5,5 | 28 | 66 | 6 |
| 110305560 | 5,56 | 28 | 66 | 6 |
| 110305600 | 5,6 | 28 | 66 | 6 |
| 110305700 | 5,7 | 28 | 66 | 6 |
| 110305800 | 5,8 | 28 | 66 | 6 |
| 110305900 | 5,9 | 28 | 66 | 6 |
| 110305950 | 5,95 | 28 | 66 | 6 |
| 110306000 | 6 | 28 | 66 | 6 |
| 110306100 | 6,1 | 34 | 79 | 8 |
| 110306200 | 6,2 | 34 | 79 | 8 |
| 110306300 | 6,3 | 34 | 79 | 8 |
| 110306350 | 6,35 | 34 | 79 | 8 |
| 110306400 | 6,4 | 34 | 79 | 8 |
| 110306500 | 6,5 | 34 | 79 | 8 |
| 110306600 | 6,6 | 34 | 79 | 8 |
| 110306700 | 6,7 | 34 | 79 | 8 |
| 110306750 | 6,75 | 34 | 79 | 8 |
| 110306800 | 6,8 | 34 | 79 | 8 |
| 110306900 | 6,9 | 34 | 79 | 8 |
| 110307000 | 7 | 34 | 79 | 8 |
| 110307100 | 7,1 | 41 | 79 | 8 |
| 110307140 | 7,14 | 41 | 79 | 8 |
| 110307200 | 7,2 | 41 | 79 | 8 |
| 110307300 | 7,3 | 41 | 79 | 8 |
| 110307400 | 7,4 | 41 | 79 | 8 |
| 110307500 | 7,5 | 41 | 79 | 8 |
| 110307540 | 7,54 | 41 | 79 | 8 |
| 110307600 | 7,6 | 41 | 79 | 8 |
| 110307700 | 7,7 | 41 | 79 | 8 |
| 110307800 | 7,8 | 41 | 79 | 8 |
| 110307900 | 7,9 | 41 | 79 | 8 |
| 110307940 | 7,94 | 41 | 79 | 8 |
| 110308000 | 8 | 41 | 79 | 8 |
| 110308100 | 8,1 | 47 | 89 | 10 |
| 110308200 | 8,2 | 47 | 89 | 10 |
| 110308300 | 8,3 | 47 | 89 | 10 |
| 110308330 | 8,33 | 47 | 89 | 10 |
| 110308400 | 8,4 | 47 | 89 | 10 |
| 110308500 | 8,5 | 47 | 89 | 10 |
| 110308600 | 8,6 | 47 | 89 | 10 |
| 110308700 | 8,7 | 47 | 89 | 10 |

# HYP-AL-3D



**Drilling | 3xD**






- Carbide drill bright finish
- Up to 3xD
- For aluminium and cast aluminium
- 137 sizes

N AI

N AC, ADC

HYPRO | CARBIDE | 30° | SHRINK FIT | 130° | m7

B.502

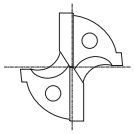
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 110308730 | 8,73 | 47 | 89 | 10 |
| 110308800 | 8,8 | 47 | 89 | 10 |
| 110308900 | 8,9 | 47 | 89 | 10 |
| 110309000 | 9 | 47 | 89 | 10 |
| 110309100 | 9,1 | 47 | 89 | 10 |
| 110309130 | 9,13 | 47 | 89 | 10 |
| 110309200 | 9,2 | 47 | 89 | 10 |
| 110309300 | 9,3 | 47 | 89 | 10 |
| 110309400 | 9,4 | 47 | 89 | 10 |
| 110309500 | 9,5 | 47 | 89 | 10 |
| 110309520 | 9,52 | 47 | 89 | 10 |
| 110309600 | 9,6 | 47 | 89 | 10 |
| 110309700 | 9,7 | 47 | 89 | 10 |
| 110309800 | 9,8 | 47 | 89 | 10 |
| 110309900 | 9,9 | 47 | 89 | 10 |
| 110309920 | 9,92 | 47 | 89 | 10 |
| 110310000 | 10 | 47 | 89 | 10 |
| 110310100 | 10,1 | 55 | 102 | 12 |
| 110310200 | 10,2 | 55 | 102 | 12 |
| 110310300 | 10,3 | 55 | 102 | 12 |
| 110310320 | 10,32 | 55 | 102 | 12 |
| 110310400 | 10,4 | 55 | 102 | 12 |
| 110310500 | 10,5 | 55 | 102 | 12 |
| 110310600 | 10,6 | 55 | 102 | 12 |
| 110310700 | 10,7 | 55 | 102 | 12 |
| 110310720 | 10,72 | 55 | 102 | 12 |
| 110310800 | 10,8 | 55 | 102 | 12 |
| 110310900 | 10,9 | 55 | 102 | 12 |
| 110311000 | 11 | 55 | 102 | 12 |
| 110311100 | 11,1 | 55 | 102 | 12 |
| 110311110 | 11,11 | 55 | 102 | 12 |
| 110311200 | 11,2 | 55 | 102 | 12 |
| 110311300 | 11,3 | 55 | 102 | 12 |
| 110311400 | 11,4 | 55 | 102 | 12 |
| 110311500 | 11,5 | 55 | 102 | 12 |
| 110311510 | 11,51 | 55 | 102 | 12 |
| 110311600 | 11,6 | 55 | 102 | 12 |
| 110311700 | 11,7 | 55 | 102 | 12 |
| 110311800 | 11,8 | 55 | 102 | 12 |
| 110311900 | 11,9 | 55 | 102 | 12 |
| 110311910 | 11,91 | 55 | 102 | 12 |
| 110312000 | 12 | 55 | 102 | 12 |
| 110312300 | 12,3 | 60 | 107 | 14 |
| 110312500 | 12,5 | 60 | 107 | 14 |
| 110312700 | 12,7 | 60 | 107 | 14 |

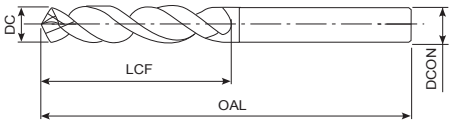
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# HYP-ALO-5D

INDEX

**Drilling | 5xD**






- Carbide drill with internal coolant, bright finish
- Up to 5xD
- For aluminium and cast aluminium
- 119 sizes

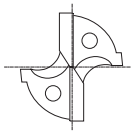
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 111503000 | 3 | 28 | 66 | 6 |
| 111503100 | 3,1 | 28 | 66 | 6 |
| 111503170 | 3,17 | 28 | 66 | 6 |
| 111503200 | 3,2 | 28 | 66 | 6 |
| 111503300 | 3,3 | 28 | 66 | 6 |
| 111503400 | 3,4 | 28 | 66 | 6 |
| 111503500 | 3,5 | 28 | 66 | 6 |
| 111503570 | 3,57 | 28 | 66 | 6 |
| 111503600 | 3,6 | 28 | 66 | 6 |
| 111503700 | 3,7 | 28 | 66 | 6 |
| 111503800 | 3,8 | 36 | 74 | 6 |
| 111503900 | 3,9 | 36 | 74 | 6 |
| 111503970 | 3,97 | 36 | 74 | 6 |
| 111504000 | 4 | 36 | 74 | 6 |
| 111504100 | 4,1 | 36 | 74 | 6 |
| 111504200 | 4,2 | 36 | 74 | 6 |
| 111504300 | 4,3 | 36 | 74 | 6 |
| 111504370 | 4,37 | 36 | 74 | 6 |
| 111504400 | 4,4 | 36 | 74 | 6 |
| 111504500 | 4,5 | 36 | 74 | 6 |
| 111504600 | 4,6 | 36 | 74 | 6 |
| 111504650 | 4,65 | 36 | 74 | 6 |
| 111504700 | 4,7 | 36 | 74 | 6 |
| 111504760 | 4,76 | 44 | 82 | 6 |
| 111504800 | 4,8 | 44 | 82 | 6 |
| 111504900 | 4,9 | 44 | 82 | 6 |
| 111505000 | 5 | 44 | 82 | 6 |
| 111505100 | 5,1 | 44 | 82 | 6 |
| 111505160 | 5,16 | 44 | 82 | 6 |
| 111505200 | 5,2 | 44 | 82 | 6 |
| 111505300 | 5,3 | 44 | 82 | 6 |
| 111505400 | 5,4 | 44 | 82 | 6 |
| 111505500 | 5,5 | 44 | 82 | 6 |
| 111505550 | 5,55 | 44 | 82 | 6 |
| 111505560 | 5,56 | 44 | 82 | 6 |
| 111505600 | 5,6 | 44 | 82 | 6 |
| 111505700 | 5,7 | 44 | 82 | 6 |
| 111505800 | 5,8 | 44 | 82 | 6 |
| 111505900 | 5,9 | 44 | 82 | 6 |
| 111505950 | 5,95 | 44 | 82 | 6 |
| 111506000 | 6 | 44 | 82 | 6 |
| 111506100 | 6,1 | 53 | 91 | 8 |
| 111506200 | 6,2 | 53 | 91 | 8 |
| 111506300 | 6,3 | 53 | 91 | 8 |
| 111506350 | 6,35 | 53 | 91 | 8 |
| 111506400 | 6,4 | 53 | 91 | 8 |

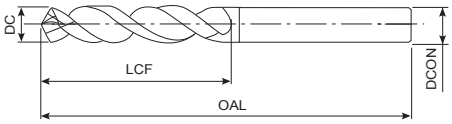
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 111506500 | 6,5 | 53 | 91 | 8 |
| 111506600 | 6,6 | 53 | 91 | 8 |
| 111506700 | 6,7 | 53 | 91 | 8 |
| 111506750 | 6,75 | 53 | 91 | 8 |
| 111506800 | 6,8 | 53 | 91 | 8 |
| 111506900 | 6,9 | 53 | 91 | 8 |
| 111507000 | 7 | 53 | 91 | 8 |
| 111507100 | 7,1 | 53 | 91 | 8 |
| 111507140 | 7,14 | 53 | 91 | 8 |
| 111507200 | 7,2 | 53 | 91 | 8 |
| 111507300 | 7,3 | 53 | 91 | 8 |
| 111507400 | 7,4 | 53 | 91 | 8 |
| 111507500 | 7,5 | 53 | 91 | 8 |
| 111507540 | 7,54 | 53 | 91 | 8 |
| 111507600 | 7,6 | 53 | 91 | 8 |
| 111507700 | 7,7 | 53 | 91 | 8 |
| 111507800 | 7,8 | 53 | 91 | 8 |
| 111507900 | 7,9 | 53 | 91 | 8 |
| 111507940 | 7,94 | 53 | 91 | 8 |
| 111508000 | 8 | 53 | 91 | 8 |
| 111508100 | 8,1 | 61 | 103 | 10 |
| 111508200 | 8,2 | 61 | 103 | 10 |
| 111508300 | 8,3 | 61 | 103 | 10 |
| 111508330 | 8,33 | 61 | 103 | 10 |
| 111508400 | 8,4 | 61 | 103 | 10 |
| 111508500 | 8,5 | 61 | 103 | 10 |
| 111508600 | 8,6 | 61 | 103 | 10 |
| 111508700 | 8,7 | 61 | 103 | 10 |
| 111508730 | 8,73 | 61 | 103 | 10 |
| 111508800 | 8,8 | 61 | 103 | 10 |
| 111508900 | 8,9 | 61 | 103 | 10 |
| 111509000 | 9 | 61 | 103 | 10 |
| 111509100 | 9,1 | 61 | 103 | 10 |
| 111509130 | 9,13 | 61 | 103 | 10 |
| 111509200 | 9,2 | 61 | 103 | 10 |
| 111509300 | 9,3 | 61 | 103 | 10 |
| 111509400 | 9,4 | 61 | 103 | 10 |
| 111509500 | 9,5 | 61 | 103 | 10 |
| 111509520 | 9,52 | 61 | 103 | 10 |
| 111509600 | 9,6 | 61 | 103 | 10 |
| 111509700 | 9,7 | 61 | 103 | 10 |
| 111509800 | 9,8 | 61 | 103 | 10 |
| 111509900 | 9,9 | 61 | 103 | 10 |
| 111509920 | 9,92 | 61 | 103 | 10 |
| 111510000 | 10 | 61 | 103 | 10 |
| 111510100 | 10,1 | 71 | 118 | 12 |

# HYP-ALO-5D

INDEX

**Drilling | 5xD**






- Carbide drill with internal coolant, bright finish
- Up to 5xD
- For aluminium and cast aluminium
- 119 sizes

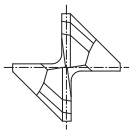
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 111510200 | 10,2 | 71 | 118 | 12 |
| 111510300 | 10,3 | 71 | 118 | 12 |
| 111510320 | 10,32 | 71 | 118 | 12 |
| 111510400 | 10,4 | 71 | 118 | 12 |
| 111510500 | 10,5 | 71 | 118 | 12 |
| 111510600 | 10,6 | 71 | 118 | 12 |
| 111510700 | 10,7 | 71 | 118 | 12 |
| 111510720 | 10,72 | 71 | 118 | 12 |
| 111510800 | 10,8 | 71 | 118 | 12 |
| 111510900 | 10,9 | 71 | 118 | 12 |
| 111511000 | 11 | 71 | 118 | 12 |
| 111511100 | 11,1 | 71 | 118 | 12 |
| 111511110 | 11,11 | 71 | 118 | 12 |
| 111511200 | 11,2 | 71 | 118 | 12 |
| 111511300 | 11,3 | 71 | 118 | 12 |
| 111511400 | 11,4 | 71 | 118 | 12 |
| 111511500 | 11,5 | 71 | 118 | 12 |
| 111511510 | 11,51 | 71 | 118 | 12 |
| 111511600 | 11,6 | 71 | 118 | 12 |
| 111511700 | 11,7 | 71 | 118 | 12 |
| 111511800 | 11,8 | 71 | 118 | 12 |
| 111511900 | 11,9 | 71 | 118 | 12 |
| 111511910 | 11,91 | 71 | 118 | 12 |
| 111512000 | 12 | 71 | 118 | 12 |
| 111512300 | 12,3 | 77 | 124 | 14 |
| 111512500 | 12,5 | 77 | 124 | 14 |
| 111512700 | 12,7 | 77 | 124 | 14 |

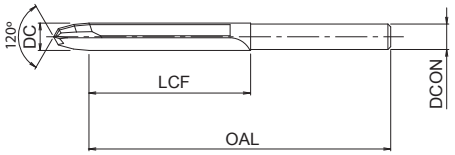
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# D-STAD

INDEX

**Drilling | Solid carbide | 3xD**






- Triple angle carbide drill with diamond coating
- Up to 3xD
- For CFRP
- 4 sizes

CFRP

CARBIDE | DIA | SHRINK FIT | 0~-0.02

B.502

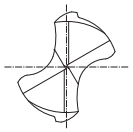
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 48154001 | 4 | 30 | 80 | 4 |
| 48154002 | 6 | 40 | 90 | 6 |
| 48154004 | 6,35 | 38 | 88 | 6,35 |
| 48154003 | 8 | 50 | 100 | 8 |

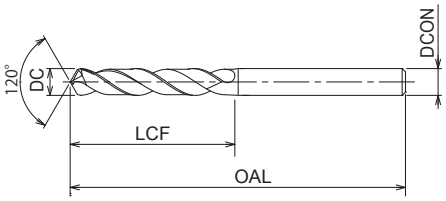
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# D-DAD



**Drilling | Solid carbide | 3xD**






- Double angle drill
- For CFRP
- 6 sizes

CFRP

CARBIDE | DIA | SHRINK FIT | 0~-0.02 | 40°

B.510

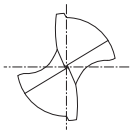
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8809141 | 2,50 | 15 | 50 | 2,50 |
| 8809142 | 3,27 | 20 | 76 | 3,27 |
| 8809143 | 4,10 | 25 | 80 | 4,10 |
| 8809144 | 4,80 | 29 | 80 | 4,80 |
| 8809145 | 6,30 | 38 | 94 | 6,30 |
| 8809146 | 9,50 | 57 | 115 | 9,50 |

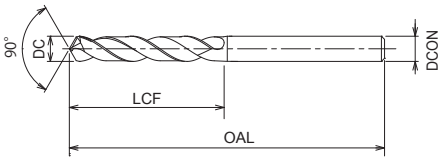
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# D-GDN90

INDEX

**Drilling | Solid carbide | 3xD**






- Diamond coated 90° point angle drill
- For CFRP
- 6 sizes

CFRP

CARBIDE | DIA | SHRINK FIT | 0~-0.02 | 40°

B.510

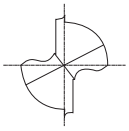
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8809151 | 2,5 | 15 | 50 | 2,50 |
| 8809152 | 3,27 | 20 | 76 | 3,27 |
| 8809153 | 4,1 | 25 | 80 | 4,10 |
| 8809154 | 4,8 | 29 | 80 | 4,80 |
| 8809155 | 6,3 | 38 | 94 | 6,30 |
| 8809156 | 9,5 | 57 | 115 | 9,50 |

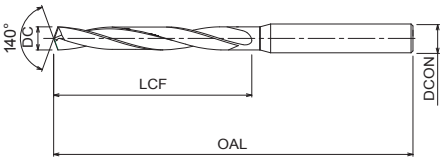
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# WH55-5D

INDEX

**Drilling | Solid carbide | 5xD**






- Carbide drill with DUROREY coating
- Up to 5xD
- For hardened material up to 55HRC
- 36 sizes

H 35-45 HRC | H 45-52 HRC | H 52-62 HRC

CARBIDE | DUROREY | 12°~20° | SHRINK FIT | 140° | h8

B.502

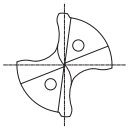
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3312200 | 2 | 18 | 68 | 4 |
| 3312250 | 2,5 | 23 | 73 | 4 |
| 3312280 | 2,8 | 27 | 73 | 4 |
| 3312300 | 3 | 29 | 78 | 6 |
| 3312330 | 3,3 | 32 | 78 | 6 |
| 3312350 | 3,5 | 32 | 78 | 6 |
| 3312380 | 3,8 | 36 | 78 | 6 |
| 3312400 | 4 | 36 | 78 | 6 |
| 3312420 | 4,2 | 38 | 88 | 6 |
| 3312450 | 4,5 | 41 | 88 | 6 |
| 3312480 | 4,8 | 45 | 88 | 6 |
| 3312500 | 5 | 45 | 88 | 6 |
| 3312510 | 5,1 | 42 | 92 | 6 |
| 3312550 | 5,5 | 44 | 92 | 6 |
| 3312580 | 5,8 | 48 | 92 | 6 |
| 3312600 | 6 | 48 | 92 | 6 |
| 3312650 | 6,5 | 52 | 102 | 8 |
| 3312680 | 6,8 | 56 | 102 | 8 |
| 3312700 | 7 | 56 | 102 | 8 |
| 3312750 | 7,5 | 60 | 118 | 8 |
| 3312780 | 7,8 | 64 | 118 | 8 |
| 3312800 | 8 | 64 | 118 | 8 |
| 3312850 | 8,5 | 68 | 128 | 10 |
| 3312870 | 8,7 | 70 | 128 | 10 |
| 3312880 | 8,8 | 72 | 128 | 10 |
| 3312900 | 9 | 72 | 128 | 10 |
| 3312950 | 9,5 | 76 | 136 | 10 |
| 3312980 | 9,8 | 80 | 136 | 10 |
| 3313000 | 10 | 80 | 136 | 10 |
| 3313030 | 10,3 | 84 | 146 | 12 |
| 3313050 | 10,5 | 84 | 146 | 12 |
| 3313080 | 10,8 | 88 | 146 | 12 |
| 3313100 | 11 | 88 | 146 | 12 |
| 3313150 | 11,5 | 92 | 156 | 12 |
| 3313180 | 11,8 | 96 | 156 | 12 |
| 3313200 | 12 | 96 | 156 | 12 |

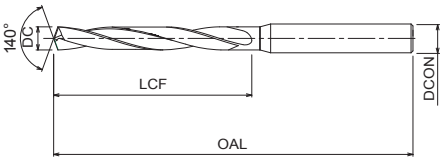
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# WHO55-5D

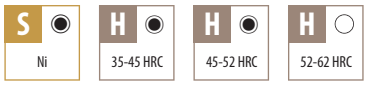
**Drilling | Solid carbide | 5xD**

INDEX






- Carbide drill with internal coolant, DUROREY coating
- Up to 5xD
- For hardened material up to 55HRC including Inconel
- 54 sizes



B.503

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3316330 | 3,3 | 32 | 78 | 6 |
| 3316340 | 3,4 | 32 | 78 | 6 |
| 3316349 | 3,49 | 32 | 78 | 6 |
| 3316350 | 3,5 | 32 | 78 | 6 |
| 3316360 | 3,6 | 34 | 78 | 6 |
| 3316370 | 3,7 | 34 | 78 | 6 |
| 3316380 | 3,8 | 36 | 78 | 6 |
| 3316390 | 3,9 | 36 | 78 | 6 |
| 3316400 | 4 | 36 | 78 | 6 |
| 3316410 | 4,1 | 38 | 88 | 6 |
| 3316415 | 4,15 | 38 | 88 | 6 |
| 3316420 | 4,2 | 38 | 88 | 6 |
| 3316430 | 4,3 | 41 | 88 | 6 |
| 3316440 | 4,4 | 41 | 88 | 6 |
| 3316450 | 4,5 | 41 | 88 | 6 |
| 3316460 | 4,6 | 43 | 88 | 6 |
| 3316470 | 4,7 | 43 | 88 | 6 |
| 3316480 | 4,8 | 45 | 88 | 6 |
| 3316490 | 4,9 | 45 | 88 | 6 |
| 3316500 | 5 | 45 | 88 | 6 |
| 3316510 | 5,1 | 42 | 92 | 6 |
| 3316520 | 5,2 | 42 | 92 | 6 |
| 3316530 | 5,3 | 44 | 92 | 6 |
| 3316540 | 5,4 | 44 | 92 | 6 |
| 3316550 | 5,5 | 44 | 92 | 6 |
| 3316556 | 5,56 | 46 | 92 | 6 |
| 3316560 | 5,6 | 46 | 92 | 6 |
| 3316570 | 5,7 | 46 | 92 | 6 |
| 3316580 | 5,8 | 48 | 92 | 6 |
| 3316590 | 5,9 | 48 | 92 | 6 |
| 3316600 | 6 | 48 | 92 | 6 |
| 3316650 | 6,5 | 52 | 102 | 8 |
| 3316680 | 6,8 | 56 | 102 | 8 |
| 3316700 | 7 | 56 | 102 | 8 |
| 3316750 | 7,5 | 60 | 118 | 8 |
| 3316780 | 7,8 | 64 | 118 | 8 |
| 3316800 | 8 | 64 | 118 | 8 |
| 3316850 | 8,5 | 68 | 128 | 10 |
| 3316858 | 8,58 | 70 | 128 | 10 |
| 3316870 | 8,7 | 70 | 128 | 10 |
| 3316880 | 8,8 | 72 | 128 | 10 |
| 3316900 | 9 | 72 | 128 | 10 |
| 3316950 | 9,5 | 76 | 136 | 10 |
| 3316980 | 9,8 | 80 | 136 | 10 |
| 3316997 | 9,97 | 80 | 136 | 10 |
| 3317000 | 10 | 80 | 136 | 10 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3317030 | 10,3 | 84 | 146 | 12 |
| 3317050 | 10,5 | 84 | 146 | 12 |
| 3317080 | 10,8 | 88 | 146 | 12 |
| 3317100 | 11 | 88 | 146 | 12 |
| 3317150 | 11,5 | 92 | 156 | 12 |
| 3317156 | 11,56 | 94 | 156 | 12 |
| 3317180 | 11,8 | 96 | 156 | 12 |
| 3317200 | 12 | 96 | 156 | 12 |

# WH70-DRL

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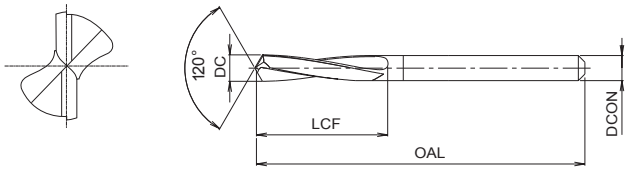
**Drilling | Solid carbide | 3xD**




- Carbide drill with DUROREY coating
- Up to 3xD
- With low helix for high rigidity, up to 70HRC material
- 101 sizes

H
52-62 HRC

CARBIDE | DUROREY | 12° | SHRINK FIT | 120° | h8

B.503

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3318200 | 2 | 12 | 42 | 3 |
| 3318210 | 2,1 | 12 | 42 | 3 |
| 3318220 | 2,2 | 13 | 43 | 3 |
| 3318230 | 2,3 | 13 | 43 | 3 |
| 3318240 | 2,4 | 14 | 44 | 3 |
| 3318250 | 2,5 | 14 | 44 | 3 |
| 3318260 | 2,6 | 14 | 44 | 3 |
| 3318270 | 2,7 | 16 | 46 | 3 |
| 3318280 | 2,8 | 16 | 46 | 3 |
| 3318290 | 2,9 | 16 | 46 | 3 |
| 3318300 | 3 | 16 | 46 | 3 |
| 3318310 | 3,1 | 18 | 48 | 4 |
| 3318320 | 3,2 | 18 | 48 | 4 |
| 3318330 | 3,3 | 18 | 48 | 4 |
| 3318340 | 3,4 | 20 | 50 | 4 |
| 3318350 | 3,5 | 20 | 50 | 4 |
| 3318360 | 3,6 | 20 | 50 | 4 |
| 3318370 | 3,7 | 20 | 50 | 4 |
| 3318380 | 3,8 | 22 | 52 | 4 |
| 3318390 | 3,9 | 22 | 52 | 4 |
| 3318400 | 4 | 22 | 52 | 4 |
| 3318410 | 4,1 | 25 | 68 | 5 |
| 3318420 | 4,2 | 25 | 68 | 5 |
| 3318430 | 4,3 | 28 | 68 | 5 |
| 3318440 | 4,4 | 28 | 68 | 5 |
| 3318450 | 4,5 | 28 | 68 | 5 |
| 3318460 | 4,6 | 28 | 68 | 5 |
| 3318470 | 4,7 | 28 | 68 | 5 |
| 3318480 | 4,8 | 32 | 68 | 5 |
| 3318490 | 4,9 | 32 | 68 | 5 |
| 3318500 | 5 | 32 | 68 | 5 |
| 3318510 | 5,1 | 32 | 74 | 6 |
| 3318520 | 5,2 | 32 | 74 | 6 |
| 3318530 | 5,3 | 32 | 74 | 6 |
| 3318540 | 5,4 | 35 | 74 | 6 |
| 3318550 | 5,5 | 35 | 74 | 6 |
| 3318560 | 5,6 | 35 | 74 | 6 |
| 3318570 | 5,7 | 35 | 74 | 6 |
| 3318580 | 5,8 | 35 | 74 | 6 |
| 3318590 | 5,9 | 35 | 74 | 6 |
| 3318600 | 6 | 35 | 74 | 6 |
| 3318610 | 6,1 | 40 | 83 | 7 |
| 3318620 | 6,2 | 40 | 83 | 7 |
| 3318630 | 6,3 | 40 | 83 | 7 |
| 3318640 | 6,4 | 40 | 83 | 7 |
| 3318650 | 6,5 | 40 | 83 | 7 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3318660 | 6,6 | 40 | 83 | 7 |
| 3318670 | 6,7 | 40 | 83 | 7 |
| 3318680 | 6,8 | 45 | 83 | 7 |
| 3318690 | 6,9 | 45 | 83 | 7 |
| 3318700 | 7 | 45 | 83 | 7 |
| 3318710 | 7,1 | 45 | 94 | 8 |
| 3318720 | 7,2 | 45 | 94 | 8 |
| 3318730 | 7,3 | 45 | 94 | 8 |
| 3318740 | 7,4 | 45 | 94 | 8 |
| 3318750 | 7,5 | 45 | 94 | 8 |
| 3318760 | 7,6 | 50 | 94 | 8 |
| 3318770 | 7,7 | 50 | 94 | 8 |
| 3318780 | 7,8 | 50 | 94 | 8 |
| 3318790 | 7,9 | 50 | 94 | 8 |
| 3318800 | 8 | 50 | 94 | 8 |
| 3318810 | 8,1 | 50 | 101 | 9 |
| 3318820 | 8,2 | 50 | 101 | 9 |
| 3318830 | 8,3 | 50 | 101 | 9 |
| 3318840 | 8,4 | 50 | 101 | 9 |
| 3318850 | 8,5 | 50 | 101 | 9 |
| 3318860 | 8,6 | 57 | 101 | 9 |
| 3318870 | 8,7 | 57 | 101 | 9 |
| 3318880 | 8,8 | 57 | 101 | 9 |
| 3318890 | 8,9 | 57 | 101 | 9 |
| 3318900 | 9 | 57 | 101 | 9 |
| 3318910 | 9,1 | 57 | 106 | 10 |
| 3318920 | 9,2 | 57 | 106 | 10 |
| 3318930 | 9,3 | 57 | 106 | 10 |
| 3318940 | 9,4 | 57 | 106 | 10 |
| 3318950 | 9,5 | 57 | 106 | 10 |
| 3318960 | 9,6 | 63 | 106 | 10 |
| 3318970 | 9,7 | 63 | 106 | 10 |
| 3318980 | 9,8 | 63 | 106 | 10 |
| 3318990 | 9,9 | 63 | 106 | 10 |
| 3319000 | 10 | 63 | 106 | 10 |
| 3319010 | 10,1 | 63 | 113 | 11 |
| 3319020 | 10,2 | 63 | 113 | 11 |
| 3319030 | 10,3 | 63 | 113 | 11 |
| 3319040 | 10,4 | 63 | 113 | 11 |
| 3319050 | 10,5 | 63 | 113 | 11 |
| 3319060 | 10,6 | 63 | 113 | 11 |
| 3319070 | 10,7 | 71 | 113 | 11 |
| 3319080 | 10,8 | 71 | 113 | 11 |
| 3319090 | 10,9 | 71 | 113 | 11 |
| 3319100 | 11 | 71 | 113 | 11 |
| 3319110 | 11,1 | 71 | 120 | 12 |

# WH70-DRL

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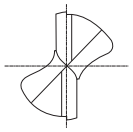
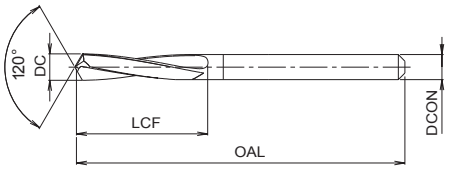
**Drilling | Solid carbide | 3xD**






- Carbide drill with DUROREY coating
- Up to 3xD
- With low helix for high rigidity, up to 70HRC material
- 101 sizes

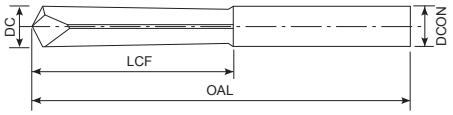
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 3319120 | 11,2 | 71 | 120 | 12 |
| 3319130 | 11,3 | 71 | 120 | 12 |
| 3319140 | 11,4 | 71 | 120 | 12 |
| 3319150 | 11,5 | 71 | 120 | 12 |
| 3319160 | 11,6 | 71 | 120 | 12 |
| 3319170 | 11,7 | 71 | 120 | 12 |
| 3319180 | 11,8 | 71 | 120 | 12 |
| 3319190 | 11,9 | 76 | 120 | 12 |
| 3319200 | 12 | 76 | 120 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-H-DRL

INDEX

**Drilling | Solid carbide | Removing**




- Carbide drill for removing broken taps, bright finish
- For hardened material up to 70HRC
- 11 sizes

H
52-62 HRC

CARBIDE

h7

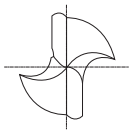
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 87702 | 2 | 10 | 30 | 2 |
| 87703 | 3 | 15 | 40 | 3 |
| 87704 | 4 | 20 | 45 | 4 |
| 87705 | 5 | 25 | 50 | 5 |
| 87706 | 6 | 30 | 60 | 6 |
| 87707 | 7 | 35 | 80 | 8 |
| 87708 | 8 | 40 | 80 | 8 |
| 87709 | 9 | 45 | 100 | 10 |
| 87710 | 10 | 50 | 100 | 10 |
| 87781 | 11 | 55 | 156 | 12 |
| 87782 | 12 | 60 | 162 | 12 |

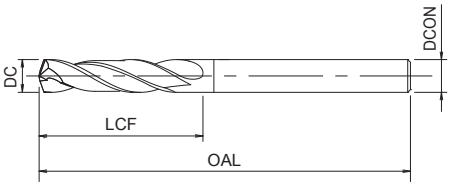
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# VPH-GDS

INDEX

**Drilling | Powder metal | 3xD**






- Powder metal drill with WDI coating
- Up to 3xD
- For cast iron, exotic material and hardened steel
- 126 sizes

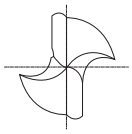
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8599005 | 0,5 | 3 | 38 | 3 |
| 8599006 | 0,6 | 3,5 | 38 | 3 |
| 8599007 | 0,7 | 4,5 | 38 | 3 |
| 8599008 | 0,8 | 5 | 38 | 3 |
| 8599009 | 0,9 | 5,5 | 38 | 3 |
| 8599010 | 1 | 6 | 38 | 3 |
| 8599011 | 1,1 | 7 | 39 | 3 |
| 8599012 | 1,2 | 8 | 40 | 3 |
| 8599013 | 1,3 | 8 | 40 | 3 |
| 8599014 | 1,4 | 9 | 41 | 3 |
| 8599015 | 1,5 | 9 | 41 | 3 |
| 8599016 | 1,6 | 10 | 42 | 3 |
| 8599017 | 1,7 | 10 | 42 | 3 |
| 8599018 | 1,8 | 11 | 43 | 3 |
| 8599019 | 1,9 | 11 | 43 | 3 |
| 8599020 | 2 | 12 | 44 | 3 |
| 8599021 | 2,1 | 12 | 44 | 3 |
| 8599022 | 2,2 | 13 | 45 | 3 |
| 8599023 | 2,3 | 13 | 45 | 3 |
| 8599024 | 2,4 | 14 | 46 | 3 |
| 8599025 | 2,5 | 14 | 46 | 3 |
| 8599026 | 2,6 | 14 | 46 | 3 |
| 8599027 | 2,7 | 16 | 48 | 3 |
| 8599028 | 2,8 | 16 | 48 | 3 |
| 8599029 | 2,9 | 16 | 48 | 3 |
| 8599030 | 3 | 16 | 48 | 3 |
| 8599031 | 3,1 | 18 | 50 | 3 |
| 8599032 | 3,2 | 18 | 50 | 3 |
| 8599033 | 3,3 | 18 | 50 | 4 |
| 8599034 | 3,4 | 20 | 52 | 4 |
| 8599035 | 3,5 | 20 | 52 | 4 |
| 8599036 | 3,6 | 20 | 52 | 4 |
| 8599037 | 3,7 | 20 | 52 | 4 |
| 8599038 | 3,8 | 22 | 54 | 4 |
| 8599039 | 3,9 | 22 | 54 | 4 |
| 8599040 | 4 | 22 | 54 | 4 |
| 8599041 | 4,1 | 22 | 66 | 6 |
| 8599042 | 4,2 | 22 | 66 | 6 |
| 8599043 | 4,3 | 24 | 68 | 6 |
| 8599044 | 4,4 | 24 | 68 | 6 |
| 8599045 | 4,5 | 24 | 68 | 6 |
| 8599046 | 4,6 | 24 | 68 | 6 |
| 8599047 | 4,7 | 24 | 68 | 6 |
| 8599048 | 4,8 | 26 | 70 | 6 |
| 8599049 | 4,9 | 26 | 70 | 6 |
| 8599050 | 5 | 26 | 70 | 6 |

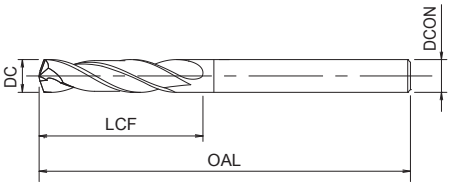
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8599051 | 5,1 | 26 | 70 | 6 |
| 8599052 | 5,2 | 26 | 70 | 6 |
| 8599053 | 5,3 | 26 | 70 | 6 |
| 8599054 | 5,4 | 28 | 72 | 6 |
| 8599055 | 5,5 | 28 | 72 | 6 |
| 8599056 | 5,6 | 28 | 72 | 6 |
| 8599057 | 5,7 | 28 | 72 | 6 |
| 8599058 | 5,8 | 28 | 72 | 6 |
| 8599059 | 5,9 | 28 | 72 | 6 |
| 8599060 | 6 | 28 | 72 | 6 |
| 8599061 | 6,1 | 31 | 75 | 8 |
| 8599062 | 6,2 | 31 | 75 | 8 |
| 8599063 | 6,3 | 31 | 75 | 8 |
| 8599064 | 6,4 | 31 | 75 | 8 |
| 8599065 | 6,5 | 31 | 75 | 8 |
| 8599066 | 6,6 | 31 | 75 | 8 |
| 8599067 | 6,7 | 31 | 75 | 8 |
| 8599068 | 6,8 | 34 | 78 | 8 |
| 8599069 | 6,9 | 34 | 78 | 8 |
| 8599070 | 7 | 34 | 78 | 8 |
| 8599071 | 7,1 | 34 | 78 | 8 |
| 8599072 | 7,2 | 34 | 78 | 8 |
| 8599073 | 7,3 | 34 | 78 | 8 |
| 8599074 | 7,4 | 34 | 78 | 8 |
| 8599075 | 7,5 | 34 | 78 | 8 |
| 8599076 | 7,6 | 37 | 81 | 8 |
| 8599077 | 7,7 | 37 | 81 | 8 |
| 8599078 | 7,8 | 37 | 81 | 8 |
| 8599079 | 7,9 | 37 | 81 | 8 |
| 8599080 | 8 | 37 | 81 | 8 |
| 8599081 | 8,1 | 37 | 87 | 10 |
| 8599082 | 8,2 | 37 | 87 | 10 |
| 8599083 | 8,3 | 37 | 87 | 10 |
| 8599084 | 8,4 | 37 | 87 | 10 |
| 8599085 | 8,5 | 37 | 87 | 10 |
| 8599086 | 8,6 | 40 | 90 | 10 |
| 8599087 | 8,7 | 40 | 90 | 10 |
| 8599088 | 8,8 | 40 | 90 | 10 |
| 8599089 | 8,9 | 40 | 90 | 10 |
| 8599090 | 9 | 40 | 90 | 10 |
| 8599091 | 9,1 | 40 | 90 | 10 |
| 8599092 | 9,2 | 40 | 90 | 10 |
| 8599093 | 9,3 | 40 | 90 | 10 |
| 8599094 | 9,4 | 40 | 90 | 10 |
| 8599095 | 9,5 | 40 | 90 | 10 |
| 8599096 | 9,6 | 43 | 93 | 10 |

# VPH-GDS



**Drilling | Powder metal | 3xD**






- Powder metal drill with WDI coating
- Up to 3xD
- For cast iron, exotic material and hardened steel
- 126 sizes

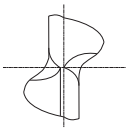
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8599097 | 9,7 | 43 | 93 | 10 |
| 8599098 | 9,8 | 43 | 93 | 10 |
| 8599099 | 9,9 | 43 | 93 | 10 |
| 8599100 | 10 | 43 | 93 | 10 |
| 8599101 | 10,1 | 43 | 100 | 12 |
| 8599102 | 10,2 | 43 | 100 | 12 |
| 8599103 | 10,3 | 43 | 100 | 12 |
| 8599104 | 10,4 | 43 | 100 | 12 |
| 8599105 | 10,5 | 43 | 100 | 12 |
| 8599106 | 10,6 | 43 | 100 | 12 |
| 8599107 | 10,7 | 47 | 104 | 12 |
| 8599108 | 10,8 | 47 | 104 | 12 |
| 8599109 | 10,9 | 47 | 104 | 12 |
| 8599110 | 11 | 47 | 104 | 12 |
| 8599111 | 11,1 | 47 | 104 | 12 |
| 8599112 | 11,2 | 47 | 104 | 12 |
| 8599113 | 11,3 | 47 | 104 | 12 |
| 8599114 | 11,4 | 47 | 104 | 12 |
| 8599115 | 11,5 | 47 | 104 | 12 |
| 8599116 | 11,6 | 47 | 104 | 12 |
| 8599117 | 11,7 | 47 | 104 | 12 |
| 8599118 | 11,8 | 47 | 104 | 12 |
| 8599119 | 11,9 | 51 | 108 | 12 |
| 8599120 | 12 | 51 | 108 | 12 |
| 8599121 | 12,1 | 51 | 108 | 12 |
| 8599122 | 12,2 | 51 | 108 | 12 |
| 8599123 | 12,3 | 51 | 108 | 12 |
| 8599124 | 12,4 | 51 | 108 | 12 |
| 8599125 | 12,5 | 51 | 108 | 12 |
| 8599126 | 12,6 | 51 | 108 | 12 |
| 8599127 | 12,7 | 51 | 108 | 12 |
| 8599128 | 12,8 | 51 | 108 | 12 |
| 8599129 | 12,9 | 51 | 108 | 12 |
| 8599130 | 13 | 51 | 108 | 12 |

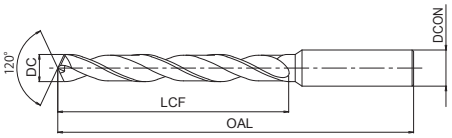
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# VP-GDR



**Drilling | Powder metal | 5xD**






- Powder metal drill with TiCN coating
- Up to 5xD
- For steel, cast iron and non-ferrous material
- 144 sizes

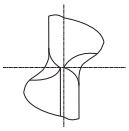
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8593020 | 2 | 24 | 56 | 3 |
| 8593021 | 2,1 | 24 | 56 | 3 |
| 8593022 | 2,2 | 27 | 59 | 3 |
| 8593023 | 2,3 | 27 | 59 | 3 |
| 8593024 | 2,4 | 30 | 62 | 3 |
| 8593025 | 2,5 | 30 | 62 | 3 |
| 8593026 | 2,6 | 30 | 62 | 3 |
| 8593027 | 2,7 | 33 | 65 | 3 |
| 8593028 | 2,8 | 33 | 65 | 3 |
| 8593029 | 2,9 | 33 | 65 | 3 |
| 8593030 | 3 | 33 | 65 | 3 |
| 8593031 | 3,1 | 36 | 68 | 4 |
| 8593032 | 3,2 | 36 | 68 | 4 |
| 8593033 | 3,3 | 36 | 68 | 4 |
| 8593034 | 3,4 | 39 | 71 | 4 |
| 8593035 | 3,5 | 39 | 71 | 4 |
| 8593036 | 3,6 | 39 | 71 | 4 |
| 8593037 | 3,7 | 39 | 71 | 4 |
| 8593038 | 3,8 | 43 | 75 | 4 |
| 8593039 | 3,9 | 43 | 75 | 4 |
| 8593040 | 4 | 43 | 75 | 4 |
| 8593041 | 4,1 | 43 | 87 | 6 |
| 8593042 | 4,2 | 43 | 87 | 6 |
| 8593043 | 4,3 | 47 | 91 | 6 |
| 8593044 | 4,4 | 47 | 91 | 6 |
| 8593045 | 4,5 | 47 | 91 | 6 |
| 8593046 | 4,6 | 47 | 91 | 6 |
| 8593047 | 4,7 | 47 | 91 | 6 |
| 8593048 | 4,8 | 52 | 96 | 6 |
| 8593049 | 4,9 | 52 | 96 | 6 |
| 8593050 | 5 | 52 | 96 | 6 |
| 8593051 | 5,1 | 52 | 96 | 6 |
| 8593052 | 5,2 | 52 | 96 | 6 |
| 8593053 | 5,3 | 52 | 96 | 6 |
| 8593054 | 5,4 | 57 | 101 | 6 |
| 8593055 | 5,5 | 57 | 101 | 6 |
| 8593056 | 5,6 | 57 | 101 | 6 |
| 8593057 | 5,7 | 57 | 101 | 6 |
| 8593058 | 5,8 | 57 | 101 | 6 |
| 8593059 | 5,9 | 57 | 101 | 6 |
| 8593060 | 6 | 57 | 101 | 6 |
| 8593061 | 6,1 | 63 | 107 | 8 |
| 8593062 | 6,2 | 63 | 107 | 8 |
| 8593063 | 6,3 | 63 | 107 | 8 |
| 8593064 | 6,4 | 63 | 107 | 8 |
| 8593065 | 6,5 | 63 | 107 | 8 |

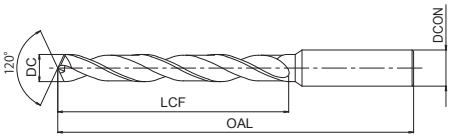
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8593066 | 6,6 | 63 | 107 | 8 |
| 8593067 | 6,7 | 63 | 107 | 8 |
| 8593068 | 6,8 | 69 | 113 | 8 |
| 8593069 | 6,9 | 69 | 113 | 8 |
| 8593070 | 7 | 69 | 113 | 8 |
| 8593071 | 7,1 | 69 | 113 | 8 |
| 8593072 | 7,2 | 69 | 113 | 8 |
| 8593073 | 7,3 | 69 | 113 | 8 |
| 8593074 | 7,4 | 69 | 113 | 8 |
| 8593075 | 7,5 | 69 | 113 | 8 |
| 8593076 | 7,6 | 75 | 119 | 8 |
| 8593077 | 7,7 | 75 | 119 | 8 |
| 8593078 | 7,8 | 75 | 119 | 8 |
| 8593079 | 7,9 | 75 | 119 | 8 |
| 8593080 | 8 | 75 | 119 | 8 |
| 8593081 | 8,1 | 75 | 125 | 10 |
| 8593082 | 8,2 | 75 | 125 | 10 |
| 8593083 | 8,3 | 75 | 125 | 10 |
| 8593084 | 8,4 | 75 | 125 | 10 |
| 8593085 | 8,5 | 75 | 125 | 10 |
| 8593086 | 8,6 | 81 | 131 | 10 |
| 8593087 | 8,7 | 81 | 131 | 10 |
| 8593088 | 8,8 | 81 | 131 | 10 |
| 8593089 | 8,9 | 81 | 131 | 10 |
| 8593090 | 9 | 81 | 131 | 10 |
| 8593091 | 9,1 | 81 | 131 | 10 |
| 8593092 | 9,2 | 81 | 131 | 10 |
| 8593093 | 9,3 | 81 | 131 | 10 |
| 8593094 | 9,4 | 81 | 131 | 10 |
| 8593095 | 9,5 | 81 | 131 | 10 |
| 8593096 | 9,6 | 87 | 137 | 10 |
| 8593097 | 9,7 | 87 | 137 | 10 |
| 8593098 | 9,8 | 87 | 137 | 10 |
| 8593099 | 9,9 | 87 | 137 | 10 |
| 8593100 | 10 | 87 | 137 | 10 |
| 8593101 | 10,1 | 87 | 144 | 12 |
| 8593102 | 10,2 | 87 | 144 | 12 |
| 8593103 | 10,3 | 87 | 144 | 12 |
| 8593104 | 10,4 | 87 | 144 | 12 |
| 8593105 | 10,5 | 87 | 144 | 12 |
| 8593106 | 10,6 | 87 | 144 | 12 |
| 8593107 | 10,7 | 94 | 151 | 12 |
| 8593108 | 10,8 | 94 | 151 | 12 |
| 8593109 | 10,9 | 94 | 151 | 12 |
| 8593110 | 11 | 94 | 151 | 12 |
| 8593111 | 11,1 | 94 | 151 | 12 |

# VP-GDR



**Drilling | Powder metal | 5xD**






- Powder metal drill with TiCN coating
- Up to 5xD
- For steel, cast iron and non-ferrous material
- 144 sizes

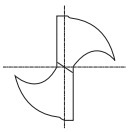
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8593121 | 12,1 | 101 | 158 | 12 |
| 8593122 | 12,2 | 101 | 158 | 12 |
| 8593123 | 12,3 | 101 | 158 | 12 |
| 8593124 | 12,4 | 101 | 158 | 12 |
| 8593125 | 12,5 | 101 | 158 | 12 |
| 8593126 | 12,6 | 101 | 158 | 12 |
| 8593127 | 12,7 | 101 | 158 | 12 |
| 8593128 | 12,8 | 101 | 158 | 12 |
| 8593129 | 12,9 | 101 | 158 | 12 |
| 8593130 | 13 | 101 | 158 | 12 |
| 8593135 | 13,5 | 106 | 166 | 16 |
| 8593140 | 14 | 106 | 166 | 16 |
| 8593145 | 14,5 | 109 | 169 | 16 |
| 8593150 | 15 | 109 | 169 | 16 |
| 8593155 | 15,5 | 112 | 172 | 16 |
| 8593160 | 16 | 112 | 172 | 16 |
| 8593165 | 16,5 | 115 | 181 | 20 |
| 8593170 | 17 | 115 | 181 | 20 |
| 8593175 | 17,5 | 118 | 184 | 20 |
| 8593180 | 18 | 118 | 184 | 20 |
| 8593185 | 18,5 | 122 | 188 | 20 |
| 8593190 | 19 | 122 | 188 | 20 |
| 8593195 | 19,5 | 125 | 191 | 20 |
| 8593200 | 20 | 125 | 191 | 20 |
| 8593205 | 20,5 | 128 | 204 | 25 |
| 8593210 | 21 | 128 | 204 | 25 |
| 8593215 | 21,5 | 132 | 208 | 25 |
| 8593220 | 22 | 132 | 208 | 25 |
| 8593225 | 22,5 | 136 | 212 | 25 |
| 8593230 | 23 | 136 | 212 | 25 |
| 8593235 | 23,5 | 136 | 212 | 25 |
| 8593240 | 24 | 140 | 216 | 25 |
| 8593245 | 24,5 | 140 | 216 | 25 |
| 8593250 | 25 | 140 | 216 | 25 |
| 8593255 | 25,5 | 145 | 225 | 32 |
| 8593260 | 26 | 145 | 225 | 32 |
| 8593265 | 26,5 | 145 | 225 | 32 |
| 8593270 | 27 | 150 | 230 | 32 |
| 8593280 | 28 | 150 | 230 | 32 |
| 8593290 | 29 | 155 | 235 | 32 |
| 8593300 | 30 | 155 | 235 | 32 |
| 8593310 | 31 | 160 | 240 | 32 |
| 8593320 | 32 | 165 | 245 | 32 |

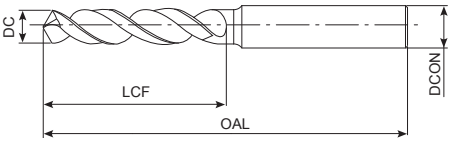
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# NEXUS-GDS



**Drilling | HSS | 3xD**






- HSSE drill with WDI coating
- Up to 3xD
- For stainless steel and non-ferrous materials
- 106 sizes

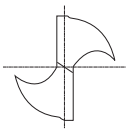
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8650100 | 1 | 6 | 38 | 3 |
| 8650110 | 1,1 | 7 | 39 | 3 |
| 8650120 | 1,2 | 8 | 40 | 3 |
| 8650130 | 1,3 | 8 | 40 | 3 |
| 8650140 | 1,4 | 9 | 41 | 3 |
| 8650150 | 1,5 | 9 | 41 | 3 |
| 8650160 | 1,6 | 10 | 42 | 3 |
| 8650170 | 1,7 | 10 | 42 | 3 |
| 8650180 | 1,8 | 11 | 43 | 3 |
| 8650181 | 1,81 | 11 | 43 | 3 |
| 8650183 | 1,83 | 11 | 43 | 3 |
| 8650190 | 1,9 | 11 | 43 | 3 |
| 8650200 | 2 | 12 | 44 | 3 |
| 8650210 | 2,1 | 12 | 44 | 3 |
| 8650211 | 2,11 | 12 | 44 | 3 |
| 8650213 | 2,13 | 13 | 45 | 3 |
| 8650220 | 2,2 | 13 | 45 | 3 |
| 8650228 | 2,28 | 13 | 45 | 3 |
| 8650230 | 2,3 | 13 | 45 | 3 |
| 8650238 | 2,38 | 14 | 46 | 3 |
| 8650240 | 2,4 | 14 | 46 | 3 |
| 8650250 | 2,5 | 14 | 46 | 3 |
| 8650260 | 2,6 | 14 | 46 | 3 |
| 8650270 | 2,7 | 16 | 48 | 3 |
| 8650276 | 2,76 | 16 | 48 | 3 |
| 8650278 | 2,78 | 16 | 48 | 3 |
| 8650280 | 2,8 | 16 | 48 | 3 |
| 8650290 | 2,9 | 16 | 48 | 3 |
| 8650300 | 3 | 16 | 48 | 3 |
| 8650310 | 3,1 | 18 | 50 | 4 |
| 8650320 | 3,2 | 18 | 50 | 4 |
| 8650325 | 3,25 | 18 | 50 | 4 |
| 8650330 | 3,3 | 18 | 50 | 4 |
| 8650340 | 3,4 | 20 | 52 | 4 |
| 8650350 | 3,5 | 20 | 52 | 4 |
| 8650360 | 3,6 | 20 | 52 | 4 |
| 8650365 | 3,65 | 20 | 52 | 4 |
| 8650367 | 3,67 | 20 | 52 | 4 |
| 8650370 | 3,7 | 20 | 52 | 4 |
| 8650380 | 3,8 | 22 | 54 | 4 |
| 8650390 | 3,9 | 22 | 54 | 4 |
| 8650400 | 4 | 22 | 54 | 4 |
| 8650410 | 4,1 | 22 | 66 | 6 |
| 8650420 | 4,2 | 22 | 66 | 6 |
| 8650430 | 4,3 | 24 | 68 | 6 |
| 8650440 | 4,4 | 24 | 68 | 6 |

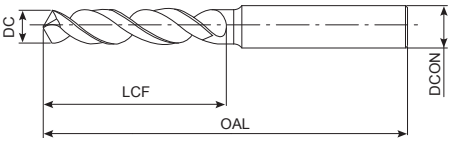
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8650450 | 4,5 | 24 | 68 | 6 |
| 8650459 | 4,59 | 24 | 68 | 6 |
| 8650460 | 4,6 | 24 | 68 | 6 |
| 8650463 | 4,63 | 24 | 68 | 6 |
| 8650470 | 4,7 | 24 | 68 | 6 |
| 8650480 | 4,8 | 26 | 70 | 6 |
| 8650490 | 4,9 | 26 | 70 | 6 |
| 8650500 | 5 | 26 | 70 | 6 |
| 8650510 | 5,1 | 26 | 70 | 6 |
| 8650520 | 5,2 | 26 | 70 | 6 |
| 8650530 | 5,3 | 26 | 70 | 6 |
| 8650540 | 5,4 | 28 | 72 | 6 |
| 8650548 | 5,48 | 28 | 72 | 6 |
| 8650550 | 5,5 | 28 | 72 | 6 |
| 8650560 | 5,6 | 28 | 72 | 6 |
| 8650570 | 5,7 | 28 | 72 | 6 |
| 8650580 | 5,8 | 28 | 72 | 6 |
| 8650590 | 5,9 | 28 | 72 | 6 |
| 8650600 | 6 | 28 | 72 | 6 |
| 8650610 | 6,1 | 31 | 75 | 8 |
| 8650620 | 6,2 | 31 | 75 | 8 |
| 8650630 | 6,3 | 31 | 75 | 8 |
| 8650640 | 6,4 | 31 | 75 | 8 |
| 8650650 | 6,5 | 31 | 75 | 8 |
| 8650660 | 6,6 | 31 | 75 | 8 |
| 8650680 | 6,8 | 34 | 78 | 8 |
| 8650690 | 6,9 | 34 | 78 | 8 |
| 8650700 | 7 | 34 | 78 | 8 |
| 8650734 | 7,34 | 34 | 78 | 8 |
| 8650738 | 7,38 | 34 | 78 | 8 |
| 8650740 | 7,4 | 34 | 78 | 8 |
| 8650750 | 7,5 | 34 | 78 | 8 |
| 8650780 | 7,8 | 37 | 81 | 8 |
| 8650790 | 7,9 | 37 | 81 | 8 |
| 8650800 | 8 | 37 | 81 | 8 |
| 8650810 | 8,1 | 37 | 87 | 10 |
| 8650820 | 8,2 | 37 | 87 | 10 |
| 8650830 | 8,3 | 37 | 87 | 10 |
| 8650840 | 8,4 | 37 | 87 | 10 |
| 8650850 | 8,5 | 37 | 87 | 10 |
| 8650860 | 8,6 | 40 | 90 | 10 |
| 8650870 | 8,7 | 40 | 90 | 10 |
| 8650880 | 8,8 | 40 | 90 | 10 |
| 8650900 | 9 | 40 | 90 | 10 |
| 8650918 | 9,18 | 40 | 90 | 10 |
| 8650920 | 9,2 | 40 | 90 | 10 |

# NEXUS-GDS



**Drilling | HSS | 3xD**






- HSSE drill with WDI coating
- Up to 3xD
- For stainless steel and non-ferrous materials
- 106 sizes

P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ◉ AC, ADC | S ◉ Ti

HSSE | WDI | 35° ~40° | D<2 140° | 2≤D≤4 130° | D>4 120° | h8

B.505

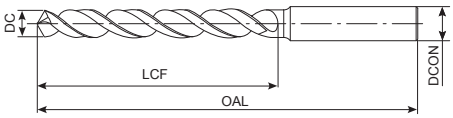
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8650924 | 9,24 | 40 | 90 | 10 |
| 8650934 | 9,34 | 40 | 90 | 10 |
| 8650936 | 9,36 | 40 | 90 | 10 |
| 8650950 | 9,5 | 40 | 90 | 10 |
| 8650980 | 9,8 | 43 | 93 | 10 |
| 8651000 | 10 | 43 | 93 | 10 |
| 8651020 | 10,2 | 43 | 100 | 12 |
| 8651030 | 10,3 | 43 | 100 | 12 |
| 8651040 | 10,4 | 43 | 100 | 12 |
| 8651050 | 10,5 | 43 | 100 | 12 |
| 8651100 | 11 | 47 | 104 | 12 |
| 8651120 | 11,2 | 47 | 104 | 12 |
| 8651150 | 11,5 | 47 | 104 | 12 |
| 8651200 | 12 | 51 | 108 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# NEXUS-GDR



**Drilling | HSS | 5xD**




- HSSE drill with WDI coating
- Up to 5xD
- For stainless steel and non-ferrous materials
- 32 sizes

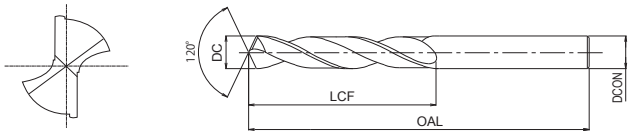
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8655200 | 2 | 24 | 56 | 3 |
| 8655230 | 2,3 | 27 | 59 | 3 |
| 8655250 | 2,5 | 30 | 62 | 3 |
| 8655260 | 2,6 | 30 | 62 | 3 |
| 8655280 | 2,8 | 33 | 65 | 3 |
| 8655300 | 3 | 33 | 65 | 3 |
| 8655330 | 3,3 | 36 | 68 | 4 |
| 8655340 | 3,4 | 39 | 71 | 4 |
| 8655350 | 3,5 | 39 | 71 | 4 |
| 8655400 | 4 | 43 | 75 | 4 |
| 8655420 | 4,2 | 43 | 87 | 6 |
| 8655430 | 4,3 | 47 | 91 | 6 |
| 8655450 | 4,5 | 47 | 91 | 6 |
| 8655500 | 5 | 52 | 96 | 6 |
| 8655510 | 5,1 | 52 | 96 | 6 |
| 8655520 | 5,2 | 52 | 96 | 6 |
| 8655550 | 5,5 | 57 | 101 | 6 |
| 8655600 | 6 | 57 | 101 | 6 |
| 8655680 | 6,8 | 69 | 113 | 8 |
| 8655690 | 6,9 | 69 | 113 | 8 |
| 8655700 | 7 | 69 | 113 | 8 |
| 8655800 | 8 | 75 | 119 | 8 |
| 8655850 | 8,5 | 75 | 125 | 10 |
| 8655860 | 8,6 | 81 | 131 | 10 |
| 8655880 | 8,8 | 81 | 131 | 10 |
| 8655900 | 9 | 81 | 131 | 10 |
| 8656000 | 10 | 87 | 137 | 10 |
| 8656030 | 10,3 | 87 | 144 | 12 |
| 8656040 | 10,4 | 87 | 144 | 12 |
| 8656050 | 10,5 | 87 | 144 | 12 |
| 8656100 | 11 | 94 | 151 | 12 |
| 8656200 | 12 | 101 | 158 | 12 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# V-SDR

**Drilling | HSS | 5xD**

INDEX




- HSSE drill with TiCN coating
- Up to 5xD
- General purpose
- 111 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC

HSSE | V | 28°~38° | 120° | DIN 338

B.506

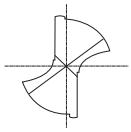
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8594020 | 2 | 24 | 49 | 2 |
| 8594021 | 2,1 | 24 | 49 | 2,1 |
| 8594022 | 2,2 | 27 | 53 | 2,2 |
| 8594023 | 2,3 | 27 | 53 | 2,3 |
| 8594024 | 2,4 | 30 | 57 | 2,4 |
| 8594025 | 2,5 | 30 | 57 | 2,5 |
| 8594026 | 2,6 | 30 | 57 | 2,6 |
| 8594027 | 2,7 | 33 | 61 | 2,7 |
| 8594028 | 2,8 | 33 | 61 | 2,8 |
| 8594029 | 2,9 | 33 | 61 | 2,9 |
| 8594030 | 3 | 33 | 61 | 3 |
| 8594031 | 3,1 | 36 | 65 | 3,1 |
| 8594032 | 3,2 | 36 | 65 | 3,2 |
| 8594033 | 3,3 | 36 | 65 | 3,3 |
| 8594034 | 3,4 | 39 | 70 | 3,4 |
| 8594035 | 3,5 | 39 | 70 | 3,5 |
| 8594036 | 3,6 | 39 | 70 | 3,6 |
| 8594037 | 3,7 | 39 | 70 | 3,7 |
| 8594038 | 3,8 | 43 | 75 | 3,8 |
| 8594039 | 3,9 | 43 | 75 | 3,9 |
| 8594040 | 4 | 43 | 75 | 4 |
| 8594041 | 4,1 | 43 | 75 | 4,1 |
| 8594042 | 4,2 | 43 | 75 | 4,2 |
| 8594043 | 4,3 | 47 | 80 | 4,3 |
| 8594044 | 4,4 | 47 | 80 | 4,4 |
| 8594045 | 4,5 | 47 | 80 | 4,5 |
| 8594046 | 4,6 | 47 | 80 | 4,6 |
| 8594047 | 4,7 | 47 | 80 | 4,7 |
| 8594048 | 4,8 | 52 | 86 | 4,8 |
| 8594049 | 4,9 | 52 | 86 | 4,9 |
| 8594050 | 5 | 52 | 86 | 5 |
| 8594051 | 5,1 | 52 | 86 | 5,1 |
| 8594052 | 5,2 | 52 | 86 | 5,2 |
| 8594053 | 5,3 | 52 | 86 | 5,3 |
| 8594054 | 5,4 | 57 | 93 | 5,4 |
| 8594055 | 5,5 | 57 | 93 | 5,5 |
| 8594056 | 5,6 | 57 | 93 | 5,6 |
| 8594057 | 5,7 | 57 | 93 | 5,7 |
| 8594058 | 5,8 | 57 | 93 | 5,8 |
| 8594059 | 5,9 | 57 | 93 | 5,9 |
| 8594060 | 6 | 57 | 93 | 6 |
| 8594061 | 6,1 | 63 | 101 | 6,1 |
| 8594062 | 6,2 | 63 | 101 | 6,2 |
| 8594063 | 6,3 | 63 | 101 | 6,3 |
| 8594064 | 6,4 | 63 | 101 | 6,4 |
| 8594065 | 6,5 | 63 | 101 | 6,5 |

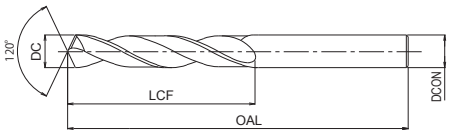
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8594066 | 6,6 | 63 | 101 | 6,6 |
| 8594067 | 6,7 | 63 | 109 | 6,7 |
| 8594068 | 6,8 | 69 | 109 | 6,8 |
| 8594069 | 6,9 | 69 | 109 | 6,9 |
| 8594070 | 7 | 69 | 109 | 7 |
| 8594071 | 7,1 | 69 | 109 | 7,1 |
| 8594072 | 7,2 | 69 | 109 | 7,2 |
| 8594073 | 7,3 | 69 | 109 | 7,3 |
| 8594074 | 7,4 | 69 | 109 | 7,4 |
| 8594075 | 7,5 | 69 | 109 | 7,5 |
| 8594076 | 7,6 | 75 | 117 | 7,6 |
| 8594077 | 7,7 | 75 | 117 | 7,7 |
| 8594078 | 7,8 | 75 | 117 | 7,8 |
| 8594079 | 7,9 | 75 | 117 | 7,9 |
| 8594080 | 8 | 75 | 117 | 8 |
| 8594081 | 8,1 | 75 | 117 | 8,1 |
| 8594082 | 8,2 | 75 | 117 | 8,2 |
| 8594083 | 8,3 | 75 | 117 | 8,3 |
| 8594084 | 8,4 | 75 | 117 | 8,4 |
| 8594085 | 8,5 | 75 | 117 | 8,5 |
| 8594086 | 8,6 | 81 | 125 | 8,6 |
| 8594087 | 8,7 | 81 | 125 | 8,7 |
| 8594088 | 8,8 | 81 | 125 | 8,8 |
| 8594089 | 8,9 | 81 | 125 | 8,9 |
| 8594090 | 9 | 81 | 125 | 9 |
| 8594091 | 9,1 | 81 | 125 | 9,1 |
| 8594092 | 9,2 | 81 | 125 | 9,2 |
| 8594093 | 9,3 | 81 | 125 | 9,3 |
| 8594094 | 9,4 | 81 | 125 | 9,4 |
| 8594095 | 9,5 | 81 | 125 | 9,5 |
| 8594096 | 9,6 | 87 | 133 | 9,6 |
| 8594097 | 9,7 | 87 | 133 | 9,7 |
| 8594098 | 9,8 | 87 | 133 | 9,8 |
| 8594099 | 9,9 | 87 | 133 | 9,9 |
| 8594100 | 10 | 87 | 133 | 10 |
| 8594101 | 10,1 | 87 | 133 | 10,1 |
| 8594102 | 10,2 | 87 | 133 | 10,2 |
| 8594103 | 10,3 | 87 | 133 | 10,3 |
| 8594104 | 10,4 | 87 | 133 | 10,4 |
| 8594105 | 10,5 | 87 | 133 | 10,5 |
| 8594106 | 10,6 | 87 | 133 | 10,6 |
| 8594107 | 10,7 | 94 | 142 | 10,7 |
| 8594108 | 10,8 | 94 | 142 | 10,8 |
| 8594109 | 10,9 | 94 | 142 | 10,9 |
| 8594110 | 11 | 94 | 142 | 11 |
| 8594111 | 11,1 | 94 | 142 | 11,1 |

# V-SDR



**Drilling | HSS | 5xD**






- HSSE drill with TiCN coating
- Up to 5xD
- General purpose
- 111 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC

HSSE | V | 28°~38° | 120° | DIN 338

B.506

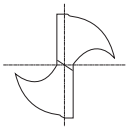
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8594112 | 11,2 | 94 | 142 | 11,2 |
| 8594113 | 11,3 | 94 | 142 | 11,3 |
| 8594114 | 11,4 | 94 | 142 | 11,4 |
| 8594115 | 11,5 | 94 | 142 | 11,5 |
| 8594116 | 11,6 | 94 | 142 | 11,6 |
| 8594117 | 11,7 | 94 | 142 | 11,7 |
| 8594118 | 11,8 | 94 | 142 | 11,8 |
| 8594119 | 11,9 | 101 | 151 | 11,9 |
| 8594120 | 12 | 101 | 151 | 12 |
| 8594121 | 12,1 | 101 | 151 | 12,1 |
| 8594122 | 12,2 | 101 | 151 | 12,2 |
| 8594123 | 12,3 | 101 | 151 | 12,3 |
| 8594124 | 12,4 | 101 | 151 | 12,4 |
| 8594125 | 12,5 | 101 | 151 | 12,5 |
| 8594126 | 12,6 | 101 | 151 | 12,6 |
| 8594127 | 12,7 | 101 | 151 | 12,7 |
| 8594128 | 12,8 | 101 | 151 | 12,8 |
| 8594129 | 12,9 | 101 | 151 | 12,9 |
| 8594130 | 13 | 101 | 151 | 13 |

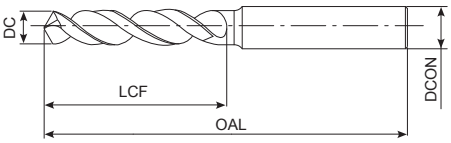
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-SUS-GDS



**Drilling | HSS | 3xD**






- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 3xD
- For stainless steel, low carbon steel and cast aluminium
- 635 sizes - from Ø 0,5-6 mm in 0,01 mm increments

B.506

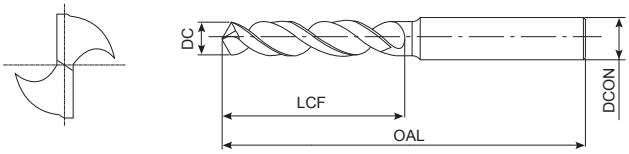
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 61505 | 0,5 | 3 | 38 | 3 |
| 8595051 | 0,51 | 3 | 38 | 3 |
| 8595052 | 0,52 | 3 | 38 | 3 |
| 8595053 | 0,53 | 3 | 38 | 3 |
| 8595054 | 0,54 | 3,5 | 38 | 3 |
| 8595055 | 0,55 | 3,5 | 38 | 3 |
| 8595056 | 0,56 | 3,5 | 38 | 3 |
| 8595057 | 0,57 | 3,5 | 38 | 3 |
| 8595058 | 0,58 | 3,5 | 38 | 3 |
| 8595059 | 0,59 | 3,5 | 38 | 3 |
| 61506 | 0,6 | 3,5 | 38 | 3 |
| 8595061 | 0,61 | 4 | 38 | 3 |
| 8595062 | 0,62 | 4 | 38 | 3 |
| 8595063 | 0,63 | 4 | 38 | 3 |
| 8595064 | 0,64 | 4 | 38 | 3 |
| 8595065 | 0,65 | 4 | 38 | 3 |
| 8595066 | 0,66 | 4 | 38 | 3 |
| 8595067 | 0,67 | 4 | 38 | 3 |
| 8595068 | 0,68 | 4,5 | 38 | 3 |
| 8595069 | 0,69 | 4,5 | 38 | 3 |
| 61507 | 0,7 | 4,5 | 38 | 3 |
| 8595071 | 0,71 | 4,5 | 38 | 3 |
| 8595072 | 0,72 | 4,5 | 38 | 3 |
| 8595073 | 0,73 | 4,5 | 38 | 3 |
| 8595074 | 0,74 | 4,5 | 38 | 3 |
| 8595075 | 0,75 | 4,5 | 38 | 3 |
| 8595076 | 0,76 | 5 | 38 | 3 |
| 8595077 | 0,77 | 5 | 38 | 3 |
| 8595078 | 0,78 | 5 | 38 | 3 |
| 8595079 | 0,79 | 5 | 38 | 3 |
| 61508 | 0,8 | 5 | 38 | 3 |
| 8595081 | 0,81 | 5 | 38 | 3 |
| 8595082 | 0,82 | 5 | 38 | 3 |
| 8595083 | 0,83 | 5 | 38 | 3 |
| 8595084 | 0,84 | 5 | 38 | 3 |
| 8595085 | 0,85 | 5 | 38 | 3 |
| 8595086 | 0,86 | 5,5 | 38 | 3 |
| 8595087 | 0,87 | 5,5 | 38 | 3 |
| 8595088 | 0,88 | 5,5 | 38 | 3 |
| 8595089 | 0,89 | 5,5 | 38 | 3 |
| 61509 | 0,9 | 5,5 | 38 | 3 |
| 8595091 | 0,91 | 5,5 | 38 | 3 |
| 8595092 | 0,92 | 5,5 | 38 | 3 |
| 8595093 | 0,93 | 5,5 | 38 | 3 |
| 8595094 | 0,94 | 5,5 | 38 | 3 |
| 8595095 | 0,95 | 6 | 38 | 3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595096 | 0,96 | 6 | 38 | 3 |
| 8595097 | 0,97 | 6 | 38 | 3 |
| 8595098 | 0,98 | 6 | 38 | 3 |
| 8595099 | 0,99 | 6 | 38 | 3 |
| 61510 | 1 | 6 | 38 | 3 |
| 8595101 | 1,01 | 6 | 38 | 3 |
| 8595102 | 1,02 | 6 | 38 | 3 |
| 8595103 | 1,03 | 6 | 38 | 3 |
| 8595104 | 1,04 | 6 | 38 | 3 |
| 8595105 | 1,05 | 6 | 38 | 3 |
| 8595106 | 1,06 | 6 | 38 | 3 |
| 8595107 | 1,07 | 7 | 39 | 3 |
| 8595108 | 1,08 | 7 | 39 | 3 |
| 8595109 | 1,09 | 7 | 39 | 3 |
| 61511 | 1,1 | 7 | 39 | 3 |
| 8595111 | 1,11 | 7 | 39 | 3 |
| 8595112 | 1,12 | 7 | 39 | 3 |
| 8595113 | 1,13 | 7 | 39 | 3 |
| 8595114 | 1,14 | 7 | 39 | 3 |
| 8595115 | 1,15 | 7 | 39 | 3 |
| 8595116 | 1,16 | 7 | 39 | 3 |
| 8595117 | 1,17 | 7 | 39 | 3 |
| 8595118 | 1,18 | 7 | 39 | 3 |
| 8595119 | 1,19 | 8 | 40 | 3 |
| 61512 | 1,2 | 8 | 40 | 3 |
| 8595121 | 1,21 | 8 | 40 | 3 |
| 8595122 | 1,22 | 8 | 40 | 3 |
| 8595123 | 1,23 | 8 | 40 | 3 |
| 8595124 | 1,24 | 8 | 40 | 3 |
| 8595125 | 1,25 | 8 | 40 | 3 |
| 8595126 | 1,26 | 8 | 40 | 3 |
| 8595127 | 1,27 | 8 | 40 | 3 |
| 8595128 | 1,28 | 8 | 40 | 3 |
| 8595129 | 1,29 | 8 | 40 | 3 |
| 61513 | 1,3 | 8 | 40 | 3 |
| 8595131 | 1,31 | 8 | 40 | 3 |
| 8595132 | 1,32 | 8 | 40 | 3 |
| 8595133 | 1,33 | 8 | 41 | 3 |
| 8595134 | 1,34 | 8 | 41 | 3 |
| 8595135 | 1,35 | 8 | 41 | 3 |
| 8595136 | 1,36 | 8 | 41 | 3 |
| 8595137 | 1,37 | 9 | 41 | 3 |
| 8595138 | 1,38 | 9 | 41 | 3 |
| 8595139 | 1,39 | 9 | 41 | 3 |
| 61514 | 1,4 | 9 | 41 | 3 |
| 8595141 | 1,41 | 9 | 41 | 3 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**




- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 3xD
- For stainless steel, low carbon steel and cast aluminium
- 635 sizes - from Ø 0,5-6 mm in 0,01 mm increments

P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ○ AC, ADC

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

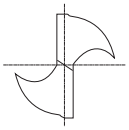
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595142 | 1,42 | 9 | 41 | 3 |
| 8595143 | 1,43 | 9 | 41 | 3 |
| 8595144 | 1,44 | 9 | 41 | 3 |
| 8595145 | 1,45 | 9 | 41 | 3 |
| 8595146 | 1,46 | 9 | 41 | 3 |
| 8595147 | 1,47 | 9 | 41 | 3 |
| 8595148 | 1,48 | 9 | 41 | 3 |
| 8595149 | 1,49 | 9 | 41 | 3 |
| 61515 | 1,5 | 9 | 41 | 3 |
| 8595151 | 1,51 | 10 | 42 | 3 |
| 8595152 | 1,52 | 10 | 42 | 3 |
| 8595153 | 1,53 | 10 | 42 | 3 |
| 8595154 | 1,54 | 10 | 42 | 3 |
| 8595155 | 1,55 | 10 | 42 | 3 |
| 8595156 | 1,56 | 10 | 42 | 3 |
| 8595157 | 1,57 | 10 | 42 | 3 |
| 8595158 | 1,58 | 10 | 42 | 3 |
| 8595159 | 1,59 | 10 | 42 | 3 |
| 61516 | 1,6 | 10 | 42 | 3 |
| 8595161 | 1,61 | 10 | 42 | 3 |
| 8595162 | 1,62 | 10 | 42 | 3 |
| 8595163 | 1,63 | 10 | 42 | 3 |
| 8595164 | 1,64 | 10 | 42 | 3 |
| 8595165 | 1,65 | 10 | 42 | 3 |
| 8595166 | 1,66 | 10 | 42 | 3 |
| 8595167 | 1,67 | 10 | 42 | 3 |
| 8595168 | 1,68 | 10 | 42 | 3 |
| 8595169 | 1,69 | 10 | 42 | 3 |
| 61517 | 1,7 | 10 | 42 | 3 |
| 8595171 | 1,71 | 11 | 43 | 3 |
| 8595172 | 1,72 | 11 | 43 | 3 |
| 8595173 | 1,73 | 11 | 43 | 3 |
| 8595174 | 1,74 | 11 | 43 | 3 |
| 8595175 | 1,75 | 11 | 43 | 3 |
| 8595176 | 1,76 | 11 | 43 | 3 |
| 8595177 | 1,77 | 11 | 43 | 3 |
| 8595178 | 1,78 | 11 | 43 | 3 |
| 8595179 | 1,79 | 11 | 43 | 3 |
| 61518 | 1,8 | 11 | 43 | 3 |
| 8595181 | 1,81 | 11 | 43 | 3 |
| 8595182 | 1,82 | 11 | 43 | 3 |
| 8595183 | 1,83 | 11 | 43 | 3 |
| 8595184 | 1,84 | 11 | 43 | 3 |
| 8595185 | 1,85 | 11 | 43 | 3 |
| 8595186 | 1,86 | 11 | 43 | 3 |
| 8595187 | 1,87 | 11 | 43 | 3 |

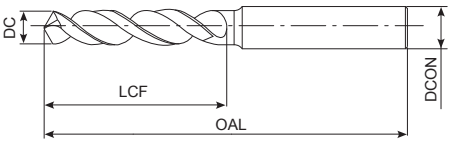
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595188 | 1,88 | 11 | 43 | 3 |
| 8595189 | 1,89 | 11 | 43 | 3 |
| 61519 | 1,9 | 11 | 43 | 3 |
| 8595191 | 1,91 | 12 | 44 | 3 |
| 8595192 | 1,92 | 12 | 44 | 3 |
| 8595193 | 1,93 | 12 | 44 | 3 |
| 8595194 | 1,94 | 12 | 44 | 3 |
| 8595195 | 1,95 | 12 | 44 | 3 |
| 8595196 | 1,96 | 12 | 44 | 3 |
| 8595197 | 1,97 | 12 | 44 | 3 |
| 8595198 | 1,98 | 12 | 44 | 3 |
| 8595199 | 1,99 | 12 | 44 | 3 |
| 61520 | 2 | 12 | 44 | 3 |
| 8595201 | 2,01 | 12 | 44 | 3 |
| 8595202 | 2,02 | 12 | 44 | 3 |
| 8595203 | 2,03 | 12 | 44 | 3 |
| 8595204 | 2,04 | 12 | 44 | 3 |
| 8595205 | 2,05 | 12 | 44 | 3 |
| 8595206 | 2,06 | 12 | 44 | 3 |
| 8595207 | 2,07 | 12 | 44 | 3 |
| 8595208 | 2,08 | 12 | 44 | 3 |
| 8595209 | 2,09 | 12 | 44 | 3 |
| 61521 | 2,1 | 12 | 44 | 3 |
| 8595211 | 2,11 | 12 | 44 | 3 |
| 8595212 | 2,12 | 12 | 44 | 3 |
| 8595213 | 2,13 | 13 | 45 | 3 |
| 8595214 | 2,14 | 13 | 45 | 3 |
| 8595215 | 2,15 | 13 | 45 | 3 |
| 8595216 | 2,16 | 13 | 45 | 3 |
| 8595217 | 2,17 | 13 | 45 | 3 |
| 8595218 | 2,18 | 13 | 45 | 3 |
| 8595219 | 2,19 | 13 | 45 | 3 |
| 61522 | 2,2 | 13 | 45 | 3 |
| 8595221 | 2,21 | 13 | 45 | 3 |
| 8595222 | 2,22 | 13 | 45 | 3 |
| 8595223 | 2,23 | 13 | 45 | 3 |
| 8595224 | 2,24 | 13 | 45 | 3 |
| 8595225 | 2,25 | 13 | 45 | 3 |
| 8595226 | 2,26 | 13 | 45 | 3 |
| 8595227 | 2,27 | 13 | 45 | 3 |
| 8595228 | 2,28 | 13 | 45 | 3 |
| 8595229 | 2,29 | 13 | 45 | 3 |
| 61523 | 2,3 | 13 | 45 | 3 |
| 8595231 | 2,31 | 13 | 45 | 3 |
| 8595232 | 2,32 | 13 | 45 | 3 |
| 8595233 | 2,33 | 13 | 45 | 3 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**






- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 3xD
- For stainless steel, low carbon steel and cast aluminium
- 635 sizes - from Ø 0,5-6 mm in 0,01 mm increments

P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ○ AC, ADC

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

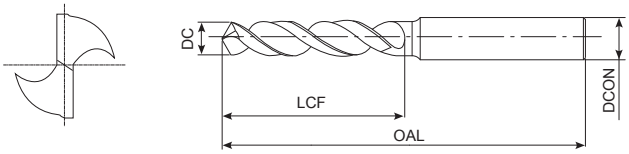
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595234 | 2,34 | 13 | 45 | 3 |
| 8595235 | 2,35 | 13 | 45 | 3 |
| 8595236 | 2,36 | 13 | 45 | 3 |
| 8595237 | 2,37 | 14 | 46 | 3 |
| 8595238 | 2,38 | 14 | 46 | 3 |
| 8595239 | 2,39 | 14 | 46 | 3 |
| 61524 | 2,4 | 14 | 46 | 3 |
| 8595241 | 2,41 | 14 | 46 | 3 |
| 8595242 | 2,42 | 14 | 46 | 3 |
| 8595243 | 2,43 | 14 | 46 | 3 |
| 8595244 | 2,44 | 14 | 46 | 3 |
| 8595245 | 2,45 | 14 | 46 | 3 |
| 8595246 | 2,46 | 14 | 46 | 3 |
| 8595247 | 2,47 | 14 | 46 | 3 |
| 8595248 | 2,48 | 14 | 46 | 3 |
| 8595249 | 2,49 | 14 | 46 | 3 |
| 61525 | 2,5 | 14 | 46 | 3 |
| 8595251 | 2,51 | 14 | 46 | 3 |
| 8595252 | 2,52 | 14 | 46 | 3 |
| 8595253 | 2,53 | 14 | 46 | 3 |
| 8595254 | 2,54 | 14 | 46 | 3 |
| 8595255 | 2,55 | 14 | 46 | 3 |
| 8595256 | 2,56 | 14 | 46 | 3 |
| 8595257 | 2,57 | 14 | 46 | 3 |
| 8595258 | 2,58 | 14 | 46 | 3 |
| 8595259 | 2,59 | 14 | 46 | 3 |
| 61526 | 2,6 | 14 | 46 | 3 |
| 8595261 | 2,61 | 14 | 46 | 3 |
| 8595262 | 2,62 | 14 | 46 | 3 |
| 8595263 | 2,63 | 14 | 46 | 3 |
| 8595264 | 2,64 | 14 | 46 | 3 |
| 8595265 | 2,65 | 14 | 46 | 3 |
| 8595266 | 2,66 | 16 | 48 | 3 |
| 8595267 | 2,67 | 16 | 48 | 3 |
| 8595268 | 2,68 | 16 | 48 | 3 |
| 8595269 | 2,69 | 16 | 48 | 3 |
| 61527 | 2,7 | 16 | 48 | 3 |
| 8595271 | 2,71 | 16 | 48 | 3 |
| 8595272 | 2,72 | 16 | 48 | 3 |
| 8595273 | 2,73 | 16 | 48 | 3 |
| 8595274 | 2,74 | 16 | 48 | 3 |
| 8595275 | 2,75 | 16 | 48 | 3 |
| 8595276 | 2,76 | 16 | 48 | 3 |
| 8595277 | 2,77 | 16 | 48 | 3 |
| 8595278 | 2,78 | 16 | 48 | 3 |
| 8595279 | 2,79 | 16 | 48 | 3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 61528 | 2,8 | 16 | 48 | 3 |
| 8595281 | 2,81 | 16 | 48 | 3 |
| 8595282 | 2,82 | 16 | 48 | 3 |
| 8595283 | 2,83 | 16 | 48 | 3 |
| 8595284 | 2,84 | 16 | 48 | 3 |
| 8595285 | 2,85 | 16 | 48 | 3 |
| 8595286 | 2,86 | 16 | 48 | 3 |
| 8595287 | 2,87 | 16 | 48 | 3 |
| 8595288 | 2,88 | 16 | 48 | 3 |
| 8595289 | 2,89 | 16 | 48 | 3 |
| 61529 | 2,9 | 16 | 48 | 3 |
| 8595291 | 2,91 | 16 | 48 | 3 |
| 8595292 | 2,92 | 16 | 48 | 3 |
| 8595293 | 2,93 | 16 | 48 | 3 |
| 8595294 | 2,94 | 16 | 48 | 3 |
| 8595295 | 2,95 | 16 | 48 | 3 |
| 8595296 | 2,96 | 16 | 48 | 3 |
| 8595297 | 2,97 | 16 | 48 | 3 |
| 8595298 | 2,98 | 16 | 48 | 3 |
| 8595299 | 2,99 | 16 | 48 | 3 |
| 61530 | 3 | 16 | 48 | 3 |
| 8595301 | 3,01 | 18 | 50 | 4 |
| 8595302 | 3,02 | 18 | 50 | 4 |
| 8595303 | 3,03 | 18 | 50 | 4 |
| 8595304 | 3,04 | 18 | 50 | 4 |
| 8595305 | 3,05 | 18 | 50 | 4 |
| 8595306 | 3,06 | 18 | 50 | 4 |
| 8595307 | 3,07 | 18 | 50 | 4 |
| 8595308 | 3,08 | 18 | 50 | 4 |
| 8595309 | 3,09 | 18 | 50 | 4 |
| 61531 | 3,1 | 18 | 50 | 4 |
| 8595311 | 3,11 | 18 | 50 | 4 |
| 8595312 | 3,12 | 18 | 50 | 4 |
| 8595313 | 3,13 | 18 | 50 | 4 |
| 8595314 | 3,14 | 18 | 50 | 4 |
| 8595315 | 3,15 | 18 | 50 | 4 |
| 8595316 | 3,16 | 18 | 50 | 4 |
| 8595317 | 3,17 | 18 | 50 | 4 |
| 8595318 | 3,18 | 18 | 50 | 4 |
| 8595319 | 3,19 | 18 | 50 | 4 |
| 61532 | 3,2 | 18 | 50 | 4 |
| 8595321 | 3,21 | 18 | 50 | 4 |
| 8595322 | 3,22 | 18 | 50 | 4 |
| 8595323 | 3,23 | 18 | 50 | 4 |
| 8595324 | 3,24 | 18 | 50 | 4 |
| 8595325 | 3,25 | 18 | 50 | 4 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**




- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 3xD
- For stainless steel, low carbon steel and cast aluminium
- 635 sizes - from Ø 0,5-6 mm in 0,01 mm increments

P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ○ AC, ADC

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

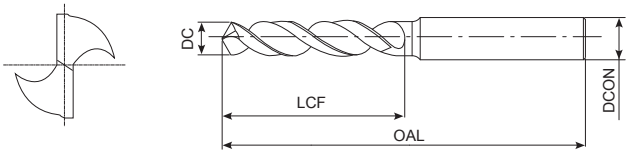
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595326 | 3,26 | 18 | 50 | 4 |
| 8595327 | 3,27 | 18 | 50 | 4 |
| 8595328 | 3,28 | 18 | 50 | 4 |
| 8595329 | 3,29 | 18 | 50 | 4 |
| 61533 | 3,3 | 18 | 50 | 4 |
| 8595331 | 3,31 | 18 | 50 | 4 |
| 8595332 | 3,32 | 18 | 50 | 4 |
| 8595333 | 3,33 | 18 | 50 | 4 |
| 8595334 | 3,34 | 18 | 50 | 4 |
| 8595335 | 3,35 | 18 | 50 | 4 |
| 8595336 | 3,36 | 20 | 52 | 4 |
| 8595337 | 3,37 | 20 | 52 | 4 |
| 8595338 | 3,38 | 20 | 52 | 4 |
| 8595339 | 3,39 | 20 | 52 | 4 |
| 61534 | 3,4 | 20 | 52 | 4 |
| 8595341 | 3,41 | 20 | 52 | 4 |
| 8595342 | 3,42 | 20 | 52 | 4 |
| 8595343 | 3,43 | 20 | 52 | 4 |
| 8595344 | 3,44 | 20 | 52 | 4 |
| 8595345 | 3,45 | 20 | 52 | 4 |
| 8595346 | 3,46 | 20 | 52 | 4 |
| 8595347 | 3,47 | 20 | 52 | 4 |
| 8595348 | 3,48 | 20 | 52 | 4 |
| 8595349 | 3,49 | 20 | 52 | 4 |
| 61535 | 3,5 | 20 | 52 | 4 |
| 8595351 | 3,51 | 20 | 52 | 4 |
| 8595352 | 3,52 | 20 | 52 | 4 |
| 8595353 | 3,53 | 20 | 52 | 4 |
| 8595354 | 3,54 | 20 | 52 | 4 |
| 8595355 | 3,55 | 20 | 52 | 4 |
| 8595356 | 3,56 | 20 | 52 | 4 |
| 8595357 | 3,57 | 20 | 52 | 4 |
| 8595358 | 3,58 | 20 | 52 | 4 |
| 8595359 | 3,59 | 20 | 52 | 4 |
| 61536 | 3,6 | 20 | 52 | 4 |
| 8595361 | 3,61 | 20 | 52 | 4 |
| 8595362 | 3,62 | 20 | 52 | 4 |
| 8595363 | 3,63 | 20 | 52 | 4 |
| 8595364 | 3,64 | 20 | 52 | 4 |
| 8595365 | 3,65 | 20 | 52 | 4 |
| 8595366 | 3,66 | 20 | 52 | 4 |
| 8595367 | 3,67 | 20 | 52 | 4 |
| 8595368 | 3,68 | 20 | 52 | 4 |
| 8595369 | 3,69 | 20 | 52 | 4 |
| 61537 | 3,7 | 20 | 52 | 4 |
| 8595371 | 3,71 | 20 | 52 | 4 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595372 | 3,72 | 20 | 52 | 4 |
| 8595373 | 3,73 | 20 | 52 | 4 |
| 8595374 | 3,74 | 20 | 52 | 4 |
| 8595375 | 3,75 | 20 | 52 | 4 |
| 8595376 | 3,76 | 22 | 54 | 4 |
| 8595377 | 3,77 | 22 | 54 | 4 |
| 8595378 | 3,78 | 22 | 54 | 4 |
| 8595379 | 3,79 | 22 | 54 | 4 |
| 61538 | 3,8 | 22 | 54 | 4 |
| 8595381 | 3,81 | 22 | 54 | 4 |
| 8595382 | 3,82 | 22 | 54 | 4 |
| 8595383 | 3,83 | 22 | 54 | 4 |
| 8595384 | 3,84 | 22 | 54 | 4 |
| 8595385 | 3,85 | 22 | 54 | 4 |
| 8595386 | 3,86 | 22 | 54 | 4 |
| 8595387 | 3,87 | 22 | 54 | 4 |
| 8595388 | 3,88 | 22 | 54 | 4 |
| 8595389 | 3,89 | 22 | 54 | 4 |
| 61539 | 3,9 | 22 | 54 | 4 |
| 8595391 | 3,91 | 22 | 54 | 4 |
| 8595392 | 3,92 | 22 | 54 | 4 |
| 8595393 | 3,93 | 22 | 54 | 4 |
| 8595394 | 3,94 | 22 | 54 | 4 |
| 8595395 | 3,95 | 22 | 54 | 4 |
| 8595396 | 3,96 | 22 | 54 | 4 |
| 8595397 | 3,97 | 22 | 54 | 4 |
| 8595398 | 3,98 | 22 | 54 | 4 |
| 8595399 | 3,99 | 22 | 54 | 4 |
| 61540 | 4 | 22 | 54 | 4 |
| 8595401 | 4,01 | 22 | 66 | 6 |
| 8595402 | 4,02 | 22 | 66 | 6 |
| 8595403 | 4,03 | 22 | 66 | 6 |
| 8595404 | 4,04 | 22 | 66 | 6 |
| 8595405 | 4,05 | 22 | 66 | 6 |
| 8595406 | 4,06 | 22 | 66 | 6 |
| 8595407 | 4,07 | 22 | 66 | 6 |
| 8595408 | 4,08 | 22 | 66 | 6 |
| 8595409 | 4,09 | 22 | 66 | 6 |
| 61541 | 4,1 | 22 | 66 | 6 |
| 8595411 | 4,11 | 22 | 66 | 6 |
| 8595412 | 4,12 | 22 | 66 | 6 |
| 8595413 | 4,13 | 22 | 66 | 6 |
| 8595414 | 4,14 | 22 | 66 | 6 |
| 8595415 | 4,15 | 22 | 66 | 6 |
| 8595416 | 4,16 | 22 | 66 | 6 |
| 8595417 | 4,17 | 22 | 66 | 6 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**

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- For stainless steel, low carbon steel and cast aluminium
- 635 sizes - from Ø 0,5-6 mm in 0,01 mm increments

P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ○ AC, ADC

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

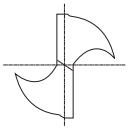
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595418 | 4,18 | 22 | 66 | 6 |
| 8595419 | 4,19 | 22 | 66 | 6 |
| 61542 | 4,2 | 22 | 66 | 6 |
| 8595421 | 4,21 | 22 | 66 | 6 |
| 8595422 | 4,22 | 22 | 66 | 6 |
| 8595423 | 4,23 | 22 | 66 | 6 |
| 8595424 | 4,24 | 22 | 66 | 6 |
| 8595425 | 4,25 | 22 | 66 | 6 |
| 8595426 | 4,26 | 24 | 68 | 6 |
| 8595427 | 4,27 | 24 | 68 | 6 |
| 8595428 | 4,28 | 24 | 68 | 6 |
| 8595429 | 4,29 | 24 | 68 | 6 |
| 61543 | 4,3 | 24 | 68 | 6 |
| 8595431 | 4,31 | 24 | 68 | 6 |
| 8595432 | 4,32 | 24 | 68 | 6 |
| 8595433 | 4,33 | 24 | 68 | 6 |
| 8595434 | 4,34 | 24 | 68 | 6 |
| 8595435 | 4,35 | 24 | 68 | 6 |
| 8595436 | 4,36 | 24 | 68 | 6 |
| 8595437 | 4,37 | 24 | 68 | 6 |
| 8595438 | 4,38 | 24 | 68 | 6 |
| 8595439 | 4,39 | 24 | 68 | 6 |
| 61544 | 4,4 | 24 | 68 | 6 |
| 8595441 | 4,41 | 24 | 68 | 6 |
| 8595442 | 4,42 | 24 | 68 | 6 |
| 8595443 | 4,43 | 24 | 68 | 6 |
| 8595444 | 4,44 | 24 | 68 | 6 |
| 8595445 | 4,45 | 24 | 68 | 6 |
| 8595446 | 4,46 | 24 | 68 | 6 |
| 8595447 | 4,47 | 24 | 68 | 6 |
| 8595448 | 4,48 | 24 | 68 | 6 |
| 8595449 | 4,49 | 24 | 68 | 6 |
| 61545 | 4,5 | 24 | 68 | 6 |
| 8595451 | 4,51 | 24 | 68 | 6 |
| 8595452 | 4,52 | 24 | 68 | 6 |
| 8595453 | 4,53 | 24 | 68 | 6 |
| 8595454 | 4,54 | 24 | 68 | 6 |
| 8595455 | 4,55 | 24 | 68 | 6 |
| 8595456 | 4,56 | 24 | 68 | 6 |
| 8595457 | 4,57 | 24 | 68 | 6 |
| 8595458 | 4,58 | 24 | 68 | 6 |
| 8595459 | 4,59 | 24 | 68 | 6 |
| 61546 | 4,6 | 24 | 68 | 6 |
| 8595461 | 4,61 | 24 | 68 | 6 |
| 8595462 | 4,62 | 24 | 68 | 6 |
| 8595463 | 4,63 | 24 | 68 | 6 |

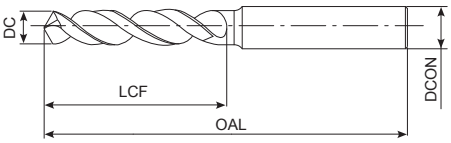
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595464 | 4,64 | 24 | 68 | 6 |
| 8595465 | 4,65 | 24 | 68 | 6 |
| 8595466 | 4,66 | 24 | 68 | 6 |
| 8595467 | 4,67 | 24 | 68 | 6 |
| 8595468 | 4,68 | 24 | 68 | 6 |
| 8595469 | 4,69 | 24 | 68 | 6 |
| 61547 | 4,7 | 24 | 68 | 6 |
| 8595471 | 4,71 | 24 | 68 | 6 |
| 8595472 | 4,72 | 24 | 68 | 6 |
| 8595473 | 4,73 | 24 | 68 | 6 |
| 8595474 | 4,74 | 24 | 68 | 6 |
| 8595475 | 4,75 | 24 | 68 | 6 |
| 8595476 | 4,76 | 26 | 70 | 6 |
| 8595477 | 4,77 | 26 | 70 | 6 |
| 8595478 | 4,78 | 26 | 70 | 6 |
| 8595479 | 4,79 | 26 | 70 | 6 |
| 61548 | 4,8 | 26 | 70 | 6 |
| 8595481 | 4,81 | 26 | 70 | 6 |
| 8595482 | 4,82 | 26 | 70 | 6 |
| 8595483 | 4,83 | 26 | 70 | 6 |
| 8595484 | 4,84 | 26 | 70 | 6 |
| 8595485 | 4,85 | 26 | 70 | 6 |
| 8595486 | 4,86 | 26 | 70 | 6 |
| 8595487 | 4,87 | 26 | 70 | 6 |
| 8595488 | 4,88 | 26 | 70 | 6 |
| 8595489 | 4,89 | 26 | 70 | 6 |
| 61549 | 4,9 | 26 | 70 | 6 |
| 8595491 | 4,91 | 26 | 70 | 6 |
| 8595492 | 4,92 | 26 | 70 | 6 |
| 8595493 | 4,93 | 26 | 70 | 6 |
| 8595494 | 4,94 | 26 | 70 | 6 |
| 8595495 | 4,95 | 26 | 70 | 6 |
| 8595496 | 4,96 | 26 | 70 | 6 |
| 8595497 | 4,97 | 26 | 70 | 6 |
| 8595498 | 4,98 | 26 | 70 | 6 |
| 8595499 | 4,99 | 26 | 70 | 6 |
| 61550 | 5 | 26 | 70 | 6 |
| 8595501 | 5,01 | 26 | 70 | 6 |
| 8595502 | 5,02 | 26 | 70 | 6 |
| 8595503 | 5,03 | 26 | 70 | 6 |
| 8595504 | 5,04 | 26 | 70 | 6 |
| 8595505 | 5,05 | 26 | 70 | 6 |
| 8595506 | 5,06 | 26 | 70 | 6 |
| 8595507 | 5,07 | 26 | 70 | 6 |
| 8595508 | 5,08 | 26 | 70 | 6 |
| 8595509 | 5,09 | 26 | 70 | 6 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**



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P ◉ C <0,2% | P ○ 0,25<C<0,4 | M ◉ INOX | N ◉ Al | N ○ AC, ADC

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

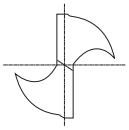
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 61551 | 5,1 | 26 | 70 | 6 |
| 8595511 | 5,11 | 26 | 70 | 6 |
| 8595512 | 5,12 | 26 | 70 | 6 |
| 8595513 | 5,13 | 26 | 70 | 6 |
| 8595514 | 5,14 | 26 | 70 | 6 |
| 8595515 | 5,15 | 26 | 70 | 6 |
| 8595516 | 5,16 | 26 | 70 | 6 |
| 8595517 | 5,17 | 26 | 70 | 6 |
| 8595518 | 5,18 | 26 | 70 | 6 |
| 8595519 | 5,19 | 26 | 70 | 6 |
| 61552 | 5,2 | 26 | 70 | 6 |
| 8595521 | 5,21 | 26 | 70 | 6 |
| 8595522 | 5,22 | 26 | 70 | 6 |
| 8595523 | 5,23 | 26 | 70 | 6 |
| 8595524 | 5,24 | 26 | 70 | 6 |
| 8595525 | 5,25 | 26 | 70 | 6 |
| 8595526 | 5,26 | 26 | 70 | 6 |
| 8595527 | 5,27 | 26 | 70 | 6 |
| 8595528 | 5,28 | 26 | 70 | 6 |
| 8595529 | 5,29 | 26 | 70 | 6 |
| 61553 | 5,3 | 26 | 70 | 6 |
| 8595531 | 5,31 | 28 | 72 | 6 |
| 8595532 | 5,32 | 28 | 72 | 6 |
| 8595533 | 5,33 | 28 | 72 | 6 |
| 8595534 | 5,34 | 28 | 72 | 6 |
| 8595535 | 5,35 | 28 | 72 | 6 |
| 8595536 | 5,36 | 28 | 72 | 6 |
| 8595537 | 5,37 | 28 | 72 | 6 |
| 8595538 | 5,38 | 28 | 72 | 6 |
| 8595539 | 5,39 | 28 | 72 | 6 |
| 61554 | 5,4 | 28 | 72 | 6 |
| 8595541 | 5,41 | 28 | 72 | 6 |
| 8595542 | 5,42 | 28 | 72 | 6 |
| 8595543 | 5,43 | 28 | 72 | 6 |
| 8595544 | 5,44 | 28 | 72 | 6 |
| 8595545 | 5,45 | 28 | 72 | 6 |
| 8595546 | 5,46 | 28 | 72 | 6 |
| 8595547 | 5,47 | 28 | 72 | 6 |
| 8595548 | 5,48 | 28 | 72 | 6 |
| 8595549 | 5,49 | 28 | 72 | 6 |
| 61555 | 5,5 | 28 | 72 | 6 |
| 8595551 | 5,51 | 28 | 72 | 6 |
| 8595552 | 5,52 | 28 | 72 | 6 |
| 8595553 | 5,53 | 28 | 72 | 6 |
| 8595554 | 5,54 | 28 | 72 | 6 |
| 8595555 | 5,55 | 28 | 72 | 6 |

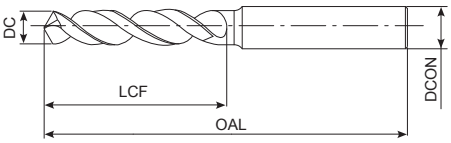
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8595556 | 5,56 | 28 | 72 | 6 |
| 8595557 | 5,57 | 28 | 72 | 6 |
| 8595558 | 5,58 | 28 | 72 | 6 |
| 8595559 | 5,59 | 28 | 72 | 6 |
| 61556 | 5,6 | 28 | 72 | 6 |
| 8595561 | 5,61 | 28 | 72 | 6 |
| 8595562 | 5,62 | 28 | 72 | 6 |
| 8595563 | 5,63 | 28 | 72 | 6 |
| 8595564 | 5,64 | 28 | 72 | 6 |
| 8595565 | 5,65 | 28 | 72 | 6 |
| 8595566 | 5,66 | 28 | 72 | 6 |
| 8595567 | 5,67 | 28 | 72 | 6 |
| 8595568 | 5,68 | 28 | 72 | 6 |
| 8595569 | 5,69 | 28 | 72 | 6 |
| 61557 | 5,7 | 28 | 72 | 6 |
| 8595571 | 5,71 | 28 | 72 | 6 |
| 8595572 | 5,72 | 28 | 72 | 6 |
| 8595573 | 5,73 | 28 | 72 | 6 |
| 8595574 | 5,74 | 28 | 72 | 6 |
| 8595575 | 5,75 | 28 | 72 | 6 |
| 8595576 | 5,76 | 28 | 72 | 6 |
| 8595577 | 5,77 | 28 | 72 | 6 |
| 8595578 | 5,78 | 28 | 72 | 6 |
| 8595579 | 5,79 | 28 | 72 | 6 |
| 61558 | 5,8 | 28 | 72 | 6 |
| 8595581 | 5,81 | 28 | 72 | 6 |
| 8595582 | 5,82 | 28 | 72 | 6 |
| 8595583 | 5,83 | 28 | 72 | 6 |
| 8595584 | 5,84 | 28 | 72 | 6 |
| 8595585 | 5,85 | 28 | 72 | 6 |
| 8595586 | 5,86 | 28 | 72 | 6 |
| 8595587 | 5,87 | 28 | 72 | 6 |
| 8595588 | 5,88 | 28 | 72 | 6 |
| 8595589 | 5,89 | 28 | 72 | 6 |
| 61559 | 5,9 | 28 | 72 | 6 |
| 8595591 | 5,91 | 28 | 72 | 6 |
| 8595592 | 5,92 | 28 | 72 | 6 |
| 8595593 | 5,93 | 28 | 72 | 6 |
| 8595594 | 5,94 | 28 | 72 | 6 |
| 8595595 | 5,95 | 28 | 72 | 6 |
| 8595596 | 5,96 | 28 | 72 | 6 |
| 8595597 | 5,97 | 28 | 72 | 6 |
| 8595598 | 5,98 | 28 | 72 | 6 |
| 8595599 | 5,99 | 28 | 72 | 6 |
| 61560 | 6 | 28 | 72 | 6 |
| 61561 | 6,1 | 31 | 75 | 8 |

# EX-SUS-GDS



**Drilling | HSS | 3xD**



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HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 0,5≤D<1 150° | 1≤D<2 140° | 2≤D≤4 130° | 4<D≤20 120° | h8

B.506

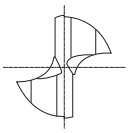
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 61562 | 6,2 | 31 | 75 | 8 |
| 61563 | 6,3 | 31 | 75 | 8 |
| 61564 | 6,4 | 31 | 75 | 8 |
| 61565 | 6,5 | 31 | 75 | 8 |
| 61566 | 6,6 | 31 | 75 | 8 |
| 61567 | 6,7 | 31 | 75 | 8 |
| 61568 | 6,8 | 34 | 78 | 8 |
| 61569 | 6,9 | 34 | 78 | 8 |
| 61570 | 7 | 34 | 78 | 8 |
| 61571 | 7,1 | 34 | 78 | 8 |
| 61572 | 7,2 | 34 | 78 | 8 |
| 61573 | 7,3 | 34 | 78 | 8 |
| 61574 | 7,4 | 34 | 78 | 8 |
| 61575 | 7,5 | 34 | 78 | 8 |
| 61576 | 7,6 | 37 | 81 | 8 |
| 61577 | 7,7 | 37 | 81 | 8 |
| 61578 | 7,8 | 37 | 81 | 8 |
| 61579 | 7,9 | 37 | 81 | 8 |
| 61580 | 8 | 37 | 81 | 8 |
| 61581 | 8,1 | 37 | 87 | 10 |
| 61582 | 8,2 | 37 | 87 | 10 |
| 61583 | 8,3 | 37 | 87 | 10 |
| 61584 | 8,4 | 37 | 87 | 10 |
| 61585 | 8,5 | 37 | 87 | 10 |
| 61586 | 8,6 | 40 | 90 | 10 |
| 61587 | 8,7 | 40 | 90 | 10 |
| 61588 | 8,8 | 40 | 90 | 10 |
| 61589 | 8,9 | 40 | 90 | 10 |
| 61590 | 9 | 40 | 90 | 10 |
| 61591 | 9,1 | 40 | 90 | 10 |
| 61592 | 9,2 | 40 | 90 | 10 |
| 61593 | 9,3 | 40 | 90 | 10 |
| 61594 | 9,4 | 40 | 90 | 10 |
| 61595 | 9,5 | 40 | 90 | 10 |
| 61596 | 9,6 | 43 | 93 | 10 |
| 61597 | 9,7 | 43 | 93 | 10 |
| 61598 | 9,8 | 43 | 93 | 10 |
| 61599 | 9,9 | 43 | 93 | 10 |
| 61600 | 10 | 43 | 93 | 10 |
| 61601 | 10,1 | 43 | 100 | 12 |
| 61602 | 10,2 | 43 | 100 | 12 |
| 61603 | 10,3 | 43 | 100 | 12 |
| 61604 | 10,4 | 43 | 100 | 12 |
| 61605 | 10,5 | 43 | 100 | 12 |
| 61606 | 10,6 | 43 | 100 | 12 |
| 61607 | 10,7 | 47 | 104 | 12 |

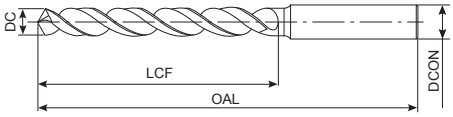
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 61608 | 10,8 | 47 | 104 | 12 |
| 61609 | 10,9 | 47 | 104 | 12 |
| 61610 | 11 | 47 | 104 | 12 |
| 61611 | 11,1 | 47 | 104 | 12 |
| 61612 | 11,2 | 47 | 104 | 12 |
| 61613 | 11,3 | 47 | 104 | 12 |
| 61614 | 11,4 | 47 | 104 | 12 |
| 61615 | 11,5 | 47 | 104 | 12 |
| 61616 | 11,6 | 47 | 104 | 12 |
| 61617 | 11,7 | 47 | 104 | 12 |
| 61618 | 11,8 | 47 | 104 | 12 |
| 61619 | 11,9 | 51 | 108 | 12 |
| 61620 | 12 | 51 | 108 | 12 |
| 43011210 | 12,1 | 51 | 111 | 16 |
| 43011220 | 12,2 | 51 | 111 | 16 |
| 43011230 | 12,3 | 51 | 108 | 16 |
| 43011240 | 12,4 | 51 | 108 | 16 |
| 43011250 | 12,5 | 51 | 108 | 16 |
| 43011260 | 12,6 | 51 | 108 | 16 |
| 43011270 | 12,7 | 51 | 108 | 16 |
| 43011280 | 12,8 | 51 | 108 | 16 |
| 43011290 | 12,9 | 51 | 108 | 16 |
| 43011300 | 13 | 51 | 108 | 16 |
| 43011350 | 13,5 | 54 | 114 | 16 |
| 43011400 | 14 | 54 | 114 | 16 |
| 43011450 | 14,5 | 56 | 116 | 16 |
| 43011500 | 15 | 56 | 116 | 16 |
| 43011550 | 15,5 | 58 | 118 | 16 |
| 43011600 | 16 | 58 | 118 | 16 |
| 43011650 | 16,5 | 60 | 126 | 20 |
| 43011700 | 17 | 60 | 126 | 20 |
| 43011750 | 17,5 | 62 | 128 | 20 |
| 43011800 | 18 | 62 | 128 | 20 |
| 43011850 | 18,5 | 64 | 130 | 20 |
| 43011900 | 19 | 64 | 130 | 20 |
| 43011950 | 19,5 | 66 | 132 | 20 |
| 43012000 | 20 | 66 | 132 | 20 |

# EX-SUS-GDR



**Drilling | HSS | 5xD**



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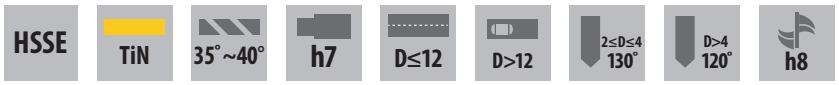


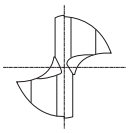
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 62520 | 2 | 24 | 56 | 3 |
| 8597201 | 2,01 | 24 | 56 | 3 |
| 8597202 | 2,02 | 24 | 56 | 3 |
| 8597203 | 2,03 | 24 | 56 | 3 |
| 8597204 | 2,04 | 24 | 56 | 3 |
| 8597205 | 2,05 | 24 | 56 | 3 |
| 8597206 | 2,06 | 24 | 56 | 3 |
| 8597207 | 2,07 | 24 | 56 | 3 |
| 8597208 | 2,08 | 24 | 56 | 3 |
| 8597209 | 2,09 | 24 | 56 | 3 |
| 62521 | 2,1 | 24 | 56 | 3 |
| 8597211 | 2,11 | 24 | 56 | 3 |
| 8597212 | 2,12 | 24 | 56 | 3 |
| 8597213 | 2,13 | 27 | 59 | 3 |
| 8597214 | 2,14 | 27 | 59 | 3 |
| 8597215 | 2,15 | 27 | 59 | 3 |
| 8597216 | 2,16 | 27 | 59 | 3 |
| 8597217 | 2,17 | 27 | 59 | 3 |
| 8597218 | 2,18 | 27 | 59 | 3 |
| 8597219 | 2,19 | 27 | 59 | 3 |
| 62522 | 2,2 | 27 | 59 | 3 |
| 8597221 | 2,21 | 27 | 59 | 3 |
| 8597222 | 2,22 | 27 | 59 | 3 |
| 8597223 | 2,23 | 27 | 59 | 3 |
| 8597224 | 2,24 | 27 | 59 | 3 |
| 8597225 | 2,25 | 27 | 59 | 3 |
| 8597226 | 2,26 | 27 | 59 | 3 |
| 8597227 | 2,27 | 27 | 59 | 3 |
| 8597228 | 2,28 | 27 | 59 | 3 |
| 8597229 | 2,29 | 27 | 59 | 3 |
| 62523 | 2,3 | 27 | 59 | 3 |
| 8597231 | 2,31 | 27 | 59 | 3 |
| 8597232 | 2,32 | 27 | 59 | 3 |
| 8597233 | 2,33 | 27 | 59 | 3 |
| 8597234 | 2,34 | 27 | 59 | 3 |
| 8597235 | 2,35 | 27 | 59 | 3 |
| 8597236 | 2,36 | 27 | 59 | 3 |
| 8597237 | 2,37 | 30 | 62 | 3 |
| 8597238 | 2,38 | 30 | 62 | 3 |
| 8597239 | 2,39 | 30 | 62 | 3 |
| 62524 | 2,4 | 30 | 62 | 3 |
| 8597241 | 2,41 | 30 | 62 | 3 |
| 8597242 | 2,42 | 30 | 62 | 3 |
| 8597243 | 2,43 | 30 | 62 | 3 |
| 8597244 | 2,44 | 30 | 62 | 3 |
| 8597245 | 2,45 | 30 | 62 | 3 |

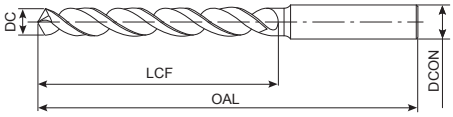
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597246 | 2,46 | 30 | 62 | 3 |
| 8597247 | 2,47 | 30 | 62 | 3 |
| 8597248 | 2,48 | 30 | 62 | 3 |
| 8597249 | 2,49 | 30 | 62 | 3 |
| 62525 | 2,5 | 30 | 62 | 3 |
| 8597251 | 2,51 | 30 | 62 | 3 |
| 8597252 | 2,52 | 30 | 62 | 3 |
| 8597253 | 2,53 | 30 | 62 | 3 |
| 8597254 | 2,54 | 30 | 62 | 3 |
| 8597255 | 2,55 | 30 | 62 | 3 |
| 8597256 | 2,56 | 30 | 62 | 3 |
| 8597257 | 2,57 | 30 | 62 | 3 |
| 8597258 | 2,58 | 30 | 62 | 3 |
| 8597259 | 2,59 | 30 | 62 | 3 |
| 62526 | 2,6 | 30 | 62 | 3 |
| 8597261 | 2,61 | 30 | 62 | 3 |
| 8597262 | 2,62 | 30 | 62 | 3 |
| 8597263 | 2,63 | 30 | 62 | 3 |
| 8597264 | 2,64 | 30 | 62 | 3 |
| 8597265 | 2,65 | 30 | 62 | 3 |
| 8597266 | 2,66 | 33 | 65 | 3 |
| 8597267 | 2,67 | 33 | 65 | 3 |
| 8597268 | 2,68 | 33 | 65 | 3 |
| 8597269 | 2,69 | 33 | 65 | 3 |
| 62527 | 2,7 | 33 | 65 | 3 |
| 8597271 | 2,71 | 33 | 65 | 3 |
| 8597272 | 2,72 | 33 | 65 | 3 |
| 8597273 | 2,73 | 33 | 65 | 3 |
| 8597274 | 2,74 | 33 | 65 | 3 |
| 8597275 | 2,75 | 33 | 65 | 3 |
| 8597276 | 2,76 | 33 | 65 | 3 |
| 8597277 | 2,77 | 33 | 65 | 3 |
| 8597278 | 2,78 | 33 | 65 | 3 |
| 8597279 | 2,79 | 33 | 65 | 3 |
| 62528 | 2,8 | 33 | 65 | 3 |
| 8597281 | 2,81 | 33 | 65 | 3 |
| 8597282 | 2,82 | 33 | 65 | 3 |
| 8597283 | 2,83 | 33 | 65 | 3 |
| 8597284 | 2,84 | 33 | 65 | 3 |
| 8597285 | 2,85 | 33 | 65 | 3 |
| 8597286 | 2,86 | 33 | 65 | 3 |
| 8597287 | 2,87 | 33 | 65 | 3 |
| 8597288 | 2,88 | 33 | 65 | 3 |
| 8597289 | 2,89 | 33 | 65 | 3 |
| 62529 | 2,9 | 33 | 65 | 3 |
| 8597291 | 2,91 | 33 | 65 | 3 |

# EX-SUS-GDR

**Drilling | HSS | 5xD**

INDEX



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- 485 sizes - from Ø 2-6 mm in 0,01 mm increments

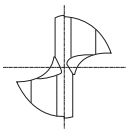
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597292 | 2,92 | 33 | 65 | 3 |
| 8597293 | 2,93 | 33 | 65 | 3 |
| 8597294 | 2,94 | 33 | 65 | 3 |
| 8597295 | 2,95 | 33 | 65 | 3 |
| 8597296 | 2,96 | 33 | 65 | 3 |
| 8597297 | 2,97 | 33 | 65 | 3 |
| 8597298 | 2,98 | 33 | 65 | 3 |
| 8597299 | 2,99 | 33 | 65 | 3 |
| 62530 | 3 | 33 | 65 | 3 |
| 8597301 | 3,01 | 36 | 68 | 4 |
| 8597302 | 3,02 | 36 | 68 | 4 |
| 8597303 | 3,03 | 36 | 68 | 4 |
| 8597304 | 3,04 | 36 | 68 | 4 |
| 8597305 | 3,05 | 36 | 68 | 4 |
| 8597306 | 3,06 | 36 | 68 | 4 |
| 8597307 | 3,07 | 36 | 68 | 4 |
| 8597308 | 3,08 | 36 | 68 | 4 |
| 8597309 | 3,09 | 36 | 68 | 4 |
| 62531 | 3,1 | 36 | 68 | 4 |
| 8597311 | 3,11 | 36 | 68 | 4 |
| 8597312 | 3,12 | 36 | 68 | 4 |
| 8597313 | 3,13 | 36 | 68 | 4 |
| 8597314 | 3,14 | 36 | 68 | 4 |
| 8597315 | 3,15 | 36 | 68 | 4 |
| 8597316 | 3,16 | 36 | 68 | 4 |
| 8597317 | 3,17 | 36 | 68 | 4 |
| 8597318 | 3,18 | 36 | 68 | 4 |
| 8597319 | 3,19 | 36 | 68 | 4 |
| 62532 | 3,2 | 36 | 68 | 4 |
| 8597321 | 3,21 | 36 | 68 | 4 |
| 8597322 | 3,22 | 36 | 68 | 4 |
| 8597323 | 3,23 | 36 | 68 | 4 |
| 8597324 | 3,24 | 36 | 68 | 4 |
| 8597325 | 3,25 | 36 | 68 | 4 |
| 8597326 | 3,26 | 36 | 68 | 4 |
| 8597327 | 3,27 | 36 | 68 | 4 |
| 8597328 | 3,28 | 36 | 68 | 4 |
| 8597329 | 3,29 | 36 | 68 | 4 |
| 62533 | 3,3 | 36 | 68 | 4 |
| 8597331 | 3,31 | 36 | 68 | 4 |
| 8597332 | 3,32 | 36 | 68 | 4 |
| 8597333 | 3,33 | 36 | 68 | 4 |
| 8597334 | 3,34 | 36 | 68 | 4 |
| 8597335 | 3,35 | 36 | 68 | 4 |
| 8597336 | 3,36 | 39 | 71 | 4 |
| 8597337 | 3,37 | 39 | 71 | 4 |

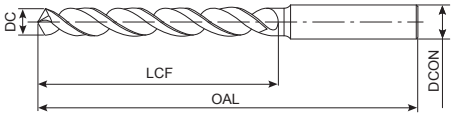
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597338 | 3,38 | 39 | 71 | 4 |
| 8597339 | 3,39 | 39 | 71 | 4 |
| 62534 | 3,4 | 39 | 71 | 4 |
| 8597341 | 3,41 | 39 | 71 | 4 |
| 8597342 | 3,42 | 39 | 71 | 4 |
| 8597343 | 3,43 | 39 | 71 | 4 |
| 8597344 | 3,44 | 39 | 71 | 4 |
| 8597345 | 3,45 | 39 | 71 | 4 |
| 8597346 | 3,46 | 39 | 71 | 4 |
| 8597347 | 3,47 | 39 | 71 | 4 |
| 8597348 | 3,48 | 39 | 71 | 4 |
| 8597349 | 3,49 | 39 | 71 | 4 |
| 62535 | 3,5 | 39 | 71 | 4 |
| 8597351 | 3,51 | 39 | 71 | 4 |
| 8597352 | 3,52 | 39 | 71 | 4 |
| 8597353 | 3,53 | 39 | 71 | 4 |
| 8597354 | 3,54 | 39 | 71 | 4 |
| 8597355 | 3,55 | 39 | 71 | 4 |
| 8597356 | 3,56 | 39 | 71 | 4 |
| 8597357 | 3,57 | 39 | 71 | 4 |
| 8597358 | 3,58 | 39 | 71 | 4 |
| 8597359 | 3,59 | 39 | 71 | 4 |
| 62536 | 3,6 | 39 | 71 | 4 |
| 8597361 | 3,61 | 39 | 71 | 4 |
| 8597362 | 3,62 | 39 | 71 | 4 |
| 8597363 | 3,63 | 39 | 71 | 4 |
| 8597364 | 3,64 | 39 | 71 | 4 |
| 8597365 | 3,65 | 39 | 71 | 4 |
| 8597366 | 3,66 | 39 | 71 | 4 |
| 8597367 | 3,67 | 39 | 71 | 4 |
| 8597368 | 3,68 | 39 | 71 | 4 |
| 8597369 | 3,69 | 39 | 71 | 4 |
| 62537 | 3,7 | 39 | 71 | 4 |
| 8597371 | 3,71 | 39 | 71 | 4 |
| 8597372 | 3,72 | 39 | 71 | 4 |
| 8597373 | 3,73 | 39 | 71 | 4 |
| 8597374 | 3,74 | 39 | 71 | 4 |
| 8597375 | 3,75 | 39 | 71 | 4 |
| 8597376 | 3,76 | 43 | 75 | 4 |
| 8597377 | 3,77 | 43 | 75 | 4 |
| 8597378 | 3,78 | 43 | 75 | 4 |
| 8597379 | 3,79 | 43 | 75 | 4 |
| 62538 | 3,8 | 43 | 75 | 4 |
| 8597381 | 3,81 | 43 | 75 | 4 |
| 8597382 | 3,82 | 43 | 75 | 4 |
| 8597383 | 3,83 | 43 | 75 | 4 |

# EX-SUS-GDR



**Drilling | HSS | 5xD**



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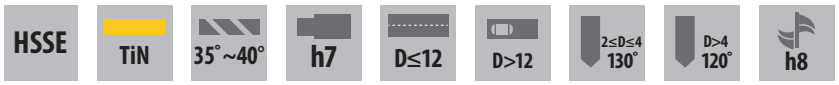


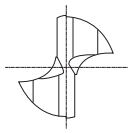
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597384 | 3,84 | 43 | 75 | 4 |
| 8597385 | 3,85 | 43 | 75 | 4 |
| 8597386 | 3,86 | 43 | 75 | 4 |
| 8597387 | 3,87 | 43 | 75 | 4 |
| 8597388 | 3,88 | 43 | 75 | 4 |
| 8597389 | 3,89 | 43 | 75 | 4 |
| 62539 | 3,9 | 43 | 75 | 4 |
| 8597391 | 3,91 | 43 | 75 | 4 |
| 8597392 | 3,92 | 43 | 75 | 4 |
| 8597393 | 3,93 | 43 | 75 | 4 |
| 8597394 | 3,94 | 43 | 75 | 4 |
| 8597395 | 3,95 | 43 | 75 | 4 |
| 8597396 | 3,96 | 43 | 75 | 4 |
| 8597397 | 3,97 | 43 | 75 | 4 |
| 8597398 | 3,98 | 43 | 75 | 4 |
| 8597399 | 3,99 | 43 | 75 | 4 |
| 62540 | 4 | 43 | 75 | 4 |
| 8597401 | 4,01 | 43 | 87 | 6 |
| 8597402 | 4,02 | 43 | 87 | 6 |
| 8597403 | 4,03 | 43 | 87 | 6 |
| 8597404 | 4,04 | 43 | 87 | 6 |
| 8597405 | 4,05 | 43 | 87 | 6 |
| 8597406 | 4,06 | 43 | 87 | 6 |
| 8597407 | 4,07 | 43 | 87 | 6 |
| 8597408 | 4,08 | 43 | 87 | 6 |
| 8597409 | 4,09 | 43 | 87 | 6 |
| 62541 | 4,1 | 43 | 87 | 6 |
| 8597411 | 4,11 | 43 | 87 | 6 |
| 8597412 | 4,12 | 43 | 87 | 6 |
| 8597413 | 4,13 | 43 | 87 | 6 |
| 8597414 | 4,14 | 43 | 87 | 6 |
| 8597415 | 4,15 | 43 | 87 | 6 |
| 8597416 | 4,16 | 43 | 87 | 6 |
| 8597417 | 4,17 | 43 | 87 | 6 |
| 8597418 | 4,18 | 43 | 87 | 6 |
| 8597419 | 4,19 | 43 | 87 | 6 |
| 62542 | 4,2 | 43 | 87 | 6 |
| 8597421 | 4,21 | 43 | 87 | 6 |
| 8597422 | 4,22 | 43 | 87 | 6 |
| 8597423 | 4,23 | 43 | 87 | 6 |
| 8597424 | 4,24 | 43 | 87 | 6 |
| 8597425 | 4,25 | 43 | 87 | 6 |
| 8597426 | 4,26 | 47 | 91 | 6 |
| 8597427 | 4,27 | 47 | 91 | 6 |
| 8597428 | 4,28 | 47 | 91 | 6 |
| 8597429 | 4,29 | 47 | 91 | 6 |

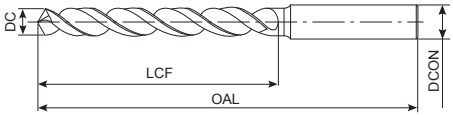
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 62543 | 4,3 | 47 | 91 | 6 |
| 8597431 | 4,31 | 47 | 91 | 6 |
| 8597432 | 4,32 | 47 | 91 | 6 |
| 8597433 | 4,33 | 47 | 91 | 6 |
| 8597434 | 4,34 | 47 | 91 | 6 |
| 8597435 | 4,35 | 47 | 91 | 6 |
| 8597436 | 4,36 | 47 | 91 | 6 |
| 8597437 | 4,37 | 47 | 91 | 6 |
| 8597438 | 4,38 | 47 | 91 | 6 |
| 8597439 | 4,39 | 47 | 91 | 6 |
| 62544 | 4,4 | 47 | 91 | 6 |
| 8597441 | 4,41 | 47 | 91 | 6 |
| 8597442 | 4,42 | 47 | 91 | 6 |
| 8597443 | 4,43 | 47 | 91 | 6 |
| 8597444 | 4,44 | 47 | 91 | 6 |
| 8597445 | 4,45 | 47 | 91 | 6 |
| 8597446 | 4,46 | 47 | 91 | 6 |
| 8597447 | 4,47 | 47 | 91 | 6 |
| 8597448 | 4,48 | 47 | 91 | 6 |
| 8597449 | 4,49 | 47 | 91 | 6 |
| 62545 | 4,5 | 47 | 91 | 6 |
| 8597451 | 4,51 | 47 | 91 | 6 |
| 8597452 | 4,52 | 47 | 91 | 6 |
| 8597453 | 4,53 | 47 | 91 | 6 |
| 8597454 | 4,54 | 47 | 91 | 6 |
| 8597455 | 4,55 | 47 | 91 | 6 |
| 8597456 | 4,56 | 47 | 91 | 6 |
| 8597457 | 4,57 | 47 | 91 | 6 |
| 8597458 | 4,58 | 47 | 91 | 6 |
| 8597459 | 4,59 | 47 | 91 | 6 |
| 62546 | 4,6 | 47 | 91 | 6 |
| 8597461 | 4,61 | 47 | 91 | 6 |
| 8597462 | 4,62 | 47 | 91 | 6 |
| 8597463 | 4,63 | 47 | 91 | 6 |
| 8597464 | 4,64 | 47 | 91 | 6 |
| 8597465 | 4,65 | 47 | 91 | 6 |
| 8597466 | 4,66 | 47 | 91 | 6 |
| 8597467 | 4,67 | 47 | 91 | 6 |
| 8597468 | 4,68 | 47 | 91 | 6 |
| 8597469 | 4,69 | 47 | 91 | 6 |
| 62547 | 4,7 | 47 | 91 | 6 |
| 8597471 | 4,71 | 47 | 91 | 6 |
| 8597472 | 4,72 | 47 | 91 | 6 |
| 8597473 | 4,73 | 47 | 91 | 6 |
| 8597474 | 4,74 | 47 | 91 | 6 |
| 8597475 | 4,75 | 47 | 91 | 6 |

# EX-SUS-GDR

**Drilling | HSS | 5xD**

INDEX



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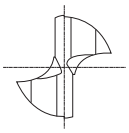
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597476 | 4,76 | 52 | 96 | 6 |
| 8597477 | 4,77 | 52 | 96 | 6 |
| 8597478 | 4,78 | 52 | 96 | 6 |
| 8597479 | 4,79 | 52 | 96 | 6 |
| 62548 | 4,8 | 52 | 96 | 6 |
| 8597481 | 4,81 | 52 | 96 | 6 |
| 8597482 | 4,82 | 52 | 96 | 6 |
| 8597483 | 4,83 | 52 | 96 | 6 |
| 8597484 | 4,84 | 52 | 96 | 6 |
| 8597485 | 4,85 | 52 | 96 | 6 |
| 8597486 | 4,86 | 52 | 96 | 6 |
| 8597487 | 4,87 | 52 | 96 | 6 |
| 8597488 | 4,88 | 52 | 96 | 6 |
| 8597489 | 4,89 | 52 | 96 | 6 |
| 62549 | 4,9 | 52 | 96 | 6 |
| 8597491 | 4,91 | 52 | 96 | 6 |
| 8597492 | 4,92 | 52 | 96 | 6 |
| 8597493 | 4,93 | 52 | 96 | 6 |
| 8597494 | 4,94 | 52 | 96 | 6 |
| 8597495 | 4,95 | 52 | 96 | 6 |
| 8597496 | 4,96 | 52 | 96 | 6 |
| 8597497 | 4,97 | 52 | 96 | 6 |
| 8597498 | 4,98 | 52 | 96 | 6 |
| 8597499 | 4,99 | 52 | 96 | 6 |
| 62550 | 5 | 52 | 96 | 6 |
| 8597501 | 5,01 | 52 | 96 | 6 |
| 8597502 | 5,02 | 52 | 96 | 6 |
| 8597503 | 5,03 | 52 | 96 | 6 |
| 8597504 | 5,04 | 52 | 96 | 6 |
| 8597505 | 5,05 | 52 | 96 | 6 |
| 8597506 | 5,06 | 52 | 96 | 6 |
| 8597507 | 5,07 | 52 | 96 | 6 |
| 8597508 | 5,08 | 52 | 96 | 6 |
| 8597509 | 5,09 | 52 | 96 | 6 |
| 62551 | 5,1 | 52 | 96 | 6 |
| 8597511 | 5,11 | 52 | 96 | 6 |
| 8597512 | 5,12 | 52 | 96 | 6 |
| 8597513 | 5,13 | 52 | 96 | 6 |
| 8597514 | 5,14 | 52 | 96 | 6 |
| 8597515 | 5,15 | 52 | 96 | 6 |
| 8597516 | 5,16 | 52 | 96 | 6 |
| 8597517 | 5,17 | 52 | 96 | 6 |
| 8597518 | 5,18 | 52 | 96 | 6 |
| 8597519 | 5,19 | 52 | 96 | 6 |
| 62552 | 5,2 | 52 | 96 | 6 |
| 8597521 | 5,21 | 52 | 96 | 6 |

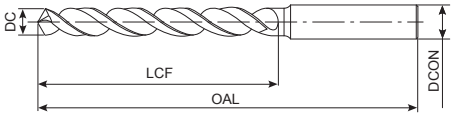
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597522 | 5,22 | 52 | 96 | 6 |
| 8597523 | 5,23 | 52 | 96 | 6 |
| 8597524 | 5,24 | 52 | 96 | 6 |
| 8597525 | 5,25 | 52 | 96 | 6 |
| 8597526 | 5,26 | 52 | 96 | 6 |
| 8597527 | 5,27 | 52 | 96 | 6 |
| 8597528 | 5,28 | 52 | 96 | 6 |
| 8597529 | 5,29 | 52 | 96 | 6 |
| 62553 | 5,3 | 52 | 96 | 6 |
| 8597531 | 5,31 | 57 | 101 | 6 |
| 8597532 | 5,32 | 57 | 101 | 6 |
| 8597533 | 5,33 | 57 | 101 | 6 |
| 8597534 | 5,34 | 57 | 101 | 6 |
| 8597535 | 5,35 | 57 | 101 | 6 |
| 8597536 | 5,36 | 57 | 101 | 6 |
| 8597537 | 5,37 | 57 | 101 | 6 |
| 8597538 | 5,38 | 57 | 101 | 6 |
| 8597539 | 5,39 | 57 | 101 | 6 |
| 62554 | 5,4 | 57 | 101 | 6 |
| 8597541 | 5,41 | 57 | 101 | 6 |
| 8597542 | 5,42 | 57 | 101 | 6 |
| 8597543 | 5,43 | 57 | 101 | 6 |
| 8597544 | 5,44 | 57 | 101 | 6 |
| 8597545 | 5,45 | 57 | 101 | 6 |
| 8597546 | 5,46 | 57 | 101 | 6 |
| 8597547 | 5,47 | 57 | 101 | 6 |
| 8597548 | 5,48 | 57 | 101 | 6 |
| 8597549 | 5,49 | 57 | 101 | 6 |
| 62555 | 5,5 | 57 | 101 | 6 |
| 8597551 | 5,51 | 57 | 101 | 6 |
| 8597552 | 5,52 | 57 | 101 | 6 |
| 8597553 | 5,53 | 57 | 101 | 6 |
| 8597554 | 5,54 | 57 | 101 | 6 |
| 8597555 | 5,55 | 57 | 101 | 6 |
| 8597556 | 5,56 | 57 | 101 | 6 |
| 8597557 | 5,57 | 57 | 101 | 6 |
| 8597558 | 5,58 | 57 | 101 | 6 |
| 8597559 | 5,59 | 57 | 101 | 6 |
| 62556 | 5,6 | 57 | 101 | 6 |
| 8597561 | 5,61 | 57 | 101 | 6 |
| 8597562 | 5,62 | 57 | 101 | 6 |
| 8597563 | 5,63 | 57 | 101 | 6 |
| 8597564 | 5,64 | 57 | 101 | 6 |
| 8597565 | 5,65 | 57 | 101 | 6 |
| 8597566 | 5,66 | 57 | 101 | 6 |
| 8597567 | 5,67 | 57 | 101 | 6 |

# EX-SUS-GDR

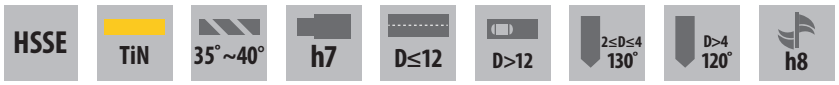


**Drilling | HSS | 5xD**






- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 5xD
- For stainless steel, low carbon steel and cast aluminium
- 485 sizes - from Ø 2-6 mm in 0,01 mm increments




B.506

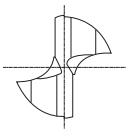
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8597568 | 5,68 | 57 | 101 | 6 |
| 8597569 | 5,69 | 57 | 101 | 6 |
| 62557 | 5,7 | 57 | 101 | 6 |
| 8597571 | 5,71 | 57 | 101 | 6 |
| 8597572 | 5,72 | 57 | 101 | 6 |
| 8597573 | 5,73 | 57 | 101 | 6 |
| 8597574 | 5,74 | 57 | 101 | 6 |
| 8597575 | 5,75 | 57 | 101 | 6 |
| 8597576 | 5,76 | 57 | 101 | 6 |
| 8597577 | 5,77 | 57 | 101 | 6 |
| 8597578 | 5,78 | 57 | 101 | 6 |
| 8597579 | 5,79 | 57 | 101 | 6 |
| 62558 | 5,8 | 57 | 101 | 6 |
| 8597581 | 5,81 | 57 | 101 | 6 |
| 8597582 | 5,82 | 57 | 101 | 6 |
| 8597583 | 5,83 | 57 | 101 | 6 |
| 8597584 | 5,84 | 57 | 101 | 6 |
| 8597585 | 5,85 | 57 | 101 | 6 |
| 8597586 | 5,86 | 57 | 101 | 6 |
| 8597587 | 5,87 | 57 | 101 | 6 |
| 8597588 | 5,88 | 57 | 101 | 6 |
| 8597589 | 5,89 | 57 | 101 | 6 |
| 62559 | 5,9 | 57 | 101 | 6 |
| 8597591 | 5,91 | 57 | 101 | 6 |
| 8597592 | 5,92 | 57 | 101 | 6 |
| 8597593 | 5,93 | 57 | 101 | 6 |
| 8597594 | 5,94 | 57 | 101 | 6 |
| 8597595 | 5,95 | 57 | 101 | 6 |
| 8597596 | 5,96 | 57 | 101 | 6 |
| 8597597 | 5,97 | 57 | 101 | 6 |
| 8597598 | 5,98 | 57 | 101 | 6 |
| 8597599 | 5,99 | 57 | 101 | 6 |
| 62560 | 6 | 57 | 101 | 6 |
| 62561 | 6,1 | 63 | 107 | 8 |
| 62562 | 6,2 | 63 | 107 | 8 |
| 62563 | 6,3 | 63 | 107 | 8 |
| 62564 | 6,4 | 63 | 107 | 8 |
| 62565 | 6,5 | 63 | 107 | 8 |
| 62566 | 6,6 | 63 | 107 | 8 |
| 62567 | 6,7 | 63 | 107 | 8 |
| 62568 | 6,8 | 69 | 113 | 8 |
| 62569 | 6,9 | 69 | 113 | 8 |
| 62570 | 7 | 69 | 113 | 8 |
| 62571 | 7,1 | 69 | 113 | 8 |
| 62572 | 7,2 | 69 | 113 | 8 |
| 62573 | 7,3 | 69 | 113 | 8 |

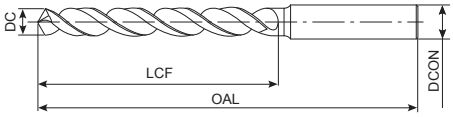
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 62574 | 7,4 | 69 | 113 | 8 |
| 62575 | 7,5 | 69 | 113 | 8 |
| 62576 | 7,6 | 75 | 119 | 8 |
| 62577 | 7,7 | 75 | 119 | 8 |
| 62578 | 7,8 | 75 | 119 | 8 |
| 62579 | 7,9 | 75 | 119 | 8 |
| 62580 | 8 | 75 | 119 | 8 |
| 62581 | 8,1 | 75 | 125 | 10 |
| 62582 | 8,2 | 75 | 125 | 10 |
| 62583 | 8,3 | 75 | 125 | 10 |
| 62584 | 8,4 | 75 | 125 | 10 |
| 62585 | 8,5 | 75 | 125 | 10 |
| 62586 | 8,6 | 81 | 131 | 10 |
| 62587 | 8,7 | 81 | 131 | 10 |
| 62588 | 8,8 | 81 | 131 | 10 |
| 62589 | 8,9 | 81 | 131 | 10 |
| 62590 | 9 | 81 | 131 | 10 |
| 62591 | 9,1 | 81 | 131 | 10 |
| 62592 | 9,2 | 81 | 131 | 10 |
| 62593 | 9,3 | 81 | 131 | 10 |
| 62594 | 9,4 | 81 | 131 | 10 |
| 62595 | 9,5 | 81 | 131 | 10 |
| 62596 | 9,6 | 87 | 137 | 10 |
| 62597 | 9,7 | 87 | 137 | 10 |
| 62598 | 9,8 | 87 | 137 | 10 |
| 62599 | 9,9 | 87 | 137 | 10 |
| 62600 | 10 | 87 | 137 | 10 |
| 62601 | 10,1 | 87 | 144 | 12 |
| 62602 | 10,2 | 87 | 144 | 12 |
| 62603 | 10,3 | 87 | 144 | 12 |
| 62604 | 10,4 | 87 | 144 | 12 |
| 62605 | 10,5 | 87 | 144 | 12 |
| 62606 | 10,6 | 87 | 144 | 12 |
| 62607 | 10,7 | 94 | 151 | 12 |
| 62608 | 10,8 | 94 | 151 | 12 |
| 62609 | 10,9 | 94 | 151 | 12 |
| 62610 | 11 | 94 | 151 | 12 |
| 62611 | 11,1 | 94 | 151 | 12 |
| 62612 | 11,2 | 94 | 151 | 12 |
| 62613 | 11,3 | 94 | 151 | 12 |
| 62614 | 11,4 | 94 | 151 | 12 |
| 62615 | 11,5 | 94 | 151 | 12 |
| 62616 | 11,6 | 94 | 151 | 12 |
| 62617 | 11,7 | 94 | 151 | 12 |
| 62618 | 11,8 | 94 | 151 | 12 |
| 62619 | 11,9 | 101 | 158 | 12 |

# EX-SUS-GDR

**Drilling | HSS | 5xD**

INDEX






- First choice in quality and performance
- HSSE drill with TiN coating
- Up to 5xD
- For stainless steel, low carbon steel and cast aluminium
- 485 sizes - from Ø 2-6 mm in 0,01 mm increments

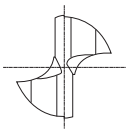
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 62620 | 12 | 101 | 158 | 12 |
| 43021210 | 12,1 | 101 | 158 | 16 |
| 43021220 | 12,2 | 101 | 158 | 16 |
| 43021230 | 12,3 | 101 | 158 | 16 |
| 43021240 | 12,4 | 101 | 158 | 16 |
| 43021250 | 12,5 | 101 | 158 | 16 |
| 43021260 | 12,6 | 101 | 158 | 16 |
| 43021270 | 12,7 | 101 | 158 | 16 |
| 43021280 | 12,8 | 101 | 158 | 16 |
| 43021290 | 12,9 | 101 | 158 | 16 |
| 43021300 | 13 | 101 | 158 | 16 |
| 43021350 | 13,5 | 106 | 166 | 16 |
| 43021400 | 14 | 106 | 166 | 16 |
| 43021450 | 14,5 | 109 | 169 | 16 |
| 43021500 | 15 | 109 | 169 | 16 |
| 43021550 | 15,5 | 112 | 172 | 16 |
| 43021600 | 16 | 112 | 172 | 16 |
| 43021650 | 16,5 | 115 | 181 | 20 |
| 43021700 | 17 | 115 | 181 | 20 |
| 43021750 | 17,5 | 118 | 184 | 20 |
| 43021800 | 18 | 118 | 184 | 20 |
| 43021850 | 18,5 | 122 | 188 | 20 |
| 43021900 | 19 | 122 | 188 | 20 |
| 43021950 | 19,5 | 125 | 191 | 20 |
| 43022000 | 20 | 125 | 191 | 20 |

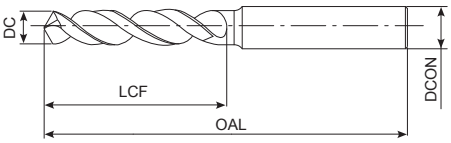
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-GDS

INDEX

**Drilling | HSS | 3xD**






- HSS-Co drill with TiN coating
- Up to 3xD
- General purpose
- 193 sizes

B.507

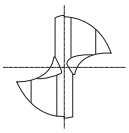
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60010 | 1 | 6 | 38 | 3 |
| 60410 | 1,05 | 6 | 38 | 3 |
| 60011 | 1,1 | 7 | 39 | 3 |
| 60411 | 1,15 | 7 | 39 | 3 |
| 60012 | 1,2 | 8 | 40 | 3 |
| 60412 | 1,25 | 8 | 40 | 3 |
| 60013 | 1,3 | 8 | 40 | 3 |
| 60413 | 1,35 | 9 | 41 | 3 |
| 60014 | 1,4 | 9 | 41 | 3 |
| 60414 | 1,45 | 9 | 41 | 3 |
| 60015 | 1,5 | 9 | 41 | 3 |
| 60415 | 1,55 | 10 | 42 | 3 |
| 60016 | 1,6 | 10 | 42 | 3 |
| 60416 | 1,65 | 10 | 42 | 3 |
| 60017 | 1,7 | 10 | 42 | 3 |
| 60417 | 1,75 | 11 | 43 | 3 |
| 60018 | 1,8 | 11 | 43 | 3 |
| 60418 | 1,85 | 11 | 43 | 3 |
| 60019 | 1,9 | 11 | 43 | 3 |
| 60419 | 1,95 | 12 | 44 | 3 |
| 60020 | 2 | 12 | 44 | 3 |
| 60420 | 2,05 | 12 | 44 | 3 |
| 60021 | 2,1 | 12 | 44 | 3 |
| 60421 | 2,15 | 13 | 45 | 3 |
| 60022 | 2,2 | 13 | 45 | 3 |
| 60422 | 2,25 | 13 | 45 | 3 |
| 60023 | 2,3 | 13 | 45 | 3 |
| 60423 | 2,35 | 13 | 45 | 3 |
| 60024 | 2,4 | 14 | 46 | 3 |
| 60424 | 2,45 | 14 | 46 | 3 |
| 60025 | 2,5 | 14 | 46 | 3 |
| 60425 | 2,55 | 14 | 46 | 3 |
| 60026 | 2,6 | 14 | 46 | 3 |
| 60426 | 2,65 | 14 | 46 | 3 |
| 60027 | 2,7 | 16 | 48 | 3 |
| 60427 | 2,75 | 16 | 48 | 3 |
| 60028 | 2,8 | 16 | 48 | 3 |
| 60428 | 2,85 | 16 | 48 | 3 |
| 60029 | 2,9 | 16 | 48 | 3 |
| 60429 | 2,95 | 16 | 48 | 3 |
| 60030 | 3 | 16 | 48 | 3 |
| 60430 | 3,05 | 18 | 50 | 4 |
| 60031 | 3,1 | 18 | 50 | 4 |
| 60431 | 3,15 | 18 | 50 | 4 |
| 60032 | 3,2 | 18 | 50 | 4 |
| 60432 | 3,25 | 18 | 50 | 4 |

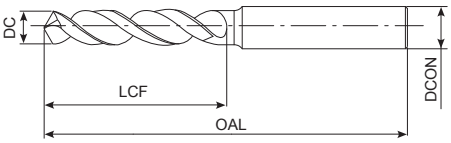
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60033 | 3,3 | 18 | 50 | 4 |
| 60433 | 3,35 | 18 | 50 | 4 |
| 60034 | 3,4 | 20 | 52 | 4 |
| 60434 | 3,45 | 20 | 52 | 4 |
| 60035 | 3,5 | 20 | 52 | 4 |
| 60435 | 3,55 | 20 | 52 | 4 |
| 60036 | 3,6 | 20 | 52 | 4 |
| 60436 | 3,65 | 20 | 52 | 4 |
| 60037 | 3,7 | 20 | 52 | 4 |
| 60437 | 3,75 | 20 | 52 | 4 |
| 60038 | 3,8 | 22 | 54 | 4 |
| 60438 | 3,85 | 22 | 54 | 4 |
| 60039 | 3,9 | 22 | 54 | 4 |
| 60439 | 3,95 | 22 | 54 | 4 |
| 60040 | 4 | 22 | 54 | 4 |
| 60440 | 4,05 | 22 | 66 | 6 |
| 60041 | 4,1 | 22 | 66 | 6 |
| 60441 | 4,15 | 22 | 66 | 6 |
| 60042 | 4,2 | 22 | 66 | 6 |
| 60442 | 4,25 | 22 | 66 | 6 |
| 60043 | 4,3 | 24 | 68 | 6 |
| 60443 | 4,35 | 24 | 68 | 6 |
| 60044 | 4,4 | 24 | 68 | 6 |
| 60444 | 4,45 | 24 | 68 | 6 |
| 60045 | 4,5 | 24 | 68 | 6 |
| 60445 | 4,55 | 24 | 68 | 6 |
| 60046 | 4,6 | 24 | 68 | 6 |
| 60446 | 4,65 | 24 | 68 | 6 |
| 60047 | 4,7 | 24 | 68 | 6 |
| 60447 | 4,75 | 24 | 68 | 6 |
| 60048 | 4,8 | 26 | 70 | 6 |
| 60448 | 4,85 | 26 | 70 | 6 |
| 60049 | 4,9 | 26 | 70 | 6 |
| 60449 | 4,95 | 26 | 70 | 6 |
| 60050 | 5 | 26 | 70 | 6 |
| 60450 | 5,05 | 26 | 70 | 6 |
| 60051 | 5,1 | 26 | 70 | 6 |
| 60451 | 5,15 | 26 | 70 | 6 |
| 60052 | 5,2 | 26 | 70 | 6 |
| 60452 | 5,25 | 26 | 70 | 6 |
| 60053 | 5,3 | 26 | 70 | 6 |
| 60453 | 5,35 | 28 | 72 | 6 |
| 60054 | 5,4 | 28 | 72 | 6 |
| 60454 | 5,45 | 28 | 72 | 6 |
| 60055 | 5,5 | 28 | 72 | 6 |
| 60455 | 5,55 | 28 | 72 | 6 |

# EX-GDS



**Drilling | HSS | 3xD**






- HSS-Co drill with TiN coating
- Up to 3xD
- General purpose
- 193 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC | S Ni | H 25-35 HRC | H 35-45 HRC

HSS-Co | TiN | 25° | h7 | h8

B.507

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60056 | 5,6 | 28 | 72 | 6 |
| 60456 | 5,65 | 28 | 72 | 6 |
| 60057 | 5,7 | 28 | 72 | 6 |
| 60457 | 5,75 | 28 | 72 | 6 |
| 60058 | 5,8 | 28 | 72 | 6 |
| 60458 | 5,85 | 28 | 72 | 6 |
| 60059 | 5,9 | 28 | 72 | 6 |
| 60459 | 5,95 | 28 | 72 | 6 |
| 60060 | 6 | 28 | 72 | 6 |
| 60061 | 6,1 | 31 | 75 | 8 |
| 60062 | 6,2 | 31 | 75 | 8 |
| 60063 | 6,3 | 31 | 75 | 8 |
| 60064 | 6,4 | 31 | 75 | 8 |
| 60065 | 6,5 | 31 | 75 | 8 |
| 60465 | 6,55 | 31 | 75 | 8 |
| 60066 | 6,6 | 31 | 75 | 8 |
| 60466 | 6,65 | 31 | 75 | 8 |
| 60067 | 6,7 | 31 | 75 | 8 |
| 60068 | 6,8 | 34 | 78 | 8 |
| 60069 | 6,9 | 34 | 78 | 8 |
| 60070 | 7 | 34 | 78 | 8 |
| 60071 | 7,1 | 34 | 78 | 8 |
| 60072 | 7,2 | 34 | 78 | 8 |
| 60073 | 7,3 | 34 | 78 | 8 |
| 60473 | 7,35 | 34 | 78 | 8 |
| 60074 | 7,4 | 34 | 78 | 8 |
| 60075 | 7,5 | 34 | 78 | 8 |
| 60475 | 7,55 | 37 | 81 | 8 |
| 60076 | 7,6 | 37 | 81 | 8 |
| 60476 | 7,65 | 37 | 81 | 8 |
| 60077 | 7,7 | 37 | 81 | 8 |
| 60078 | 7,8 | 37 | 81 | 8 |
| 60079 | 7,9 | 37 | 81 | 8 |
| 60080 | 8 | 37 | 81 | 8 |
| 60081 | 8,1 | 37 | 87 | 10 |
| 60082 | 8,2 | 37 | 87 | 10 |
| 60083 | 8,3 | 37 | 87 | 10 |
| 60483 | 8,35 | 37 | 87 | 10 |
| 60084 | 8,4 | 37 | 87 | 10 |
| 60085 | 8,5 | 37 | 87 | 10 |
| 60485 | 8,55 | 40 | 90 | 10 |
| 60086 | 8,6 | 40 | 90 | 10 |
| 60486 | 8,65 | 40 | 90 | 10 |
| 60087 | 8,7 | 40 | 90 | 10 |
| 60088 | 8,8 | 40 | 90 | 10 |
| 60089 | 8,9 | 40 | 90 | 10 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60090 | 9 | 40 | 90 | 10 |
| 60091 | 9,1 | 40 | 90 | 10 |
| 60092 | 9,2 | 40 | 90 | 10 |
| 60492 | 9,25 | 40 | 90 | 10 |
| 60093 | 9,3 | 40 | 90 | 10 |
| 60493 | 9,35 | 40 | 90 | 10 |
| 60094 | 9,4 | 40 | 90 | 10 |
| 60494 | 9,45 | 40 | 90 | 10 |
| 60095 | 9,5 | 40 | 90 | 10 |
| 60495 | 9,55 | 43 | 93 | 10 |
| 60096 | 9,6 | 43 | 93 | 10 |
| 60496 | 9,65 | 43 | 93 | 10 |
| 60097 | 9,7 | 43 | 93 | 10 |
| 60098 | 9,8 | 43 | 93 | 10 |
| 60099 | 9,9 | 43 | 93 | 10 |
| 60499 | 9,95 | 43 | 93 | 10 |
| 60100 | 10 | 43 | 93 | 10 |
| 60101 | 10,1 | 43 | 100 | 12 |
| 60102 | 10,2 | 43 | 100 | 12 |
| 62002 | 10,25 | 43 | 100 | 12 |
| 60103 | 10,3 | 43 | 100 | 12 |
| 62003 | 10,35 | 43 | 100 | 12 |
| 60104 | 10,4 | 43 | 100 | 12 |
| 60105 | 10,5 | 43 | 100 | 12 |
| 62005 | 10,55 | 43 | 100 | 12 |
| 60106 | 10,6 | 43 | 100 | 12 |
| 62006 | 10,65 | 47 | 104 | 12 |
| 60107 | 10,7 | 47 | 104 | 12 |
| 60108 | 10,8 | 47 | 104 | 12 |
| 60109 | 10,9 | 47 | 104 | 12 |
| 62009 | 10,95 | 47 | 104 | 12 |
| 60110 | 11 | 47 | 104 | 12 |
| 60111 | 11,1 | 47 | 104 | 12 |
| 60112 | 11,2 | 47 | 104 | 12 |
| 62012 | 11,25 | 47 | 104 | 12 |
| 60113 | 11,3 | 47 | 104 | 12 |
| 62013 | 11,35 | 47 | 104 | 12 |
| 60114 | 11,4 | 47 | 104 | 12 |
| 60115 | 11,5 | 47 | 104 | 12 |
| 62015 | 11,55 | 47 | 104 | 12 |
| 60116 | 11,6 | 47 | 104 | 12 |
| 60117 | 11,7 | 47 | 104 | 12 |
| 60118 | 11,8 | 47 | 104 | 12 |
| 60119 | 11,9 | 51 | 108 | 12 |
| 60120 | 12 | 51 | 108 | 12 |
| 60121 | 12,1 | 51 | 108 | 12 |

# EX-GDS

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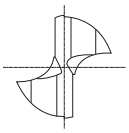
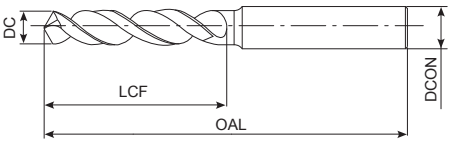
**Drilling | HSS | 3xD**






- HSS-Co drill with TiN coating
- Up to 3xD
- General purpose
- 193 sizes

B.507

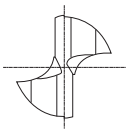
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60122 | 12,2 | 51 | 108 | 12 |
| 60123 | 12,3 | 51 | 108 | 12 |
| 60124 | 12,4 | 51 | 108 | 12 |
| 60125 | 12,5 | 51 | 108 | 12 |
| 60126 | 12,6 | 51 | 108 | 12 |
| 60127 | 12,7 | 51 | 108 | 12 |
| 60128 | 12,8 | 51 | 108 | 12 |
| 60129 | 12,9 | 51 | 108 | 12 |
| 60130 | 13 | 51 | 108 | 12 |

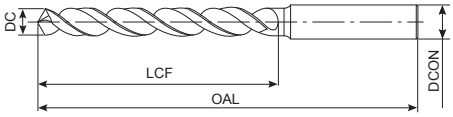
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-GDR



**Drilling | HSS | 5xD**






- HSS-Co drill with TiN coating
- Up to 5xD
- General purpose
- 249 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ◉ GG | K ○ GGG | N ○ Al | N ○ AC, ADC | H ○ 25-35 HRC

HSS-Co | TiN | 30° | h7 D>13 | h7 D≤13 | h8

B.507

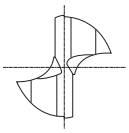
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60520 | 2 | 24 | 56 | 3 |
| 62120 | 2,05 | 24 | 56 | 3 |
| 60521 | 2,1 | 24 | 56 | 3 |
| 62121 | 2,15 | 27 | 59 | 3 |
| 60522 | 2,2 | 27 | 59 | 3 |
| 62122 | 2,25 | 27 | 59 | 3 |
| 60523 | 2,3 | 27 | 59 | 3 |
| 62123 | 2,35 | 27 | 59 | 3 |
| 60524 | 2,4 | 30 | 62 | 3 |
| 62124 | 2,45 | 30 | 62 | 3 |
| 60525 | 2,5 | 30 | 62 | 3 |
| 62125 | 2,55 | 30 | 62 | 3 |
| 60526 | 2,6 | 30 | 62 | 3 |
| 62126 | 2,65 | 30 | 62 | 3 |
| 60527 | 2,7 | 33 | 65 | 3 |
| 62127 | 2,75 | 33 | 65 | 3 |
| 60528 | 2,8 | 33 | 65 | 3 |
| 62128 | 2,85 | 33 | 65 | 3 |
| 60529 | 2,9 | 33 | 65 | 3 |
| 62129 | 2,95 | 33 | 65 | 3 |
| 60530 | 3 | 33 | 65 | 3 |
| 62130 | 3,05 | 36 | 68 | 4 |
| 60531 | 3,1 | 36 | 68 | 4 |
| 62131 | 3,15 | 36 | 68 | 4 |
| 60532 | 3,2 | 36 | 68 | 4 |
| 62132 | 3,25 | 36 | 68 | 4 |
| 60533 | 3,3 | 36 | 68 | 4 |
| 62133 | 3,35 | 36 | 68 | 4 |
| 60534 | 3,4 | 39 | 71 | 4 |
| 62134 | 3,45 | 39 | 71 | 4 |
| 60535 | 3,5 | 39 | 71 | 4 |
| 62135 | 3,55 | 39 | 71 | 4 |
| 60536 | 3,6 | 39 | 71 | 4 |
| 62136 | 3,65 | 39 | 71 | 4 |
| 60537 | 3,7 | 39 | 71 | 4 |
| 62137 | 3,75 | 39 | 71 | 4 |
| 60538 | 3,8 | 43 | 75 | 4 |
| 62138 | 3,85 | 43 | 75 | 4 |
| 60539 | 3,9 | 43 | 75 | 4 |
| 62139 | 3,95 | 43 | 75 | 4 |
| 60540 | 4 | 43 | 75 | 4 |
| 62140 | 4,05 | 43 | 87 | 6 |
| 60541 | 4,1 | 43 | 87 | 6 |
| 62141 | 4,15 | 43 | 87 | 6 |
| 60542 | 4,2 | 43 | 87 | 6 |
| 62142 | 4,25 | 43 | 87 | 6 |

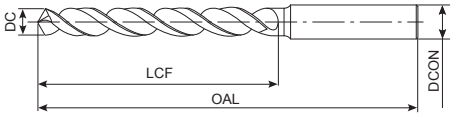
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60543 | 4,3 | 47 | 91 | 6 |
| 62143 | 4,35 | 47 | 91 | 6 |
| 60544 | 4,4 | 47 | 91 | 6 |
| 62144 | 4,45 | 47 | 91 | 6 |
| 60545 | 4,5 | 47 | 91 | 6 |
| 62145 | 4,55 | 47 | 91 | 6 |
| 60546 | 4,6 | 47 | 91 | 6 |
| 62146 | 4,65 | 47 | 91 | 6 |
| 60547 | 4,7 | 47 | 91 | 6 |
| 62147 | 4,75 | 47 | 91 | 6 |
| 60548 | 4,8 | 52 | 96 | 6 |
| 62148 | 4,85 | 52 | 96 | 6 |
| 60549 | 4,9 | 52 | 96 | 6 |
| 62149 | 4,95 | 52 | 96 | 6 |
| 60550 | 5 | 52 | 96 | 6 |
| 62150 | 5,05 | 52 | 96 | 6 |
| 60551 | 5,1 | 52 | 96 | 6 |
| 62151 | 5,15 | 52 | 96 | 6 |
| 60552 | 5,2 | 52 | 96 | 6 |
| 62152 | 5,25 | 52 | 96 | 6 |
| 60553 | 5,3 | 52 | 96 | 6 |
| 62153 | 5,35 | 57 | 101 | 6 |
| 60554 | 5,4 | 57 | 101 | 6 |
| 62154 | 5,45 | 57 | 101 | 6 |
| 60555 | 5,5 | 57 | 101 | 6 |
| 62155 | 5,55 | 57 | 101 | 6 |
| 60556 | 5,6 | 57 | 101 | 6 |
| 62156 | 5,65 | 57 | 101 | 6 |
| 60557 | 5,7 | 57 | 101 | 6 |
| 62157 | 5,75 | 57 | 101 | 6 |
| 60558 | 5,8 | 57 | 101 | 6 |
| 62158 | 5,85 | 57 | 101 | 6 |
| 60559 | 5,9 | 57 | 101 | 6 |
| 62159 | 5,95 | 57 | 101 | 6 |
| 60560 | 6 | 57 | 101 | 6 |
| 62160 | 6,05 | 63 | 107 | 8 |
| 60561 | 6,1 | 63 | 107 | 8 |
| 62161 | 6,15 | 63 | 107 | 8 |
| 60562 | 6,2 | 63 | 107 | 8 |
| 62162 | 6,25 | 63 | 107 | 8 |
| 60563 | 6,3 | 63 | 107 | 8 |
| 62163 | 6,35 | 63 | 107 | 8 |
| 60564 | 6,4 | 63 | 107 | 8 |
| 62164 | 6,45 | 63 | 107 | 8 |
| 60565 | 6,5 | 63 | 107 | 8 |
| 62165 | 6,55 | 63 | 107 | 8 |

# EX-GDR



**Drilling | HSS | 5xD**






- HSS-Co drill with TiN coating
- Up to 5xD
- General purpose
- 249 sizes

P ○ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | K ◉ GG | K ○ GGG | N ○ Al | N ○ AC, ADC | H ○ 25-35 HRC

HSS-Co | TiN | 30° | h7 D>13 | h7 D≤13 | h8

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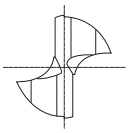
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60566 | 6,6 | 63 | 107 | 8 |
| 62166 | 6,65 | 63 | 107 | 8 |
| 60567 | 6,7 | 63 | 107 | 8 |
| 62167 | 6,75 | 69 | 113 | 8 |
| 60568 | 6,8 | 69 | 113 | 8 |
| 62168 | 6,85 | 69 | 113 | 8 |
| 60569 | 6,9 | 69 | 113 | 8 |
| 62169 | 6,95 | 69 | 113 | 8 |
| 60570 | 7 | 69 | 113 | 8 |
| 62170 | 7,05 | 69 | 113 | 8 |
| 60571 | 7,1 | 69 | 113 | 8 |
| 62171 | 7,15 | 69 | 113 | 8 |
| 60572 | 7,2 | 69 | 113 | 8 |
| 62172 | 7,25 | 69 | 113 | 8 |
| 60573 | 7,3 | 69 | 113 | 8 |
| 62173 | 7,35 | 69 | 113 | 8 |
| 60574 | 7,4 | 69 | 113 | 8 |
| 62174 | 7,45 | 69 | 113 | 8 |
| 60575 | 7,5 | 69 | 113 | 8 |
| 62175 | 7,55 | 75 | 119 | 8 |
| 60576 | 7,6 | 75 | 119 | 8 |
| 62176 | 7,65 | 75 | 119 | 8 |
| 60577 | 7,7 | 75 | 119 | 8 |
| 62177 | 7,75 | 75 | 119 | 8 |
| 60578 | 7,8 | 75 | 119 | 8 |
| 62178 | 7,85 | 75 | 119 | 8 |
| 60579 | 7,9 | 75 | 119 | 8 |
| 62179 | 7,95 | 75 | 119 | 8 |
| 60580 | 8 | 75 | 119 | 8 |
| 62180 | 8,05 | 75 | 125 | 10 |
| 60581 | 8,1 | 75 | 125 | 10 |
| 62181 | 8,15 | 75 | 125 | 10 |
| 60582 | 8,2 | 75 | 125 | 10 |
| 62182 | 8,25 | 75 | 125 | 10 |
| 60583 | 8,3 | 75 | 125 | 10 |
| 62183 | 8,35 | 75 | 125 | 10 |
| 60584 | 8,4 | 75 | 125 | 10 |
| 62184 | 8,45 | 75 | 125 | 10 |
| 60585 | 8,5 | 75 | 125 | 10 |
| 62185 | 8,55 | 81 | 131 | 10 |
| 60586 | 8,6 | 81 | 131 | 10 |
| 62186 | 8,65 | 81 | 131 | 10 |
| 60587 | 8,7 | 81 | 131 | 10 |
| 62187 | 8,75 | 81 | 131 | 10 |
| 60588 | 8,8 | 81 | 131 | 10 |
| 62188 | 8,85 | 81 | 131 | 10 |

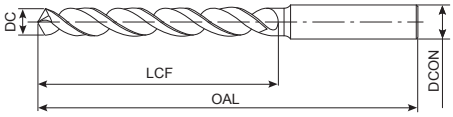
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60589 | 8,9 | 81 | 131 | 10 |
| 62189 | 8,95 | 81 | 131 | 10 |
| 60590 | 9 | 81 | 131 | 10 |
| 62190 | 9,05 | 81 | 131 | 10 |
| 60591 | 9,1 | 81 | 131 | 10 |
| 62191 | 9,15 | 81 | 131 | 10 |
| 60592 | 9,2 | 81 | 131 | 10 |
| 62192 | 9,25 | 81 | 131 | 10 |
| 60593 | 9,3 | 81 | 131 | 10 |
| 62193 | 9,35 | 81 | 131 | 10 |
| 60594 | 9,4 | 81 | 131 | 10 |
| 62194 | 9,45 | 81 | 131 | 10 |
| 60595 | 9,5 | 81 | 131 | 10 |
| 62195 | 9,55 | 87 | 137 | 10 |
| 60596 | 9,6 | 87 | 137 | 10 |
| 62196 | 9,65 | 87 | 137 | 10 |
| 60597 | 9,7 | 87 | 137 | 10 |
| 62197 | 9,75 | 87 | 137 | 10 |
| 60598 | 9,8 | 87 | 137 | 10 |
| 62198 | 9,85 | 87 | 137 | 10 |
| 60599 | 9,9 | 87 | 137 | 10 |
| 62199 | 9,95 | 87 | 137 | 10 |
| 60600 | 10 | 87 | 137 | 10 |
| 62200 | 10,05 | 87 | 144 | 12 |
| 60601 | 10,1 | 87 | 144 | 12 |
| 62201 | 10,15 | 87 | 144 | 12 |
| 60602 | 10,2 | 87 | 144 | 12 |
| 62202 | 10,25 | 87 | 144 | 12 |
| 60603 | 10,3 | 87 | 144 | 12 |
| 62203 | 10,35 | 87 | 144 | 12 |
| 60604 | 10,4 | 87 | 144 | 12 |
| 62204 | 10,45 | 87 | 144 | 12 |
| 60605 | 10,5 | 87 | 144 | 12 |
| 62205 | 10,55 | 87 | 144 | 12 |
| 60606 | 10,6 | 87 | 144 | 12 |
| 62206 | 10,65 | 94 | 151 | 12 |
| 60607 | 10,7 | 94 | 151 | 12 |
| 62207 | 10,75 | 94 | 151 | 12 |
| 60608 | 10,8 | 94 | 151 | 12 |
| 62208 | 10,85 | 94 | 151 | 12 |
| 60609 | 10,9 | 94 | 151 | 12 |
| 62209 | 10,95 | 94 | 151 | 12 |
| 60610 | 11 | 94 | 151 | 12 |
| 62210 | 11,05 | 94 | 151 | 12 |
| 60611 | 11,1 | 94 | 151 | 12 |
| 62211 | 11,15 | 94 | 151 | 12 |

# EX-GDR



**Drilling | HSS | 5xD**






- HSS-Co drill with TiN coating
- Up to 5xD
- General purpose
- 249 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N Al | N AC, ADC | H 25-35 HRC

HSS-Co | TiN | 30° | h7 D>13 | h7 D≤13 | h8

B.507

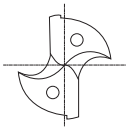
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60612 | 11,2 | 94 | 151 | 12 |
| 62212 | 11,25 | 94 | 151 | 12 |
| 60613 | 11,3 | 94 | 151 | 12 |
| 62213 | 11,35 | 94 | 151 | 12 |
| 60614 | 11,4 | 94 | 151 | 12 |
| 62214 | 11,45 | 94 | 151 | 12 |
| 60615 | 11,5 | 94 | 151 | 12 |
| 62215 | 11,55 | 94 | 151 | 12 |
| 60616 | 11,6 | 94 | 151 | 12 |
| 62216 | 11,65 | 94 | 151 | 12 |
| 60617 | 11,7 | 94 | 151 | 12 |
| 62217 | 11,75 | 94 | 151 | 12 |
| 60618 | 11,8 | 94 | 151 | 12 |
| 62218 | 11,85 | 101 | 158 | 12 |
| 60619 | 11,9 | 101 | 158 | 12 |
| 62219 | 11,95 | 101 | 158 | 12 |
| 60620 | 12 | 101 | 158 | 12 |
| 60621 | 12,1 | 101 | 158 | 12 |
| 60622 | 12,2 | 101 | 158 | 12 |
| 60623 | 12,3 | 101 | 158 | 12 |
| 60624 | 12,4 | 101 | 158 | 12 |
| 60625 | 12,5 | 101 | 158 | 12 |
| 60626 | 12,6 | 101 | 158 | 12 |
| 60627 | 12,7 | 101 | 158 | 12 |
| 60628 | 12,8 | 101 | 158 | 12 |
| 60629 | 12,9 | 101 | 158 | 12 |
| 60630 | 13 | 101 | 158 | 12 |
| 60635 | 13,5 | 90 | 150 | 16 |
| 60640 | 14 | 90 | 150 | 16 |
| 60641 | 14,1 | 95 | 155 | 16 |
| 60645 | 14,5 | 95 | 155 | 16 |
| 60650 | 15 | 95 | 161 | 20 |
| 60655 | 15,5 | 100 | 166 | 20 |
| 60656 | 15,6 | 100 | 166 | 20 |
| 60660 | 16 | 100 | 166 | 20 |
| 60665 | 16,5 | 106 | 172 | 20 |
| 60670 | 17 | 106 | 172 | 20 |
| 60675 | 17,5 | 112 | 178 | 20 |
| 60676 | 17,6 | 112 | 178 | 20 |
| 60680 | 18 | 112 | 178 | 20 |
| 60685 | 18,5 | 118 | 184 | 20 |
| 60690 | 19 | 118 | 194 | 25 |
| 60695 | 19,5 | 125 | 201 | 25 |
| 60696 | 19,6 | 125 | 201 | 25 |
| 60700 | 20 | 125 | 201 | 25 |
| 60705 | 20,5 | 128 | 204 | 25 |

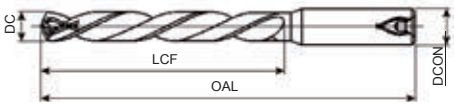
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 60710 | 21 | 128 | 204 | 25 |
| 60711 | 21,1 | 128 | 204 | 25 |
| 60715 | 21,5 | 132 | 208 | 25 |
| 60720 | 22 | 132 | 208 | 25 |
| 60725 | 22,5 | 136 | 212 | 25 |
| 60730 | 23 | 136 | 212 | 25 |
| 60735 | 23,5 | 136 | 212 | 25 |
| 60740 | 24 | 140 | 220 | 32 |
| 60745 | 24,5 | 140 | 220 | 32 |
| 60750 | 25 | 140 | 220 | 32 |
| 60755 | 25,5 | 145 | 225 | 32 |
| 60760 | 26 | 145 | 225 | 32 |
| 60765 | 26,5 | 145 | 225 | 32 |
| 60770 | 27 | 150 | 230 | 32 |
| 60780 | 28 | 150 | 230 | 32 |
| 60790 | 29 | 155 | 235 | 32 |
| 60800 | 30 | 155 | 235 | 32 |
| 60810 | 31 | 160 | 241 | 32 |
| 60820 | 32 | 165 | 245 | 32 |

# V-HDO-GDR

INDEX

**Drilling | HSS | 5xD**






- HSS-Co drill with internal coolant, TiCN coating
- Up to 5xD
- General purpose
- 96 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

HSS-Co | V | 30° | h6 D>12 | h7 D≤12 | D≤12 | D>12 | 120° | h8

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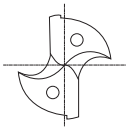
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 43040600 | 6 | 57 | 101 | 6 |
| 43040610 | 6,1 | 63 | 107 | 6 |
| 43040620 | 6,2 | 63 | 107 | 6 |
| 43040630 | 6,3 | 63 | 107 | 6 |
| 43040640 | 6,4 | 63 | 107 | 6 |
| 43040650 | 6,5 | 63 | 107 | 6 |
| 43040660 | 6,6 | 63 | 107 | 7 |
| 43040670 | 6,7 | 63 | 107 | 7 |
| 43040680 | 6,8 | 69 | 113 | 7 |
| 43040690 | 6,9 | 69 | 113 | 7 |
| 43040700 | 7 | 69 | 113 | 7 |
| 43040710 | 7,1 | 69 | 113 | 8 |
| 43040720 | 7,2 | 69 | 113 | 8 |
| 43040730 | 7,3 | 69 | 113 | 8 |
| 43040740 | 7,4 | 69 | 113 | 8 |
| 43040750 | 7,5 | 69 | 113 | 8 |
| 43040760 | 7,6 | 75 | 119 | 8 |
| 43040770 | 7,7 | 75 | 119 | 8 |
| 43040780 | 7,8 | 75 | 119 | 8 |
| 43040790 | 7,9 | 75 | 119 | 8 |
| 43040800 | 8 | 75 | 119 | 8 |
| 43040810 | 8,1 | 75 | 125 | 9 |
| 43040820 | 8,2 | 75 | 125 | 9 |
| 43040830 | 8,3 | 75 | 125 | 9 |
| 43040840 | 8,4 | 75 | 125 | 9 |
| 43040850 | 8,5 | 75 | 125 | 9 |
| 43040860 | 8,6 | 81 | 131 | 9 |
| 43040870 | 8,7 | 81 | 131 | 9 |
| 43040880 | 8,8 | 81 | 131 | 9 |
| 43040890 | 8,9 | 81 | 131 | 9 |
| 43040900 | 9 | 81 | 131 | 9 |
| 43040910 | 9,1 | 81 | 131 | 10 |
| 43040920 | 9,2 | 81 | 131 | 10 |
| 43040930 | 9,3 | 81 | 131 | 10 |
| 43040940 | 9,4 | 81 | 131 | 10 |
| 43040950 | 9,5 | 81 | 131 | 10 |
| 43040960 | 9,6 | 87 | 137 | 10 |
| 43040970 | 9,7 | 87 | 137 | 10 |
| 43040980 | 9,8 | 87 | 137 | 10 |
| 43040990 | 9,9 | 87 | 137 | 10 |
| 43041000 | 10 | 87 | 137 | 10 |
| 43041010 | 10,1 | 87 | 144 | 11 |
| 43041020 | 10,2 | 87 | 144 | 11 |
| 43041030 | 10,3 | 87 | 144 | 11 |
| 43041040 | 10,4 | 87 | 144 | 11 |
| 43041050 | 10,5 | 87 | 144 | 11 |

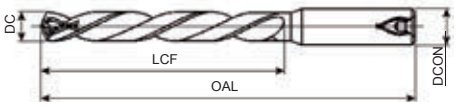
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 43041060 | 10,6 | 87 | 144 | 11 |
| 43041070 | 10,7 | 94 | 151 | 11 |
| 43041080 | 10,8 | 94 | 151 | 11 |
| 43041090 | 10,9 | 94 | 151 | 11 |
| 43041100 | 11 | 94 | 151 | 11 |
| 43041110 | 11,1 | 94 | 151 | 12 |
| 43041120 | 11,2 | 94 | 151 | 12 |
| 43041130 | 11,3 | 94 | 151 | 12 |
| 43041140 | 11,4 | 94 | 151 | 12 |
| 43041150 | 11,5 | 94 | 151 | 12 |
| 43041160 | 11,6 | 94 | 151 | 12 |
| 43041170 | 11,7 | 94 | 151 | 12 |
| 43041180 | 11,8 | 94 | 151 | 12 |
| 43041190 | 11,9 | 101 | 158 | 12 |
| 43041200 | 12 | 101 | 158 | 12 |
| 43041250 | 12,5 | 80 | 140 | 16 |
| 43041300 | 13 | 85 | 145 | 16 |
| 43041350 | 13,5 | 90 | 150 | 16 |
| 43041400 | 14 | 90 | 150 | 16 |
| 43041450 | 14,5 | 95 | 155 | 16 |
| 43041500 | 15 | 95 | 161 | 20 |
| 43041550 | 15,5 | 100 | 166 | 20 |
| 43041600 | 16 | 100 | 166 | 20 |
| 43041650 | 16,5 | 106 | 172 | 20 |
| 43041700 | 17 | 106 | 172 | 20 |
| 43041750 | 17,5 | 112 | 178 | 20 |
| 43041800 | 18 | 112 | 178 | 20 |
| 43041850 | 18,5 | 118 | 184 | 20 |
| 43041900 | 19 | 118 | 194 | 25 |
| 43041950 | 19,5 | 125 | 201 | 25 |
| 43042000 | 20 | 125 | 201 | 25 |
| 43042050 | 20,5 | 128 | 204 | 25 |
| 43042100 | 21 | 128 | 204 | 25 |
| 43042150 | 21,5 | 132 | 208 | 25 |
| 43042200 | 22 | 132 | 208 | 25 |
| 43042250 | 22,5 | 136 | 212 | 25 |
| 43042300 | 23 | 136 | 212 | 25 |
| 43042350 | 23,5 | 136 | 212 | 25 |
| 43042400 | 24 | 140 | 220 | 32 |
| 43042450 | 24,5 | 140 | 220 | 32 |
| 43042500 | 25 | 140 | 220 | 32 |
| 43042550 | 25,5 | 145 | 225 | 32 |
| 43042600 | 26 | 145 | 225 | 32 |
| 43042650 | 26,5 | 145 | 225 | 32 |
| 43042700 | 27 | 150 | 230 | 32 |
| 43042800 | 28 | 150 | 230 | 32 |

# V-HDO-GDR



**Drilling | HSS | 5xD**






- HSS-Co drill with internal coolant, TiCN coating
- Up to 5xD
- General purpose
- 96 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC

HSS-Co | V | 30° | h6 D>12 | h7 D≤12 | D≤12 | D>12 | 120° | h8

B.508

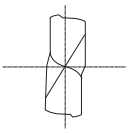
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 43042900 | 29 | 155 | 235 | 32 |
| 43043000 | 30 | 155 | 235 | 32 |
| 43043100 | 31 | 160 | 240 | 32 |
| 43043200 | 32 | 165 | 245 | 32 |

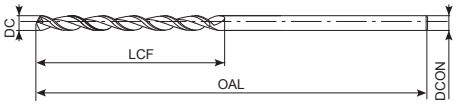
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# TDXL-10D

**Drilling | HSS | 10xD**

INDEX






- HSS-Co drill with WXL coating
- Up to 10xD
- For steels, cast iron and cast aluminium
- 103 sizes

B.508

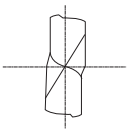
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8622816 | 1,6 | 26 | 70 | 1,6 |
| 8622818 | 1,8 | 26 | 75 | 1,8 |
| 8622820 | 2 | 26 | 75 | 2 |
| 8622821 | 2,1 | 33 | 75 | 2,1 |
| 8622822 | 2,2 | 33 | 75 | 2,2 |
| 8622823 | 2,3 | 33 | 75 | 2,3 |
| 8622824 | 2,4 | 33 | 75 | 2,4 |
| 8622825 | 2,5 | 33 | 75 | 2,5 |
| 8622826 | 2,6 | 40 | 90 | 2,6 |
| 8622827 | 2,7 | 40 | 90 | 2,7 |
| 8622828 | 2,8 | 40 | 90 | 2,8 |
| 8622829 | 2,9 | 40 | 90 | 2,9 |
| 8622830 | 3 | 40 | 90 | 3 |
| 8622831 | 3,1 | 45 | 100 | 3,1 |
| 8622832 | 3,2 | 45 | 100 | 3,2 |
| 8622833 | 3,3 | 45 | 100 | 3,3 |
| 8622834 | 3,4 | 50 | 100 | 3,4 |
| 8622835 | 3,5 | 50 | 100 | 3,5 |
| 8622836 | 3,6 | 50 | 100 | 3,6 |
| 8622837 | 3,7 | 50 | 100 | 3,7 |
| 8622838 | 3,8 | 50 | 100 | 3,8 |
| 8622839 | 3,9 | 50 | 100 | 3,9 |
| 8622840 | 4 | 50 | 100 | 4 |
| 8622841 | 4,1 | 55 | 115 | 4,1 |
| 8622842 | 4,2 | 55 | 115 | 4,2 |
| 8622843 | 4,3 | 60 | 115 | 4,3 |
| 8622844 | 4,4 | 60 | 115 | 4,4 |
| 8622845 | 4,5 | 60 | 115 | 4,5 |
| 8622846 | 4,6 | 60 | 115 | 4,6 |
| 8622847 | 4,7 | 60 | 115 | 4,7 |
| 8622848 | 4,8 | 65 | 115 | 4,8 |
| 8622849 | 4,9 | 65 | 115 | 4,9 |
| 8622850 | 5 | 65 | 115 | 5 |
| 8622851 | 5,1 | 70 | 128 | 5,1 |
| 8622852 | 5,2 | 70 | 128 | 5,2 |
| 8622853 | 5,3 | 70 | 128 | 5,3 |
| 8622854 | 5,4 | 78 | 128 | 5,4 |
| 8622855 | 5,5 | 78 | 128 | 5,5 |
| 8622856 | 5,6 | 78 | 128 | 5,6 |
| 8622857 | 5,7 | 78 | 128 | 5,7 |
| 8622858 | 5,8 | 78 | 128 | 5,8 |
| 8622859 | 5,9 | 78 | 128 | 5,9 |
| 8622860 | 6 | 78 | 128 | 6 |
| 8622861 | 6,1 | 87 | 140 | 6,1 |
| 8622862 | 6,2 | 87 | 140 | 6,2 |
| 8622863 | 6,3 | 87 | 140 | 6,3 |

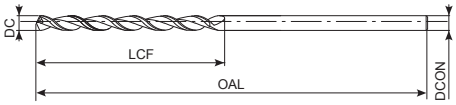
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8622864 | 6,4 | 87 | 140 | 6,4 |
| 8622865 | 6,5 | 87 | 140 | 6,5 |
| 8622866 | 6,6 | 87 | 140 | 6,6 |
| 8622867 | 6,7 | 87 | 140 | 6,7 |
| 8622868 | 6,8 | 90 | 140 | 6,8 |
| 8622869 | 6,9 | 90 | 140 | 6,9 |
| 8622870 | 7 | 90 | 140 | 7 |
| 8622871 | 7,1 | 100 | 155 | 7,1 |
| 8622872 | 7,2 | 100 | 155 | 7,2 |
| 8622873 | 7,3 | 100 | 155 | 7,3 |
| 8622874 | 7,4 | 100 | 155 | 7,4 |
| 8622875 | 7,5 | 100 | 155 | 7,5 |
| 8622876 | 7,6 | 105 | 155 | 7,6 |
| 8622877 | 7,7 | 105 | 155 | 7,7 |
| 8622878 | 7,8 | 105 | 155 | 7,8 |
| 8622879 | 7,9 | 105 | 155 | 7,9 |
| 8622880 | 8 | 105 | 155 | 8 |
| 8622881 | 8,1 | 110 | 165 | 8,1 |
| 8622882 | 8,2 | 110 | 165 | 8,2 |
| 8622883 | 8,3 | 110 | 165 | 8,3 |
| 8622884 | 8,4 | 110 | 165 | 8,4 |
| 8622885 | 8,5 | 110 | 165 | 8,5 |
| 8622886 | 8,6 | 115 | 165 | 8,6 |
| 8622887 | 8,7 | 115 | 165 | 8,7 |
| 8622888 | 8,8 | 115 | 165 | 8,8 |
| 8622889 | 8,9 | 115 | 165 | 8,9 |
| 8622890 | 9 | 115 | 165 | 9 |
| 8622891 | 9,1 | 125 | 190 | 9,1 |
| 8622892 | 9,2 | 125 | 190 | 9,2 |
| 8622893 | 9,3 | 125 | 190 | 9,3 |
| 8622894 | 9,4 | 125 | 190 | 9,4 |
| 8622895 | 9,5 | 125 | 190 | 9,5 |
| 8622896 | 9,6 | 130 | 190 | 9,6 |
| 8622897 | 9,7 | 130 | 190 | 9,7 |
| 8622898 | 9,8 | 130 | 190 | 9,8 |
| 8622899 | 9,9 | 130 | 190 | 9,9 |
| 8622900 | 10 | 130 | 190 | 10 |
| 8622901 | 10,1 | 140 | 205 | 10,1 |
| 8622902 | 10,2 | 140 | 205 | 10,2 |
| 8622903 | 10,3 | 140 | 205 | 10,3 |
| 8622904 | 10,4 | 140 | 205 | 10,4 |
| 8622905 | 10,5 | 140 | 205 | 10,5 |
| 8622906 | 10,6 | 145 | 205 | 10,6 |
| 8622907 | 10,7 | 145 | 205 | 10,7 |
| 8622908 | 10,8 | 145 | 205 | 10,8 |
| 8622909 | 10,9 | 145 | 205 | 10,9 |

# TDXL-10D

**Drilling | HSS | 10xD**

INDEX






- HSS-Co drill with WXL coating
- Up to 10xD
- For steels, cast iron and cast aluminium
- 103 sizes

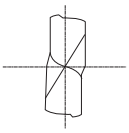
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8622910 | 11 | 145 | 205 | 11 |
| 8622911 | 11,1 | 155 | 215 | 11,1 |
| 8622912 | 11,2 | 155 | 215 | 11,2 |
| 8622913 | 11,3 | 155 | 215 | 11,3 |
| 8622914 | 11,4 | 155 | 215 | 11,4 |
| 8622915 | 11,5 | 155 | 215 | 11,5 |
| 8622916 | 11,6 | 155 | 215 | 11,6 |
| 8622917 | 11,7 | 155 | 215 | 11,7 |
| 8622918 | 11,8 | 155 | 215 | 11,8 |
| 8622919 | 11,9 | 155 | 215 | 11,9 |
| 8622920 | 12 | 155 | 215 | 12 |

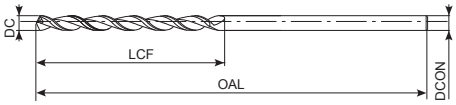
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# TDXL-15D

**Drilling | HSS | 15xD**

INDEX






- HSS-Co drill with WXL coating
- Up to 15xD
- For steels, cast iron and cast aluminium
- 68 sizes

B.508

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8623016 | 1,6 | 30 | 70 | 1,6 |
| 8623018 | 1,8 | 34 | 75 | 1,8 |
| 8623020 | 2 | 36 | 80 | 2 |
| 8623021 | 2,1 | 38 | 80 | 2,1 |
| 8623022 | 2,2 | 40 | 80 | 2,2 |
| 8623023 | 2,3 | 42 | 85 | 2,3 |
| 8623024 | 2,4 | 44 | 85 | 2,4 |
| 8623025 | 2,5 | 46 | 85 | 2,5 |
| 8623026 | 2,6 | 48 | 100 | 2,6 |
| 8623027 | 2,7 | 50 | 100 | 2,7 |
| 8623028 | 2,8 | 50 | 100 | 2,8 |
| 8623029 | 2,9 | 54 | 105 | 2,9 |
| 8623030 | 3 | 54 | 105 | 3 |
| 8623031 | 3,1 | 56 | 110 | 3,1 |
| 8623032 | 3,2 | 58 | 110 | 3,2 |
| 8623033 | 3,3 | 60 | 110 | 3,3 |
| 8623034 | 3,4 | 62 | 115 | 3,4 |
| 8623035 | 3,5 | 64 | 115 | 3,5 |
| 8623036 | 3,6 | 66 | 115 | 3,6 |
| 8623037 | 3,7 | 68 | 120 | 3,7 |
| 8623038 | 3,8 | 70 | 120 | 3,8 |
| 8623039 | 3,9 | 70 | 120 | 3,9 |
| 8623040 | 4 | 72 | 120 | 4 |
| 8623041 | 4,1 | 74 | 135 | 4,1 |
| 8623042 | 4,2 | 76 | 135 | 4,2 |
| 8623043 | 4,3 | 78 | 140 | 4,3 |
| 8623044 | 4,4 | 80 | 140 | 4,4 |
| 8623045 | 4,5 | 82 | 140 | 4,5 |
| 8623046 | 4,6 | 84 | 145 | 4,6 |
| 8623047 | 4,7 | 86 | 145 | 4,7 |
| 8623048 | 4,8 | 86 | 145 | 4,8 |
| 8623049 | 4,9 | 88 | 150 | 4,9 |
| 8623050 | 5 | 90 | 150 | 5 |
| 8623051 | 5,1 | 92 | 150 | 5,1 |
| 8623052 | 5,2 | 94 | 155 | 5,2 |
| 8623053 | 5,3 | 96 | 155 | 5,3 |
| 8623054 | 5,4 | 98 | 155 | 5,4 |
| 8623055 | 5,5 | 100 | 155 | 5,5 |
| 8623056 | 5,6 | 102 | 160 | 5,6 |
| 8623057 | 5,7 | 104 | 165 | 5,7 |
| 8623058 | 5,8 | 106 | 165 | 5,8 |
| 8623060 | 6 | 108 | 170 | 6 |
| 8623062 | 6,2 | 112 | 170 | 6,2 |
| 8623063 | 6,3 | 114 | 175 | 6,3 |
| 8623065 | 6,5 | 118 | 200 | 6,5 |
| 8623066 | 6,6 | 120 | 200 | 6,6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8623068 | 6,8 | 124 | 200 | 6,8 |
| 8623069 | 6,9 | 126 | 200 | 6,9 |
| 8623070 | 7 | 126 | 200 | 7 |
| 8623071 | 7,1 | 128 | 200 | 7,1 |
| 8623075 | 7,5 | 136 | 205 | 7,5 |
| 8623080 | 8 | 144 | 215 | 8 |
| 8623081 | 8,1 | 146 | 215 | 8,1 |
| 8623082 | 8,2 | 148 | 220 | 8,2 |
| 8623085 | 8,5 | 154 | 225 | 8,5 |
| 8623086 | 8,6 | 156 | 225 | 8,6 |
| 8623088 | 8,8 | 160 | 230 | 8,8 |
| 8623090 | 9 | 162 | 230 | 9 |
| 8623093 | 9,3 | 168 | 240 | 9,3 |
| 8623095 | 9,5 | 172 | 240 | 9,5 |
| 8623097 | 9,7 | 176 | 245 | 9,7 |
| 8623098 | 9,8 | 178 | 245 | 9,8 |
| 8623100 | 10 | 180 | 250 | 10 |
| 8623105 | 10,5 | 190 | 270 | 10,5 |
| 8623110 | 11 | 200 | 280 | 11 |
| 8623115 | 11,5 | 208 | 290 | 11,5 |
| 8623118 | 11,8 | 214 | 295 | 11,8 |
| 8623120 | 12 | 216 | 300 | 12 |

# TDXL-20D

**Drilling | HSS | 20xD**

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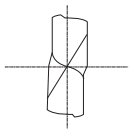

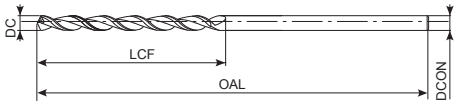


- HSS-Co drill with WXL coating
- Up to 20xD
- For steels, cast iron and cast aluminium
- 48 sizes

B.508

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8623216 | 1,6 | 38 | 85 | 1,6 |
| 8623218 | 1,8 | 42 | 85 | 1,8 |
| 8623220 | 2 | 46 | 85 | 2 |
| 8623221 | 2,1 | 50 | 90 | 2,1 |
| 8623222 | 2,2 | 52 | 90 | 2,2 |
| 8623223 | 2,3 | 54 | 95 | 2,3 |
| 8623224 | 2,4 | 56 | 95 | 2,4 |
| 8623225 | 2,5 | 58 | 100 | 2,5 |
| 8623226 | 2,6 | 60 | 110 | 2,6 |
| 8623227 | 2,7 | 64 | 115 | 2,7 |
| 8623228 | 2,8 | 66 | 115 | 2,8 |
| 8623229 | 2,9 | 68 | 120 | 2,9 |
| 8623230 | 3 | 70 | 120 | 3 |
| 8623231 | 3,1 | 72 | 125 | 3,1 |
| 8623232 | 3,2 | 74 | 125 | 3,2 |
| 8623233 | 3,3 | 76 | 125 | 3,3 |
| 8623234 | 3,4 | 80 | 130 | 3,4 |
| 8623235 | 3,5 | 82 | 130 | 3,5 |
| 8623237 | 3,7 | 86 | 135 | 3,7 |
| 8623238 | 3,8 | 88 | 140 | 3,8 |
| 8623240 | 4 | 92 | 140 | 4 |
| 8623241 | 4,1 | 96 | 155 | 4,1 |
| 8623242 | 4,2 | 98 | 155 | 4,2 |
| 8623243 | 4,3 | 100 | 160 | 4,3 |
| 8623245 | 4,5 | 104 | 165 | 4,5 |
| 8623246 | 4,6 | 106 | 165 | 4,6 |
| 8623248 | 4,8 | 112 | 170 | 4,8 |
| 8623250 | 5 | 116 | 175 | 5 |
| 8623251 | 5,1 | 118 | 180 | 5,1 |
| 8623252 | 5,2 | 120 | 180 | 5,2 |
| 8623255 | 5,5 | 128 | 185 | 5,5 |
| 8623257 | 5,7 | 132 | 190 | 5,7 |
| 8623258 | 5,8 | 134 | 200 | 5,8 |
| 8623260 | 6 | 138 | 200 | 6 |
| 8623263 | 6,3 | 146 | 200 | 6,3 |
| 8623265 | 6,5 | 150 | 225 | 6,5 |
| 8623268 | 6,8 | 158 | 225 | 6,8 |
| 8623269 | 6,9 | 160 | 230 | 6,9 |
| 8623270 | 7 | 162 | 230 | 7 |
| 8623275 | 7,5 | 174 | 245 | 7,5 |
| 8623280 | 8 | 184 | 255 | 8 |
| 8623281 | 8,1 | 188 | 255 | 8,1 |
| 8623282 | 8,2 | 190 | 260 | 8,2 |
| 8623285 | 8,5 | 196 | 265 | 8,5 |
| 8623290 | 9 | 208 | 275 | 9 |
| 8623300 | 10 | 230 | 300 | 10 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8623310 | 11 | 254 | 350 | 11 |
| 8623320 | 12 | 276 | 350 | 12 |

# EX-GDXL-8D

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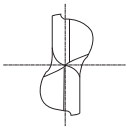
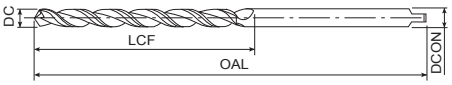
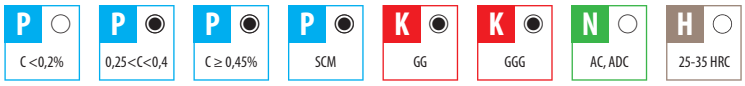
**Drilling | HSS | 8xD**






- HSS-Co drill with TiN coating
- Up to 8xD
- For general purpose steels and cast iron
- 21 sizes



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| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8592110 | 11 | 120 | 200 | 11 |
| 8592111 | 11,1 | 120 | 200 | 11,1 |
| 8592112 | 11,2 | 120 | 200 | 11,2 |
| 8592113 | 11,3 | 120 | 200 | 11,3 |
| 8592114 | 11,4 | 120 | 200 | 11,4 |
| 8592115 | 11,5 | 120 | 200 | 11,5 |
| 8592116 | 11,6 | 120 | 200 | 11,6 |
| 8592117 | 11,7 | 120 | 200 | 11,7 |
| 8592118 | 11,8 | 120 | 200 | 11,8 |
| 8592119 | 11,9 | 120 | 200 | 11,9 |
| 8592120 | 12 | 120 | 200 | 12 |
| 8592121 | 12,1 | 120 | 200 | 12,1 |
| 8592122 | 12,2 | 120 | 200 | 12,2 |
| 8592123 | 12,3 | 120 | 200 | 12,3 |
| 8592124 | 12,4 | 120 | 200 | 12,4 |
| 8592125 | 12,5 | 120 | 200 | 12,5 |
| 8592126 | 12,6 | 120 | 200 | 12,6 |
| 8592127 | 12,7 | 120 | 200 | 12,7 |
| 8592128 | 12,8 | 120 | 200 | 12,8 |
| 8592129 | 12,9 | 120 | 200 | 12,9 |
| 8592130 | 13 | 120 | 200 | 13 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-GDXL-10D

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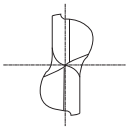
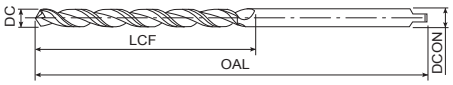
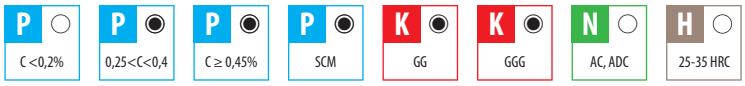
**Drilling | HSS | 10xD**






- HSS-Co drill with TiN coating
- Up to 10xD
- For general purpose steels and cast iron
- 89 sizes



B.508

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8591036 | 3,6 | 55 | 100 | 3,6 |
| 8591037 | 3,7 | 55 | 100 | 3,7 |
| 8591038 | 3,8 | 55 | 100 | 3,8 |
| 8591039 | 3,9 | 55 | 100 | 3,9 |
| 8591040 | 4 | 60 | 100 | 4 |
| 8591041 | 4,1 | 60 | 100 | 4,1 |
| 8591042 | 4,2 | 60 | 100 | 4,2 |
| 8591043 | 4,3 | 60 | 100 | 4,3 |
| 8591044 | 4,4 | 60 | 100 | 4,4 |
| 8591045 | 4,5 | 60 | 100 | 4,5 |
| 8591046 | 4,6 | 60 | 100 | 4,6 |
| 8591553 | 5,3 | 85 | 150 | 5,3 |
| 8591554 | 5,4 | 85 | 150 | 5,4 |
| 8591555 | 5,5 | 85 | 150 | 5,5 |
| 8591556 | 5,6 | 85 | 150 | 5,6 |
| 8591557 | 5,7 | 85 | 150 | 5,7 |
| 8591558 | 5,8 | 85 | 150 | 5,8 |
| 8591559 | 5,9 | 85 | 150 | 5,9 |
| 8591560 | 6 | 90 | 150 | 6 |
| 8591561 | 6,1 | 90 | 150 | 6,1 |
| 8591562 | 6,2 | 90 | 150 | 6,2 |
| 8591563 | 6,3 | 90 | 150 | 6,3 |
| 8591564 | 6,4 | 90 | 150 | 6,4 |
| 8591565 | 6,5 | 90 | 150 | 6,5 |
| 8591566 | 6,6 | 90 | 150 | 6,6 |
| 8591567 | 6,7 | 90 | 150 | 6,7 |
| 8591568 | 6,8 | 90 | 150 | 6,8 |
| 8591569 | 6,9 | 90 | 150 | 6,9 |
| 8591570 | 7 | 90 | 150 | 7 |
| 8591571 | 7,1 | 90 | 150 | 7,1 |
| 8591572 | 7,2 | 90 | 150 | 7,2 |
| 8591573 | 7,3 | 90 | 150 | 7,3 |
| 8591574 | 7,4 | 90 | 150 | 7,4 |
| 8591575 | 7,5 | 90 | 150 | 7,5 |
| 8592076 | 7,6 | 110 | 200 | 7,6 |
| 8592077 | 7,7 | 110 | 200 | 7,7 |
| 8592078 | 7,8 | 110 | 200 | 7,8 |
| 8592079 | 7,9 | 110 | 200 | 7,9 |
| 8592080 | 8 | 115 | 200 | 8 |
| 8592081 | 8,1 | 115 | 200 | 8,1 |
| 8592082 | 8,2 | 115 | 200 | 8,2 |
| 8592083 | 8,3 | 115 | 200 | 8,3 |
| 8592084 | 8,4 | 115 | 200 | 8,4 |
| 8592085 | 8,5 | 115 | 200 | 8,5 |
| 8592086 | 8,6 | 115 | 200 | 8,6 |
| 8592087 | 8,7 | 115 | 200 | 8,7 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8592088 | 8,8 | 115 | 200 | 8,8 |
| 8592089 | 8,9 | 115 | 200 | 8,9 |
| 8592090 | 9 | 115 | 200 | 9 |
| 8592091 | 9,1 | 115 | 200 | 9,1 |
| 8592092 | 9,2 | 115 | 200 | 9,2 |
| 8592093 | 9,3 | 115 | 200 | 9,3 |
| 8592094 | 9,4 | 115 | 200 | 9,4 |
| 8592095 | 9,5 | 115 | 200 | 9,5 |
| 8592096 | 9,6 | 115 | 200 | 9,6 |
| 8592097 | 9,7 | 115 | 200 | 9,7 |
| 8592098 | 9,8 | 115 | 200 | 9,8 |
| 8592099 | 9,9 | 115 | 200 | 9,9 |
| 8592100 | 10 | 120 | 200 | 10 |
| 8592101 | 10,1 | 120 | 200 | 10,1 |
| 8592102 | 10,2 | 120 | 200 | 10,2 |
| 8592103 | 10,3 | 120 | 200 | 10,3 |
| 8592104 | 10,4 | 120 | 200 | 10,4 |
| 8592105 | 10,5 | 120 | 200 | 10,5 |
| 8592106 | 10,6 | 120 | 200 | 10,6 |
| 8592107 | 10,7 | 120 | 200 | 10,7 |
| 8592108 | 10,8 | 120 | 200 | 10,8 |
| 8592109 | 10,9 | 120 | 200 | 10,9 |
| 8604110 | 11 | 160 | 250 | 11 |
| 8604111 | 11,1 | 160 | 250 | 11,1 |
| 8604112 | 11,2 | 160 | 250 | 11,2 |
| 8604113 | 11,3 | 160 | 250 | 11,3 |
| 8604114 | 11,4 | 160 | 250 | 11,4 |
| 8604115 | 11,5 | 160 | 250 | 11,5 |
| 8604116 | 11,6 | 160 | 250 | 11,6 |
| 8604117 | 11,7 | 160 | 250 | 11,7 |
| 8604118 | 11,8 | 160 | 250 | 11,8 |
| 8604119 | 11,9 | 160 | 250 | 11,9 |
| 8604120 | 12 | 160 | 250 | 12 |
| 8604121 | 12,1 | 160 | 250 | 12,1 |
| 8604122 | 12,2 | 160 | 250 | 12,2 |
| 8604123 | 12,3 | 160 | 250 | 12,3 |
| 8604124 | 12,4 | 160 | 250 | 12,4 |
| 8604125 | 12,5 | 160 | 250 | 12,5 |
| 8604126 | 12,6 | 160 | 250 | 12,6 |
| 8604127 | 12,7 | 160 | 250 | 12,7 |
| 8604128 | 12,8 | 160 | 250 | 12,8 |
| 8604129 | 12,9 | 160 | 250 | 12,9 |
| 8604130 | 13 | 160 | 250 | 13 |

# EX-GDXL-15D

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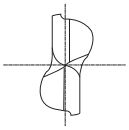
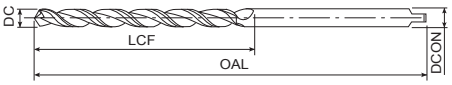
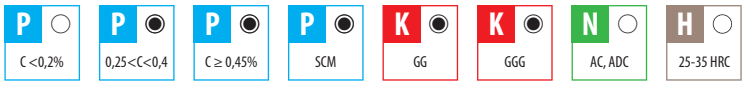
**Drilling | HSS | 15xD**






- HSS-Co drill with TiN coating
- Up to 15xD
- For general purpose steels and cast iron
- 104 sizes



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| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8590520 | 2 | 40 | 100 | 2 |
| 8590521 | 2,1 | 40 | 100 | 2,1 |
| 8590522 | 2,2 | 40 | 100 | 2,2 |
| 8590523 | 2,3 | 40 | 100 | 2,3 |
| 8590524 | 2,4 | 40 | 100 | 2,4 |
| 8591025 | 2,5 | 50 | 100 | 2,5 |
| 8591026 | 2,6 | 50 | 100 | 2,6 |
| 8591027 | 2,7 | 50 | 100 | 2,7 |
| 8591028 | 2,8 | 50 | 100 | 2,8 |
| 8591029 | 2,9 | 50 | 100 | 2,9 |
| 8591030 | 3 | 55 | 100 | 3 |
| 8591031 | 3,1 | 55 | 100 | 3,1 |
| 8591032 | 3,2 | 55 | 100 | 3,2 |
| 8591033 | 3,3 | 55 | 100 | 3,3 |
| 8591034 | 3,4 | 55 | 100 | 3,4 |
| 8591035 | 3,5 | 55 | 100 | 3,5 |
| 8591537 | 3,7 | 75 | 150 | 3,7 |
| 8591538 | 3,8 | 75 | 150 | 3,8 |
| 8591539 | 3,9 | 75 | 150 | 3,9 |
| 8591540 | 4 | 80 | 150 | 4 |
| 8591541 | 4,1 | 80 | 150 | 4,1 |
| 8591542 | 4,2 | 80 | 150 | 4,2 |
| 8591543 | 4,3 | 80 | 150 | 4,3 |
| 8591544 | 4,4 | 80 | 150 | 4,4 |
| 8591545 | 4,5 | 80 | 150 | 4,5 |
| 8591546 | 4,6 | 80 | 150 | 4,6 |
| 8591547 | 4,7 | 80 | 150 | 4,7 |
| 8591548 | 4,8 | 80 | 150 | 4,8 |
| 8591549 | 4,9 | 80 | 150 | 4,9 |
| 8591550 | 5 | 85 | 150 | 5 |
| 8591551 | 5,1 | 85 | 150 | 5,1 |
| 8591552 | 5,2 | 85 | 150 | 5,2 |
| 8592053 | 5,3 | 105 | 200 | 5,3 |
| 8592054 | 5,4 | 105 | 200 | 5,4 |
| 8592055 | 5,5 | 105 | 200 | 5,5 |
| 8592056 | 5,6 | 105 | 200 | 5,6 |
| 8592057 | 5,7 | 105 | 200 | 5,7 |
| 8592058 | 5,8 | 105 | 200 | 5,8 |
| 8592059 | 5,9 | 105 | 200 | 5,9 |
| 8592060 | 6 | 110 | 200 | 6 |
| 8592061 | 6,1 | 110 | 200 | 6,1 |
| 8592062 | 6,2 | 110 | 200 | 6,2 |
| 8592063 | 6,3 | 110 | 200 | 6,3 |
| 8592064 | 6,4 | 110 | 200 | 6,4 |
| 8592065 | 6,5 | 110 | 200 | 6,5 |
| 8592066 | 6,6 | 110 | 200 | 6,6 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8592067 | 6,7 | 110 | 200 | 6,7 |
| 8592068 | 6,8 | 110 | 200 | 6,8 |
| 8592069 | 6,9 | 110 | 200 | 6,9 |
| 8592070 | 7 | 110 | 200 | 7 |
| 8592071 | 7,1 | 110 | 200 | 7,1 |
| 8592072 | 7,2 | 110 | 200 | 7,2 |
| 8592073 | 7,3 | 110 | 200 | 7,3 |
| 8592074 | 7,4 | 110 | 200 | 7,4 |
| 8592075 | 7,5 | 110 | 200 | 7,5 |
| 8604082 | 8,2 | 160 | 250 | 8,2 |
| 8604083 | 8,3 | 160 | 250 | 8,3 |
| 8604084 | 8,4 | 160 | 250 | 8,4 |
| 8604085 | 8,5 | 160 | 250 | 8,5 |
| 8604086 | 8,6 | 160 | 250 | 8,6 |
| 8604087 | 8,7 | 160 | 250 | 8,7 |
| 8604088 | 8,8 | 160 | 250 | 8,8 |
| 8604089 | 8,9 | 160 | 250 | 8,9 |
| 8604090 | 9 | 160 | 250 | 9 |
| 8604091 | 9,1 | 160 | 250 | 9,1 |
| 8604092 | 9,2 | 160 | 250 | 9,2 |
| 8604093 | 9,3 | 160 | 250 | 9,3 |
| 8604094 | 9,4 | 160 | 250 | 9,4 |
| 8604095 | 9,5 | 160 | 250 | 9,5 |
| 8604096 | 9,6 | 160 | 250 | 9,6 |
| 8604097 | 9,7 | 160 | 250 | 9,7 |
| 8604098 | 9,8 | 160 | 250 | 9,8 |
| 8604099 | 9,9 | 160 | 250 | 9,9 |
| 8604100 | 10 | 160 | 250 | 10 |
| 8604101 | 10,1 | 160 | 250 | 10,1 |
| 8604102 | 10,2 | 160 | 250 | 10,2 |
| 8604103 | 10,3 | 160 | 250 | 10,3 |
| 8604104 | 10,4 | 160 | 250 | 10,4 |
| 8604105 | 10,5 | 160 | 250 | 10,5 |
| 8604106 | 10,6 | 160 | 250 | 10,6 |
| 8604107 | 10,7 | 160 | 250 | 10,7 |
| 8604108 | 10,8 | 160 | 250 | 10,8 |
| 8604109 | 10,9 | 160 | 250 | 10,9 |
| 8604310 | 11 | 200 | 300 | 11 |
| 8604311 | 11,1 | 200 | 300 | 11,1 |
| 8604312 | 11,2 | 200 | 300 | 11,2 |
| 8604313 | 11,3 | 200 | 300 | 11,3 |
| 8604314 | 11,4 | 200 | 300 | 11,4 |
| 8604315 | 11,5 | 200 | 300 | 11,5 |
| 8604316 | 11,6 | 200 | 300 | 11,6 |
| 8604317 | 11,7 | 200 | 300 | 11,7 |
| 8604318 | 11,8 | 200 | 300 | 11,8 |

# EX-GDXL-15D

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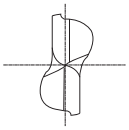
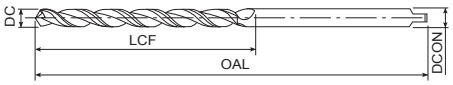
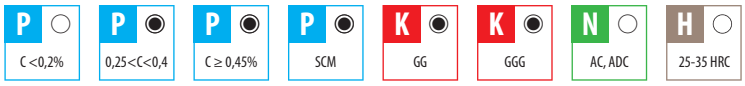
**Drilling | HSS | 15xD**






- HSS-Co drill with TiN coating
- Up to 15xD
- For general purpose steels and cast iron
- 104 sizes



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| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8604319 | 11,9 | 200 | 300 | 11,9 |
| 8604320 | 12 | 200 | 300 | 12 |
| 8604321 | 12,1 | 200 | 300 | 12,1 |
| 8604322 | 12,2 | 200 | 300 | 12,2 |
| 8604323 | 12,3 | 200 | 300 | 12,3 |
| 8604324 | 12,4 | 200 | 300 | 12,4 |
| 8604325 | 12,5 | 200 | 300 | 12,5 |
| 8604326 | 12,6 | 200 | 300 | 12,6 |
| 8604327 | 12,7 | 200 | 300 | 12,7 |
| 8604328 | 12,8 | 200 | 300 | 12,8 |
| 8604329 | 12,9 | 200 | 300 | 12,9 |
| 8604330 | 13 | 200 | 300 | 13 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-GDXL-20D

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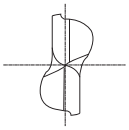
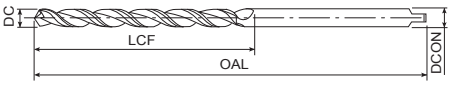
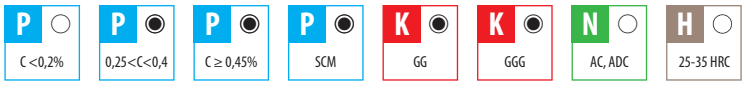
**Drilling | HSS | 20xD**






- HSS-Co drill with TiN coating
- Up to 20xD
- For general purpose steels and cast iron
- 72 sizes



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| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8591020 | 2 | 50 | 100 | 2 |
| 8591021 | 2,1 | 50 | 100 | 2,1 |
| 8591022 | 2,2 | 50 | 100 | 2,2 |
| 8591023 | 2,3 | 50 | 100 | 2,3 |
| 8591024 | 2,4 | 50 | 100 | 2,4 |
| 8591530 | 3 | 75 | 150 | 3 |
| 8591531 | 3,1 | 75 | 150 | 3,1 |
| 8591532 | 3,2 | 75 | 150 | 3,2 |
| 8591533 | 3,3 | 75 | 150 | 3,3 |
| 8591534 | 3,4 | 75 | 150 | 3,4 |
| 8591535 | 3,5 | 75 | 150 | 3,5 |
| 8591536 | 3,6 | 75 | 150 | 3,6 |
| 8592040 | 4 | 100 | 200 | 4 |
| 8592041 | 4,1 | 100 | 200 | 4,1 |
| 8592042 | 4,2 | 100 | 200 | 4,2 |
| 8592043 | 4,3 | 100 | 200 | 4,3 |
| 8592044 | 4,4 | 100 | 200 | 4,4 |
| 8592045 | 4,5 | 100 | 200 | 4,5 |
| 8592046 | 4,6 | 100 | 200 | 4,6 |
| 8592047 | 4,7 | 100 | 200 | 4,7 |
| 8592048 | 4,8 | 100 | 200 | 4,8 |
| 8592049 | 4,9 | 100 | 200 | 4,9 |
| 8592050 | 5 | 105 | 200 | 5 |
| 8592051 | 5,1 | 105 | 200 | 5,1 |
| 8592052 | 5,2 | 105 | 200 | 5,2 |
| 8604063 | 6,3 | 160 | 250 | 6,3 |
| 8604064 | 6,4 | 160 | 250 | 6,4 |
| 8604065 | 6,5 | 160 | 250 | 6,5 |
| 8604066 | 6,6 | 160 | 250 | 6,6 |
| 8604067 | 6,7 | 160 | 250 | 6,7 |
| 8604068 | 6,8 | 160 | 250 | 6,8 |
| 8604069 | 6,9 | 160 | 250 | 6,9 |
| 8604070 | 7 | 160 | 250 | 7 |
| 8604071 | 7,1 | 160 | 250 | 7,1 |
| 8604072 | 7,2 | 160 | 250 | 7,2 |
| 8604073 | 7,3 | 160 | 250 | 7,3 |
| 8604074 | 7,4 | 160 | 250 | 7,4 |
| 8604075 | 7,5 | 160 | 250 | 7,5 |
| 8604076 | 7,6 | 160 | 250 | 7,6 |
| 8604077 | 7,7 | 160 | 250 | 7,7 |
| 8604078 | 7,8 | 160 | 250 | 7,8 |
| 8604079 | 7,9 | 160 | 250 | 7,9 |
| 8604080 | 8 | 160 | 250 | 8 |
| 8604081 | 8,1 | 160 | 250 | 8,1 |
| 8604282 | 8,2 | 200 | 300 | 8,2 |
| 8604283 | 8,3 | 200 | 300 | 8,3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8604284 | 8,4 | 200 | 300 | 8,4 |
| 8604285 | 8,5 | 200 | 300 | 8,5 |
| 8604286 | 8,6 | 200 | 300 | 8,6 |
| 8604287 | 8,7 | 200 | 300 | 8,7 |
| 8604288 | 8,8 | 200 | 300 | 8,8 |
| 8604289 | 8,9 | 200 | 300 | 8,9 |
| 8604290 | 9 | 200 | 300 | 9 |
| 8604291 | 9,1 | 200 | 300 | 9,1 |
| 8604292 | 9,2 | 200 | 300 | 9,2 |
| 8604293 | 9,3 | 200 | 300 | 9,3 |
| 8604294 | 9,4 | 200 | 300 | 9,4 |
| 8604295 | 9,5 | 200 | 300 | 9,5 |
| 8604296 | 9,6 | 200 | 300 | 9,6 |
| 8604297 | 9,7 | 200 | 300 | 9,7 |
| 8604298 | 9,8 | 200 | 300 | 9,8 |
| 8604299 | 9,9 | 200 | 300 | 9,9 |
| 8604300 | 10 | 200 | 300 | 10 |
| 8604301 | 10,1 | 200 | 300 | 10,1 |
| 8604302 | 10,2 | 200 | 300 | 10,2 |
| 8604303 | 10,3 | 200 | 300 | 10,3 |
| 8604304 | 10,4 | 200 | 300 | 10,4 |
| 8604305 | 10,5 | 200 | 300 | 10,5 |
| 8604306 | 10,6 | 200 | 300 | 10,6 |
| 8604307 | 10,7 | 200 | 300 | 10,7 |
| 8604308 | 10,8 | 200 | 300 | 10,8 |
| 8604309 | 10,9 | 200 | 300 | 10,9 |

# EX-GDXL-25D

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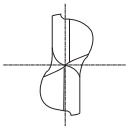
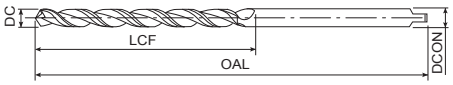
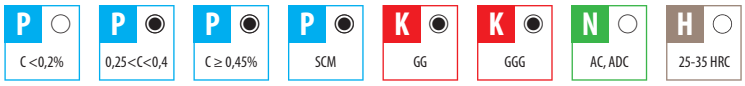
**Drilling | HSS | 25xD**






- HSS-Co drill with TiN coating
- Up to 25xD
- For general purpose steels and cast iron
- 36 sizes



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| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8592033 | 3,3 | 100 | 200 | 3,3 |
| 8592034 | 3,4 | 100 | 200 | 3,4 |
| 8592035 | 3,5 | 100 | 200 | 3,5 |
| 8592036 | 3,6 | 100 | 200 | 3,6 |
| 8592037 | 3,7 | 100 | 200 | 3,7 |
| 8592038 | 3,8 | 100 | 200 | 3,8 |
| 8592039 | 3,9 | 100 | 200 | 3,9 |
| 8592550 | 5 | 130 | 250 | 5 |
| 8604053 | 5,3 | 160 | 250 | 5,3 |
| 8604054 | 5,4 | 160 | 250 | 5,4 |
| 8604055 | 5,5 | 160 | 250 | 5,5 |
| 8604056 | 5,6 | 160 | 250 | 5,6 |
| 8604057 | 5,7 | 160 | 250 | 5,7 |
| 8604058 | 5,8 | 160 | 250 | 5,8 |
| 8604059 | 5,9 | 160 | 250 | 5,9 |
| 8604060 | 6 | 160 | 250 | 6 |
| 8604061 | 6,1 | 160 | 250 | 6,1 |
| 8604062 | 6,2 | 160 | 250 | 6,2 |
| 8604264 | 6,4 | 200 | 300 | 6,4 |
| 8604265 | 6,5 | 200 | 300 | 6,5 |
| 8604266 | 6,6 | 200 | 300 | 6,6 |
| 8604267 | 6,7 | 200 | 300 | 6,7 |
| 8604268 | 6,8 | 200 | 300 | 6,8 |
| 8604269 | 6,9 | 200 | 300 | 6,9 |
| 8604270 | 7 | 200 | 300 | 7 |
| 8604271 | 7,1 | 200 | 300 | 7,1 |
| 8604272 | 7,2 | 200 | 300 | 7,2 |
| 8604273 | 7,3 | 200 | 300 | 7,3 |
| 8604274 | 7,4 | 200 | 300 | 7,4 |
| 8604275 | 7,5 | 200 | 300 | 7,5 |
| 8604276 | 7,6 | 200 | 300 | 7,6 |
| 8604277 | 7,7 | 200 | 300 | 7,7 |
| 8604278 | 7,8 | 200 | 300 | 7,8 |
| 8604279 | 7,9 | 200 | 300 | 7,9 |
| 8604280 | 8 | 200 | 300 | 8 |
| 8604281 | 8,1 | 200 | 300 | 8,1 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

# EX-GDXL-30D

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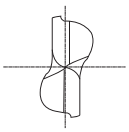
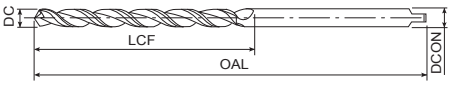
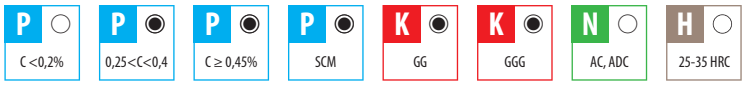
**Drilling | HSS | 30xD**






- HSS-Co drill with TiN coating
- Up to 30xD
- For general purpose steels and cast iron
- 10 sizes



B.508

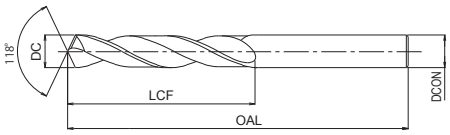
| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|
| 8592030 | 3 | 100 | 200 | 3 |
| 8592031 | 3,1 | 100 | 200 | 3,1 |
| 8592032 | 3,2 | 100 | 200 | 3,2 |
| 8604050 | 5 | 160 | 250 | 5 |
| 8604051 | 5,1 | 160 | 250 | 5,1 |
| 8604052 | 5,2 | 160 | 250 | 5,2 |
| 8604260 | 6 | 200 | 300 | 6 |
| 8604261 | 6,1 | 200 | 300 | 6,1 |
| 8604262 | 6,2 | 200 | 300 | 6,2 |
| 8604263 | 6,3 | 200 | 300 | 6,3 |

| EDP | DC | LCF | OAL | DCON |
|---|---|---|---|---|

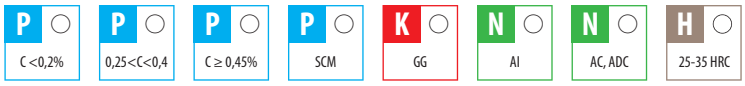
# JOBBER DRILL



**Drilling | Solid carbide | 5xD**




- Carbide drill bright finish
- Up to 5xD
- General purpose
- 125 sizes



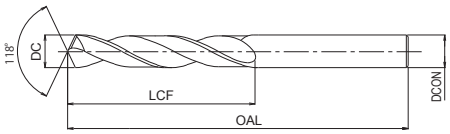
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 71150100 | 1 | - | 15,9 | 38,1 | 1 |
| 71150110 | 1,1 | - | 19,1 | 38,1 | 1,1 |
| 71150120 | 1,2 | - | 19,1 | 38,1 | 1,2 |
| 71150130 | 1,3 | - | 19,1 | 38,1 | 1,3 |
| 71150140 | 1,4 | - | 19,1 | 38,1 | 1,4 |
| 71150150 | 1,5 | - | 19,1 | 38,1 | 1,5 |
| 71150160 | 1,6 | - | 19,1 | 38,1 | 1,6 |
| 71150170 | 1,7 | - | 19,1 | 38,1 | 1,7 |
| 71150180 | 1,8 | - | 22,2 | 44,5 | 1,8 |
| 71150190 | 1,9 | - | 22,2 | 44,5 | 1,9 |
| 71150200 | 2 | - | 22,2 | 44,5 | 2 |
| 71150210 | 2,1 | - | 22,2 | 44,5 | 2,1 |
| 71150220 | 2,2 | - | 25,4 | 50,8 | 2,2 |
| 71150230 | 2,3 | - | 25,4 | 50,8 | 2,3 |
| 71150238 | 2,38 | 3/32 | 25,4 | 50,8 | 2,38 |
| 71150240 | 2,4 | - | 25,4 | 50,8 | 2,4 |
| 71150250 | 2,5 | - | 25,4 | 50,8 | 2,5 |
| 71150260 | 2,6 | - | 31,8 | 57,2 | 2,6 |
| 71150270 | 2,7 | - | 31,8 | 57,2 | 2,7 |
| 71150278 | 2,78 | 7/64 | 31,8 | 57,2 | 2,78 |
| 71150280 | 2,8 | - | 31,8 | 57,2 | 2,8 |
| 71150290 | 2,9 | - | 31,8 | 57,2 | 2,9 |
| 71150300 | 3 | - | 31,8 | 57,2 | 3 |
| 71150310 | 3,1 | - | 31,8 | 57,2 | 3,1 |
| 71150317 | 3,17 | 1/8 | 31,8 | 57,2 | 3,17 |
| 71150320 | 3,2 | - | 31,8 | 57,2 | 3,2 |
| 71150330 | 3,3 | - | 31,8 | 57,2 | 3,3 |
| 71150340 | 3,4 | - | 34,9 | 63,5 | 3,4 |
| 71150350 | 3,5 | - | 34,9 | 63,5 | 3,5 |
| 71150357 | 3,57 | 9/64 | 34,9 | 63,5 | 3,57 |
| 71150360 | 3,6 | - | 34,9 | 63,5 | 3,6 |
| 71150370 | 3,7 | - | 34,9 | 63,5 | 3,7 |
| 71150380 | 3,8 | - | 34,9 | 63,5 | 3,8 |
| 71150390 | 3,9 | - | 34,9 | 63,5 | 3,9 |
| 71150397 | 3,97 | 5/32 | 34,9 | 63,5 | 3,97 |
| 71150400 | 4 | - | 34,9 | 63,5 | 4 |
| 71150410 | 4,1 | - | 34,9 | 63,5 | 4,1 |
| 71150420 | 4,2 | - | 41,3 | 69,9 | 4,2 |
| 71150430 | 4,3 | - | 41,3 | 69,9 | 4,3 |
| 71150437 | 4,37 | 11/64 | 41,3 | 69,9 | 4,37 |
| 71150440 | 4,4 | - | 41,3 | 69,9 | 4,4 |
| 71150450 | 4,5 | - | 41,3 | 69,9 | 4,5 |
| 71150460 | 4,6 | - | 41,3 | 69,9 | 4,6 |
| 71150470 | 4,7 | - | 41,3 | 69,9 | 4,7 |
| 71150476 | 4,76 | 3/16 | 41,3 | 69,9 | 4,76 |
| 71150480 | 4,8 | - | 41,3 | 69,9 | 4,8 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 71150490 | 4,9 | - | 41,3 | 69,9 | 4,9 |
| 71150500 | 5 | - | 44,5 | 76,2 | 5 |
| 71150510 | 5,1 | - | 44,5 | 76,2 | 5,1 |
| 71150520 | 5,2 | - | 44,5 | 76,2 | 5,2 |
| 71150530 | 5,3 | - | 44,5 | 76,2 | 5,3 |
| 71150540 | 5,4 | - | 44,5 | 76,2 | 5,4 |
| 71150550 | 5,5 | - | 44,5 | 76,2 | 5,5 |
| 71150560 | 5,6 | - | 44,5 | 76,2 | 5,6 |
| 71150570 | 5,7 | - | 44,5 | 76,2 | 5,7 |
| 71150580 | 5,8 | - | 44,5 | 76,2 | 5,8 |
| 71150590 | 5,9 | - | 50,8 | 82,6 | 5,9 |
| 71150600 | 6 | - | 50,8 | 82,6 | 6 |
| 71150610 | 6,1 | - | 50,8 | 82,6 | 6,1 |
| 71150620 | 6,2 | - | 50,8 | 82,6 | 6,2 |
| 71150630 | 6,3 | - | 50,8 | 82,6 | 6,3 |
| 71150635 | 6,35 | 1/4 | 50,8 | 82,6 | 6,35 |
| 71150640 | 6,4 | - | 50,8 | 82,6 | 6,4 |
| 71150650 | 6,5 | - | 50,8 | 82,6 | 6,5 |
| 71150660 | 6,6 | - | 54 | 88,9 | 6,6 |
| 71150670 | 6,7 | - | 54 | 88,9 | 6,7 |
| 71150680 | 6,8 | - | 54 | 88,9 | 6,8 |
| 71150690 | 6,9 | - | 54 | 88,9 | 6,9 |
| 71150700 | 7 | - | 54 | 88,9 | 7 |
| 71150710 | 7,1 | - | 54 | 88,9 | 7,1 |
| 71150714 | 7,14 | 9/32 | 54 | 88,9 | 7,14 |
| 71150720 | 7,2 | - | 54 | 88,9 | 7,2 |
| 71150730 | 7,3 | - | 54 | 88,9 | 7,3 |
| 71150740 | 7,4 | - | 54 | 88,9 | 7,4 |
| 71150750 | 7,5 | - | 60,3 | 95,3 | 7,5 |
| 71150760 | 7,6 | - | 60,3 | 95,3 | 7,6 |
| 71150770 | 7,7 | - | 60,3 | 95,3 | 7,7 |
| 71150780 | 7,8 | - | 60,3 | 95,3 | 7,8 |
| 71150790 | 7,9 | - | 60,3 | 95,3 | 7,9 |
| 71150794 | 7,94 | 5/16 | 60,3 | 95,3 | 7,94 |
| 71150800 | 8 | - | 60,3 | 95,3 | 8 |
| 71150810 | 8,1 | - | 60,3 | 95,3 | 8,1 |
| 71150820 | 8,2 | - | 60,3 | 95,3 | 8,2 |
| 71150830 | 8,3 | - | 36,5 | 101,6 | 8,3 |
| 71150840 | 8,4 | - | 36,5 | 101,6 | 8,4 |
| 71150850 | 8,5 | - | 36,5 | 101,6 | 8,5 |
| 71150860 | 8,6 | - | 36,5 | 101,6 | 8,6 |
| 71150870 | 8,7 | - | 36,5 | 101,6 | 8,7 |
| 71150873 | 8,73 | 11/32 | 36,5 | 101,6 | 8,73 |
| 71150880 | 8,8 | - | 36,5 | 101,6 | 8,8 |
| 71150890 | 8,9 | - | 36,5 | 101,6 | 8,9 |
| 71150900 | 9 | - | 36,5 | 101,6 | 9 |

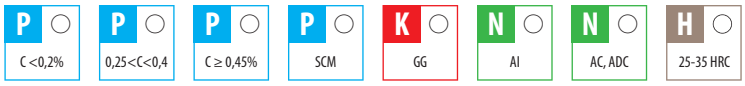
# JOBBER DRILL



**Drilling | Solid carbide | 5xD**




- Carbide drill bright finish
- Up to 5xD
- General purpose
- 125 sizes



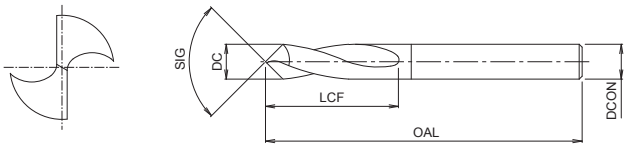
| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 71150910 | 9,1 | - | 36,5 | 101,6 | 9,1 |
| 71150920 | 9,2 | - | 69,9 | 108 | 9,2 |
| 71150930 | 9,3 | - | 69,9 | 108 | 9,3 |
| 71150940 | 9,4 | - | 69,9 | 108 | 9,4 |
| 71150950 | 9,5 | - | 69,9 | 108 | 9,5 |
| 71150960 | 9,6 | - | 69,9 | 108 | 9,6 |
| 71150970 | 9,7 | - | 73 | 114,3 | 9,7 |
| 71150980 | 9,8 | - | 73 | 114,3 | 9,8 |
| 71150990 | 9,9 | - | 73 | 114,3 | 9,9 |
| 71151000 | 10 | - | 73 | 114,3 | 10 |
| 71151010 | 10,1 | - | 73 | 114,3 | 10,1 |
| 71151020 | 10,2 | - | 73 | 114,3 | 10,2 |
| 71151030 | 10,3 | - | 73 | 114,3 | 10,3 |
| 71151040 | 10,4 | - | 73 | 114,3 | 10,4 |
| 71151050 | 10,5 | - | 73 | 114,3 | 10,5 |
| 71151060 | 10,6 | - | 73 | 114,3 | 10,6 |
| 71151070 | 10,7 | - | 73 | 114,3 | 10,7 |
| 71151080 | 10,8 | - | 73 | 114,3 | 10,8 |
| 71151090 | 10,9 | - | 73 | 114,3 | 10,9 |
| 71151100 | 11 | - | 73 | 114,3 | 11 |
| 71151110 | 11,1 | - | 73 | 114,3 | 11,1 |
| 71151111 | 11,11 | 7/16 | 73 | 114,3 | 11,11 |
| 71151120 | 11,2 | - | 76,2 | 120,7 | 11,2 |
| 71151130 | 11,3 | - | 76,2 | 120,7 | 11,3 |
| 71151140 | 11,4 | - | 76,2 | 120,7 | 11,4 |
| 71151150 | 11,5 | - | 76,2 | 120,7 | 11,5 |
| 71151160 | 11,6 | - | 76,2 | 120,7 | 11,6 |
| 71151170 | 11,7 | - | 76,2 | 120,7 | 11,7 |
| 71151180 | 11,8 | - | 76,2 | 120,7 | 11,8 |
| 71151190 | 11,9 | - | 76,2 | 120,7 | 11,9 |
| 71151191 | 11,91 | 15/32 | 76,2 | 120,7 | 11,91 |
| 71151200 | 12 | - | 76,2 | 120,7 | 12 |
| 71151270 | 12,7 | 1/2 | 76,2 | 120,7 | 12,7 |

| EDP | DC | DC Inch | LCF | OAL | DCON |
|---|---|---|---|---|---|

# AD-LDS



**Drilling | Solid carbide | Centering**




- Carbide drill with EgiAs coating
- Carbide starter drill
- 30 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC

A | CARBIDE | EgiAs | h7 | 12° | 25° | 60° | 90° | 120° | 140°

B.511

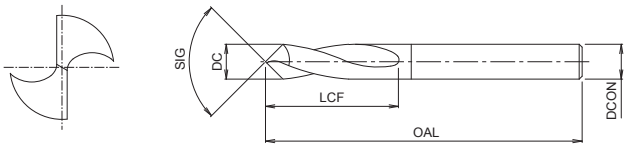
| EDP | DC | SIG | LCF | OAL | DCON | min. drill hole dia. |
|---|---|---|---|---|---|---|
| 8688930 | 0,5 | 90 | 1 | 38 | 3 | 0,25 |
| 8688963 | 0,5 | 140 | 1 | 38 | 3 | - |
| 8688931 | 1 | 90 | 1,8 | 38 | 3 | 0,4 |
| 8688964 | 1 | 140 | 1,8 | 38 | 3 | - |
| 8688932 | 2 | 90 | 2,5 | 38 | 3 | 1 |
| 8688965 | 2 | 140 | 2,5 | 38 | 3 | - |
| 8688951 | 3 | 60 | 9 | 48 | 3 | 1,2 |
| 8688933 | 3 | 90 | 9 | 48 | 3 | 0,7 |
| 8688957 | 3 | 120 | 9 | 48 | 3 | - |
| 8688966 | 3 | 140 | 9 | 48 | 3 | - |
| 8688952 | 4 | 60 | 12 | 54 | 4 | 1,5 |
| 8688934 | 4 | 90 | 12 | 54 | 4 | 1,5 |
| 8688958 | 4 | 120 | 12 | 54 | 4 | - |
| 8688967 | 4 | 140 | 12 | 54 | 4 | - |
| 8688953 | 6 | 60 | 15 | 72 | 6 | 1,9 |
| 8688935 | 6 | 90 | 15 | 72 | 6 | 1,9 |
| 8688959 | 6 | 120 | 15 | 72 | 6 | - |
| 8688968 | 6 | 140 | 15 | 72 | 6 | - |
| 8688954 | 8 | 60 | 20 | 81 | 8 | 2,1 |
| 8688936 | 8 | 90 | 20 | 81 | 8 | 2,1 |
| 8688960 | 8 | 120 | 20 | 81 | 8 | - |
| 8688969 | 8 | 140 | 20 | 81 | 8 | - |
| 8688955 | 10 | 60 | 24 | 93 | 10 | 2,5 |
| 8688937 | 10 | 90 | 24 | 93 | 10 | 2,5 |
| 8688961 | 10 | 120 | 24 | 93 | 10 | - |
| 8688970 | 10 | 140 | 24 | 93 | 10 | - |
| 8688956 | 12 | 60 | 28 | 108 | 12 | 2,5 |
| 8688938 | 12 | 90 | 28 | 108 | 12 | 2,5 |
| 8688962 | 12 | 120 | 28 | 108 | 12 | - |
| 8688971 | 12 | 140 | 28 | 108 | 12 | - |

| EDP | DC | SIG | LCF | OAL | DCON | min. drill hole dia. |
|---|---|---|---|---|---|---|

# AD-LS-LDS

INDEX

**Drilling | Solid carbide | Centering**




- Carbide drill with EgiAs coating
- Carbide long shank starter drill
- 6 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N Al | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC

A | CARBIDE | EgiAs | h7 | 12° | 90°

B.511

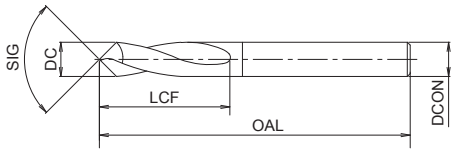
| EDP | DC | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|
| 8688942 | 3 | 9 | 75 | 3 | 1,20 |
| 8688943 | 4 | 12 | 100 | 4 | 1,50 |
| 8688944 | 6 | 15 | 150 | 6 | 1,90 |
| 8688945 | 8 | 20 | 150 | 8 | 2,10 |
| 8688946 | 10 | 24 | 200 | 10 | 2,50 |
| 8688947 | 12 | 28 | 200 | 12 | 2,50 |

| EDP | DC | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|

# HYP-LDS



**Drilling | Spotting & Chamfering | Centering**




- Carbide drill for centring and chamfering , bright finish
- With 90°, 120° or 142° point angle
- For steels and cast iron
- 24 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | K GG | K GGG | N AC, ADC | S Ti | S Ni | H 25-35 HRC | H 35-45 HRC

HYPRO | CARBIDE | 20° | h6 | 90° | 120° | 142°

B.509

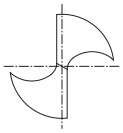
| EDP | DC | SIG | LCF | OAL | DCON |
|---|---|---|---|---|---|
| 20900300 | 3 | 90 | 8 | 35 | 3 |
| 21200300 | 3 | 120 | 8 | 35 | 3 |
| 21420300 | 3 | 142 | 8 | 35 | 3 |
| 20900400 | 4 | 90 | 10 | 40 | 4 |
| 21200400 | 4 | 120 | 10 | 40 | 4 |
| 21420400 | 4 | 142 | 10 | 40 | 4 |
| 20900600 | 6 | 90 | 16 | 50 | 6 |
| 21200600 | 6 | 120 | 16 | 50 | 6 |
| 21420600 | 6 | 142 | 16 | 50 | 6 |
| 20900800 | 8 | 90 | 23 | 60 | 8 |
| 21200800 | 8 | 120 | 23 | 60 | 8 |
| 21420800 | 8 | 142 | 23 | 60 | 8 |
| 20901000 | 10 | 90 | 24 | 70 | 10 |
| 21201000 | 10 | 120 | 24 | 70 | 10 |
| 21421000 | 10 | 142 | 24 | 70 | 10 |
| 20901200 | 12 | 90 | 25 | 70 | 12 |
| 21201200 | 12 | 120 | 25 | 70 | 12 |
| 21421200 | 12 | 142 | 25 | 70 | 12 |
| 20901600 | 16 | 90 | 30 | 80 | 16 |
| 21201600 | 16 | 120 | 30 | 80 | 16 |
| 21421600 | 16 | 142 | 30 | 80 | 16 |
| 20902000 | 20 | 90 | 35 | 100 | 20 |
| 21202000 | 20 | 120 | 35 | 100 | 20 |
| 21422000 | 20 | 142 | 35 | 100 | 20 |

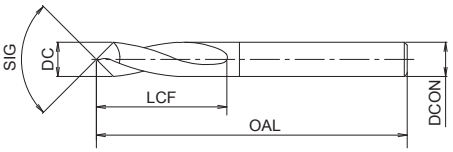
| EDP | DC | SIG | LCF | OAL | DCON |
|---|---|---|---|---|---|

# TIN-NC-LDS

INDEX

**Drilling | Spotting & Chamfering | Centering**






- HSS drill for centring and chamfering with TiN coating
- With 60°, 90° or 120° point angle
- For steels and cast iron
- 21 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | K GGG | N AC, ADC | S Ti | H 25-35 HRC

HSS | TiN | 20° | h7 | 60° | 90° | 120°

B.509

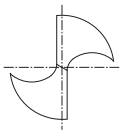
| EDP | DC | SIG | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|---|
| 63603 | 3 | 90 | 11 | 48 | 3 | 1,10 |
| 63653 | 3 | 120 | 11 | 48 | 3 | - |
| 63703 | 3 | 60 | 11 | 48 | 3 | 1,50 |
| 63604 | 4 | 90 | 15 | 54 | 4 | 1,30 |
| 63654 | 4 | 120 | 15 | 54 | 4 | - |
| 63704 | 4 | 60 | 15 | 54 | 4 | 1,70 |
| 63606 | 6 | 90 | 20 | 72 | 6 | 1,50 |
| 63656 | 6 | 120 | 20 | 72 | 6 | - |
| 63706 | 6 | 60 | 20 | 72 | 6 | 1,90 |
| 63608 | 8 | 90 | 26 | 81 | 8 | 1,60 |
| 63658 | 8 | 120 | 26 | 81 | 8 | - |
| 63708 | 8 | 60 | 26 | 81 | 8 | 1,90 |
| 63610 | 10 | 90 | 30 | 93 | 10 | 2,10 |
| 63660 | 10 | 120 | 30 | 93 | 10 | - |
| 63710 | 10 | 60 | 30 | 93 | 10 | 2,10 |
| 63612 | 12 | 90 | 36 | 108 | 12 | 2,10 |
| 63662 | 12 | 120 | 36 | 108 | 12 | - |
| 63712 | 12 | 60 | 36 | 108 | 12 | 2,10 |
| 63616 | 16 | 90 | 41 | 118 | 16 | 3 |
| 63618 | 20 | 90 | 53 | 132 | 20 | 3 |
| 63620 | 25 | 90 | 60 | 151 | 25 | 3 |

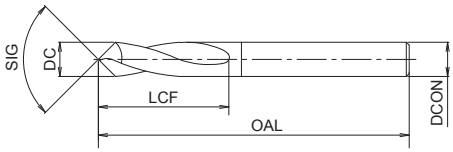
| EDP | DC | SIG | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|---|

# NC-LDS

INDEX

**Drilling | Spotting & Chamfering | Centering**






- HSS drill for centring and chamfering, bright finish
- With 90°, 120° or 130° point angle
- For steels and cast iron
- 27 sizes

B.509

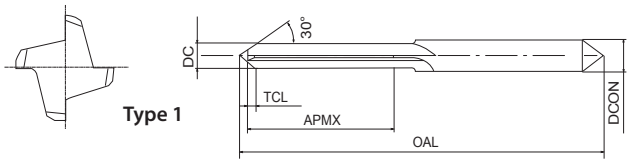
| EDP | DC | SIG | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|---|
| 62903 | 3 | 90 | 11 | 48 | 3 | 1,10 |
| 62923 | 3 | 120 | 11 | 48 | 3 | - |
| 62943 | 3 | 130 | 11 | 48 | 3 | - |
| 62904 | 4 | 90 | 15 | 54 | 4 | 1,30 |
| 62924 | 4 | 120 | 15 | 54 | 4 | - |
| 62944 | 4 | 130 | 15 | 54 | 4 | - |
| 62906 | 6 | 90 | 20 | 72 | 6 | 1,50 |
| 62926 | 6 | 120 | 20 | 72 | 6 | - |
| 62946 | 6 | 130 | 20 | 72 | 6 | - |
| 62908 | 8 | 90 | 26 | 81 | 8 | 1,60 |
| 62928 | 8 | 120 | 26 | 81 | 8 | - |
| 62948 | 8 | 130 | 26 | 81 | 8 | - |
| 62910 | 10 | 90 | 30 | 93 | 10 | 2,10 |
| 62930 | 10 | 120 | 30 | 93 | 10 | - |
| 62950 | 10 | 130 | 30 | 93 | 10 | - |
| 62912 | 12 | 90 | 36 | 108 | 12 | 2,10 |
| 62932 | 12 | 120 | 36 | 108 | 12 | - |
| 62952 | 12 | 130 | 36 | 108 | 12 | - |
| 62916 | 16 | 90 | 41 | 118 | 16 | 3 |
| 62936 | 16 | 120 | 41 | 118 | 16 | - |
| 62956 | 16 | 130 | 41 | 118 | 16 | - |
| 62918 | 20 | 90 | 53 | 132 | 20 | 3 |
| 62938 | 20 | 120 | 53 | 132 | 20 | - |
| 62958 | 20 | 130 | 53 | 132 | 20 | - |
| 62920 | 25 | 90 | 60 | 151 | 25 | 3 |
| 62940 | 25 | 120 | 60 | 151 | 25 | - |
| 62960 | 25 | 130 | 60 | 151 | 25 | - |

| EDP | DC | SIG | LCF | OAL | DCON | Min drill hole dia. |
|---|---|---|---|---|---|---|

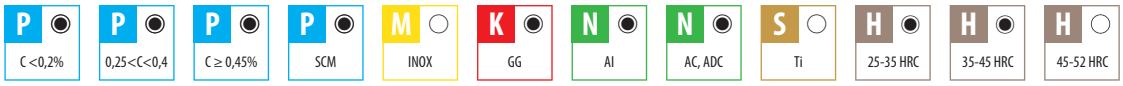
# CRM

## Carbide reamers

INDEX




- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes



B.512

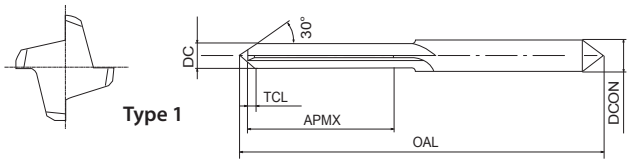
| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900030 | 0,3 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900031 | 0,31 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900032 | 0,32 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900033 | 0,33 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900034 | 0,34 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900035 | 0,35 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900036 | 0,36 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900037 | 0,37 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900038 | 0,38 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900039 | 0,39 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900040 | 0,4 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900041 | 0,41 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900042 | 0,42 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900043 | 0,43 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900044 | 0,44 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900045 | 0,45 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900046 | 0,46 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900047 | 0,47 | 50 | 4 | 0,1 | 2 | 4 | 1 |
| 8900048 | 0,48 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900049 | 0,49 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900050 | 0,5 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900051 | 0,51 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900052 | 0,52 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900053 | 0,53 | 50 | 5 | 0,1 | 2 | 4 | 1 |
| 8900054 | 0,54 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900055 | 0,55 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900056 | 0,56 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900057 | 0,57 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900058 | 0,58 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900059 | 0,59 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900060 | 0,6 | 50 | 6 | 0,1 | 2 | 4 | 1 |
| 8900061 | 0,61 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900062 | 0,62 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900063 | 0,63 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900064 | 0,64 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900065 | 0,65 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900066 | 0,66 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900067 | 0,67 | 50 | 8 | 0,1 | 2 | 4 | 1 |
| 8900068 | 0,68 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900069 | 0,69 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900070 | 0,7 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900071 | 0,71 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900072 | 0,72 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900073 | 0,73 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900074 | 0,74 | 50 | 10 | 0,1 | 2 | 4 | 1 |
| 8900075 | 0,75 | 50 | 10 | 0,1 | 2 | 4 | 1 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900076 | 0,76 | 50 | 12 | 0,1 | 2 | 4 | 1 |
| 8900077 | 0,77 | 50 | 12 | 0,1 | 2 | 4 | 1 |
| 8900078 | 0,78 | 50 | 12 | 0,1 | 2 | 4 | 1 |
| 8900079 | 0,79 | 50 | 12 | 0,1 | 2 | 4 | 1 |
| 8900080 | 0,8 | 50 | 12 | 0,1 | 2 | 4 | 1 |
| 8900081 | 0,81 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900082 | 0,82 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900083 | 0,83 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900084 | 0,84 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900085 | 0,85 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900086 | 0,86 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900087 | 0,87 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900088 | 0,88 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900089 | 0,89 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900090 | 0,9 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900091 | 0,91 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900092 | 0,92 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900093 | 0,93 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900094 | 0,94 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900095 | 0,95 | 50 | 12 | 0,2 | 2 | 4 | 1 |
| 8900096 | 0,96 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900097 | 0,97 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900098 | 0,98 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900099 | 0,99 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900100 | 1 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900101 | 1,01 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900102 | 1,02 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900103 | 1,03 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900104 | 1,04 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900105 | 1,05 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900106 | 1,06 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900107 | 1,07 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900108 | 1,08 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900109 | 1,09 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900110 | 1,1 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900111 | 1,11 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900112 | 1,12 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900113 | 1,13 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900114 | 1,14 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900115 | 1,15 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900116 | 1,16 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900117 | 1,17 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900118 | 1,18 | 50 | 14 | 0,2 | 2 | 4 | 1 |
| 8900119 | 1,19 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900120 | 1,2 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900121 | 1,21 | 50 | 16 | 0,2 | 2 | 4 | 1 |

# CRM



## Carbide reamers




Type 1

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

| P | P | P | P | M | K | N | N | S | H | H | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | Al | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

CARBIDE | 0~+0.005 | h6

B.512

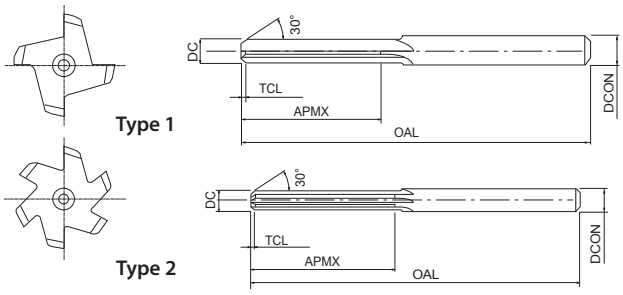
| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900122 | 1,22 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900123 | 1,23 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900124 | 1,24 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900125 | 1,25 | 50 | 16 | 0,2 | 2 | 4 | 1 |
| 8900126 | 1,26 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900127 | 1,27 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900128 | 1,28 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900129 | 1,29 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900130 | 1,3 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900131 | 1,31 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900132 | 1,32 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900133 | 1,33 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900134 | 1,34 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900135 | 1,35 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900136 | 1,36 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900137 | 1,37 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900138 | 1,38 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900139 | 1,39 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900140 | 1,4 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900141 | 1,41 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900142 | 1,42 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900143 | 1,43 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900144 | 1,44 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900145 | 1,45 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900146 | 1,46 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900147 | 1,47 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900148 | 1,48 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900149 | 1,49 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900150 | 1,5 | 50 | 16 | 0,3 | 2 | 4 | 1 |
| 8900151 | 1,51 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900152 | 1,52 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900153 | 1,53 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900154 | 1,54 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900155 | 1,55 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900156 | 1,56 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900157 | 1,57 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900158 | 1,58 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900159 | 1,59 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900160 | 1,6 | 50 | 18 | 0,3 | 2 | 4 | 1 |
| 8900161 | 1,61 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900162 | 1,62 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900163 | 1,63 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900164 | 1,64 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900165 | 1,65 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900166 | 1,66 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900167 | 1,67 | 50 | 18 | 0,4 | 2 | 4 | 1 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900168 | 1,68 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900169 | 1,69 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900170 | 1,7 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900171 | 1,71 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900172 | 1,72 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900173 | 1,73 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900174 | 1,74 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900175 | 1,75 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900176 | 1,76 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900177 | 1,77 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900178 | 1,78 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900179 | 1,79 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900180 | 1,8 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900181 | 1,81 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900182 | 1,82 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900183 | 1,83 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900184 | 1,84 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900185 | 1,85 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900186 | 1,86 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900187 | 1,87 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900188 | 1,88 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900189 | 1,89 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900190 | 1,9 | 50 | 18 | 0,4 | 2 | 4 | 1 |
| 8900191 | 1,91 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900192 | 1,92 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900193 | 1,93 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900194 | 1,94 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900195 | 1,95 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900196 | 1,96 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900197 | 1,97 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900198 | 1,98 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900199 | 1,99 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900200 | 2 | 50 | 20 | 0,4 | 2 | 4 | 1 |
| 8900201 | 2,01 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900202 | 2,02 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900203 | 2,03 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900204 | 2,04 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900205 | 2,05 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900206 | 2,06 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900207 | 2,07 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900208 | 2,08 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900209 | 2,09 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900210 | 2,1 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900211 | 2,11 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900212 | 2,12 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900213 | 2,13 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |

# CRM

INDEX

## Carbide reamers




- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

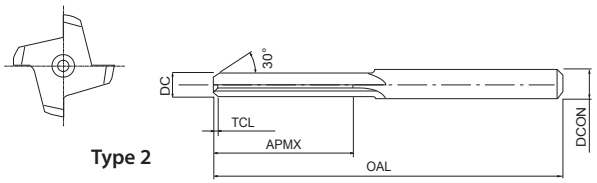
| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900214 | 2,14 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900215 | 2,15 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900216 | 2,16 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900217 | 2,17 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900218 | 2,18 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900219 | 2,19 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900220 | 2,2 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900221 | 2,21 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900222 | 2,22 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900223 | 2,23 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900224 | 2,24 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900225 | 2,25 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900226 | 2,26 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900227 | 2,27 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900228 | 2,28 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900229 | 2,29 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900230 | 2,3 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900231 | 2,31 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900232 | 2,32 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900233 | 2,33 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900234 | 2,34 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900235 | 2,35 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900236 | 2,36 | 50 | 20 | 0,5 | 2,5 | 4 | 1 |
| 8900237 | 2,37 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900238 | 2,38 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900239 | 2,39 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900240 | 2,4 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900241 | 2,41 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900242 | 2,42 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900243 | 2,43 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900244 | 2,44 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900245 | 2,45 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900246 | 2,46 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900247 | 2,47 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900248 | 2,48 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900249 | 2,49 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900250 | 2,5 | 50 | 22 | 0,5 | 2,5 | 4 | 1 |
| 8900251 | 2,51 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900252 | 2,52 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900253 | 2,53 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900254 | 2,54 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900255 | 2,55 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900256 | 2,56 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900257 | 2,57 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900258 | 2,58 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900259 | 2,59 | 60 | 22 | 0,6 | 3 | 4 | 1 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900260 | 2,6 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900261 | 2,61 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900262 | 2,62 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900263 | 2,63 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900264 | 2,64 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900265 | 2,65 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900266 | 2,66 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900267 | 2,67 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900268 | 2,68 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900269 | 2,69 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900270 | 2,7 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900271 | 2,71 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900272 | 2,72 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900273 | 2,73 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900274 | 2,74 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900275 | 2,75 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900276 | 2,76 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900277 | 2,77 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900278 | 2,78 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900279 | 2,79 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900280 | 2,8 | 60 | 22 | 0,6 | 3 | 4 | 1 |
| 8900281 | 2,81 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900282 | 2,82 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900283 | 2,83 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900284 | 2,84 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900285 | 2,85 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900286 | 2,86 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900287 | 2,87 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900288 | 2,88 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900289 | 2,89 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900290 | 2,9 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900291 | 2,91 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900292 | 2,92 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900293 | 2,93 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900294 | 2,94 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900295 | 2,95 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900296 | 2,96 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900297 | 2,97 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900298 | 2,98 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900299 | 2,99 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900300 | 3 | 60 | 25 | 0,6 | 3 | 4 | 1 |
| 8900301 | 3,01 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900302 | 3,02 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900303 | 3,03 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900304 | 3,04 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900305 | 3,05 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |

# CRM



## Carbide reamers




Type 2

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

| P | P | P | P | M | K | N | N | S | H | H | H |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C <0,2% | 0,25<C<0,4 | C ≥ 0,45% | SCM | INOX | GG | Al | AC, ADC | Ti | 25-35 HRC | 35-45 HRC | 45-52 HRC |

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900306 | 3,06 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900307 | 3,07 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900308 | 3,08 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900309 | 3,09 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900310 | 3,1 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900311 | 3,11 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900312 | 3,12 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900313 | 3,13 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900314 | 3,14 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900315 | 3,15 | 60 | 28 | 0,6 | 3,5 | 4 | 2 |
| 8900316 | 3,16 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900317 | 3,17 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900318 | 3,18 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900319 | 3,19 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900320 | 3,2 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900321 | 3,21 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900322 | 3,22 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900323 | 3,23 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900324 | 3,24 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900325 | 3,25 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900326 | 3,26 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900327 | 3,27 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900328 | 3,28 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900329 | 3,29 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900330 | 3,3 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900331 | 3,31 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900332 | 3,32 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900333 | 3,33 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900334 | 3,34 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900335 | 3,35 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900336 | 3,36 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900337 | 3,37 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900338 | 3,38 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900339 | 3,39 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900340 | 3,4 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900341 | 3,41 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900342 | 3,42 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900343 | 3,43 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900344 | 3,44 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900345 | 3,45 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900346 | 3,46 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900347 | 3,47 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900348 | 3,48 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900349 | 3,49 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900350 | 3,5 | 60 | 28 | 0,8 | 3,5 | 4 | 2 |
| 8900351 | 3,51 | 70 | 28 | 0,8 | 4 | 4 | 2 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900352 | 3,52 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900353 | 3,53 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900354 | 3,54 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900355 | 3,55 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900356 | 3,56 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900357 | 3,57 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900358 | 3,58 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900359 | 3,59 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900360 | 3,6 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900361 | 3,61 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900362 | 3,62 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900363 | 3,63 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900364 | 3,64 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900365 | 3,65 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900366 | 3,66 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900367 | 3,67 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900368 | 3,68 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900369 | 3,69 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900370 | 3,7 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900371 | 3,71 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900372 | 3,72 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900373 | 3,73 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900374 | 3,74 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900375 | 3,75 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900376 | 3,76 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900377 | 3,77 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900378 | 3,78 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900379 | 3,79 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900380 | 3,8 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900381 | 3,81 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900382 | 3,82 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900383 | 3,83 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900384 | 3,84 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900385 | 3,85 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900386 | 3,86 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900387 | 3,87 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900388 | 3,88 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900389 | 3,89 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900390 | 3,9 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900391 | 3,91 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900392 | 3,92 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900393 | 3,93 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900394 | 3,94 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900395 | 3,95 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900396 | 3,96 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900397 | 3,97 | 70 | 28 | 0,8 | 4 | 4 | 2 |

# CRM

## Carbide reamers

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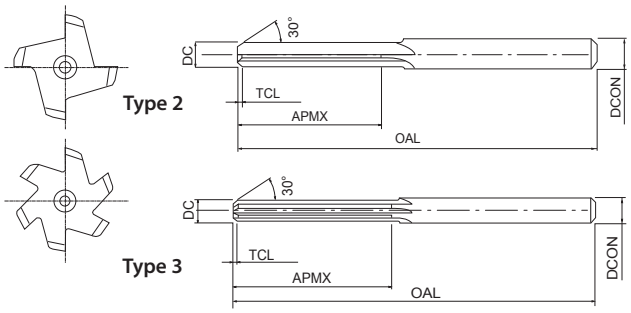


- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900398 | 3,98 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900399 | 3,99 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900400 | 4 | 70 | 28 | 0,8 | 4 | 4 | 2 |
| 8900401 | 4,01 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900402 | 4,02 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900403 | 4,03 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900404 | 4,04 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900405 | 4,05 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900406 | 4,06 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900407 | 4,07 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900408 | 4,08 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900409 | 4,09 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900410 | 4,1 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900411 | 4,11 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900412 | 4,12 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900413 | 4,13 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900414 | 4,14 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900415 | 4,15 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900416 | 4,16 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900417 | 4,17 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900418 | 4,18 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900419 | 4,19 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900420 | 4,2 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900421 | 4,21 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900422 | 4,22 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900423 | 4,23 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900424 | 4,24 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900425 | 4,25 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900426 | 4,26 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900427 | 4,27 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900428 | 4,28 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900429 | 4,29 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900430 | 4,3 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900431 | 4,31 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900432 | 4,32 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900433 | 4,33 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900434 | 4,34 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900435 | 4,35 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900436 | 4,36 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900437 | 4,37 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900438 | 4,38 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900439 | 4,39 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900440 | 4,4 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900441 | 4,41 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900442 | 4,42 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900443 | 4,43 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900444 | 4,44 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900445 | 4,45 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900446 | 4,46 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900447 | 4,47 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900448 | 4,48 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900449 | 4,49 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900450 | 4,5 | 70 | 28 | 0,8 | 4,5 | 6 | 3 |
| 8900451 | 4,51 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900452 | 4,52 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900453 | 4,53 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900454 | 4,54 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900455 | 4,55 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900456 | 4,56 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900457 | 4,57 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900458 | 4,58 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900459 | 4,59 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900460 | 4,6 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900461 | 4,61 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900462 | 4,62 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900463 | 4,63 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900464 | 4,64 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900465 | 4,65 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900466 | 4,66 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900467 | 4,67 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900468 | 4,68 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900469 | 4,69 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900470 | 4,7 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900471 | 4,71 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900472 | 4,72 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900473 | 4,73 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900474 | 4,74 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900475 | 4,75 | 80 | 28 | 0,8 | 5 | 6 | 3 |
| 8900476 | 4,76 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900477 | 4,77 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900478 | 4,78 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900479 | 4,79 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900480 | 4,8 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900481 | 4,81 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900482 | 4,82 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900483 | 4,83 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900484 | 4,84 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900485 | 4,85 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900486 | 4,86 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900487 | 4,87 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900488 | 4,88 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900489 | 4,89 | 80 | 32 | 0,8 | 5 | 6 | 3 |

# CRM

## Carbide reamers

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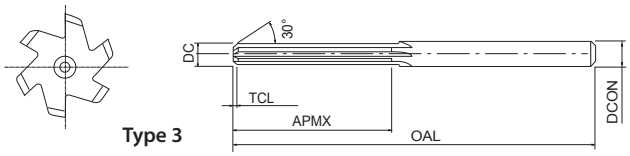


Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | N ◉ Al | N ◉ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ◉ 35-45 HRC | H ○ 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900490 | 4,9 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900491 | 4,91 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900492 | 4,92 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900493 | 4,93 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900494 | 4,94 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900495 | 4,95 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900496 | 4,96 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900497 | 4,97 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900498 | 4,98 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900499 | 4,99 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900500 | 5 | 80 | 32 | 0,8 | 5 | 6 | 3 |
| 8900501 | 5,01 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900502 | 5,02 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900503 | 5,03 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900504 | 5,04 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900505 | 5,05 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900506 | 5,06 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900507 | 5,07 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900508 | 5,08 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900509 | 5,09 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900510 | 5,1 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900511 | 5,11 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900512 | 5,12 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900513 | 5,13 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900514 | 5,14 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900515 | 5,15 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900516 | 5,16 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900517 | 5,17 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900518 | 5,18 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900519 | 5,19 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900520 | 5,2 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900521 | 5,21 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900522 | 5,22 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900523 | 5,23 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900524 | 5,24 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900525 | 5,25 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900526 | 5,26 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900527 | 5,27 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900528 | 5,28 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900529 | 5,29 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900530 | 5,3 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900531 | 5,31 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900532 | 5,32 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900533 | 5,33 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900534 | 5,34 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900535 | 5,35 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900536 | 5,36 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900537 | 5,37 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900538 | 5,38 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900539 | 5,39 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900540 | 5,4 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900541 | 5,41 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900542 | 5,42 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900543 | 5,43 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900544 | 5,44 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900545 | 5,45 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900546 | 5,46 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900547 | 5,47 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900548 | 5,48 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900549 | 5,49 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900550 | 5,5 | 80 | 32 | 0,8 | 5,5 | 6 | 3 |
| 8900551 | 5,51 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900552 | 5,52 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900553 | 5,53 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900554 | 5,54 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900555 | 5,55 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900556 | 5,56 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900557 | 5,57 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900558 | 5,58 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900559 | 5,59 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900560 | 5,6 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900561 | 5,61 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900562 | 5,62 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900563 | 5,63 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900564 | 5,64 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900565 | 5,65 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900566 | 5,66 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900567 | 5,67 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900568 | 5,68 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900569 | 5,69 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900570 | 5,7 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900571 | 5,71 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900572 | 5,72 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900573 | 5,73 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900574 | 5,74 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900575 | 5,75 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900576 | 5,76 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900577 | 5,77 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900578 | 5,78 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900579 | 5,79 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900580 | 5,8 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900581 | 5,81 | 80 | 32 | 0,8 | 6 | 6 | 3 |

# CRM

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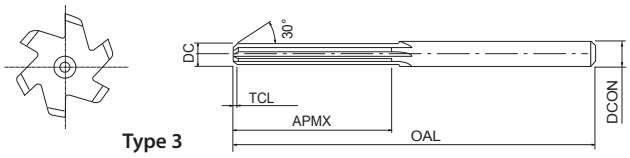
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | N ◉ Al | N ◉ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ◉ 35-45 HRC | H ○ 45-52 HRC

CARBIDE | 0~+0.005 | h6

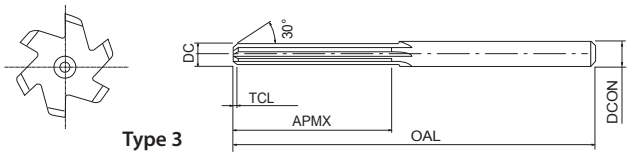
B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900582 | 5,82 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900583 | 5,83 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900584 | 5,84 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900585 | 5,85 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900586 | 5,86 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900587 | 5,87 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900588 | 5,88 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900589 | 5,89 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900590 | 5,9 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900591 | 5,91 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900592 | 5,92 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900593 | 5,93 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900594 | 5,94 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900595 | 5,95 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900596 | 5,96 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900597 | 5,97 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900598 | 5,98 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900599 | 5,99 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900600 | 6 | 80 | 32 | 0,8 | 6 | 6 | 3 |
| 8900601 | 6,01 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900602 | 6,02 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900603 | 6,03 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900604 | 6,04 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900605 | 6,05 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900606 | 6,06 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900607 | 6,07 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900608 | 6,08 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900609 | 6,09 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900610 | 6,1 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900611 | 6,11 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900612 | 6,12 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900613 | 6,13 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900614 | 6,14 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900615 | 6,15 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900616 | 6,16 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900617 | 6,17 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900618 | 6,18 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900619 | 6,19 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900620 | 6,2 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900621 | 6,21 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900622 | 6,22 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900623 | 6,23 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900624 | 6,24 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900625 | 6,25 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900626 | 6,26 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900627 | 6,27 | 80 | 35 | 0,8 | 7 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900628 | 6,28 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900629 | 6,29 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900630 | 6,3 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900631 | 6,31 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900632 | 6,32 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900633 | 6,33 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900634 | 6,34 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900635 | 6,35 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900636 | 6,36 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900637 | 6,37 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900638 | 6,38 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900639 | 6,39 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900640 | 6,4 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900641 | 6,41 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900642 | 6,42 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900643 | 6,43 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900644 | 6,44 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900645 | 6,45 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900646 | 6,46 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900647 | 6,47 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900648 | 6,48 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900649 | 6,49 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900650 | 6,5 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900651 | 6,51 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900652 | 6,52 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900653 | 6,53 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900654 | 6,54 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900655 | 6,55 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900656 | 6,56 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900657 | 6,57 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900658 | 6,58 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900659 | 6,59 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900660 | 6,6 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900661 | 6,61 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900662 | 6,62 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900663 | 6,63 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900664 | 6,64 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900665 | 6,65 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900666 | 6,66 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900667 | 6,67 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900668 | 6,68 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900669 | 6,69 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900670 | 6,7 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900671 | 6,71 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900672 | 6,72 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900673 | 6,73 | 80 | 35 | 0,8 | 7 | 6 | 3 |

# CRM

## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | N ◉ Al | N ◉ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ◉ 35-45 HRC | H ○ 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900674 | 6,74 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900675 | 6,75 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900676 | 6,76 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900677 | 6,77 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900678 | 6,78 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900679 | 6,79 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900680 | 6,8 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900681 | 6,81 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900682 | 6,82 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900683 | 6,83 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900684 | 6,84 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900685 | 6,85 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900686 | 6,86 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900687 | 6,87 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900688 | 6,88 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900689 | 6,89 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900690 | 6,9 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900691 | 6,91 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900692 | 6,92 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900693 | 6,93 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900694 | 6,94 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900695 | 6,95 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900696 | 6,96 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900697 | 6,97 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900698 | 6,98 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900699 | 6,99 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900700 | 7 | 80 | 35 | 0,8 | 7 | 6 | 3 |
| 8900701 | 7,01 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900702 | 7,02 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900703 | 7,03 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900704 | 7,04 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900705 | 7,05 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900706 | 7,06 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900707 | 7,07 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900708 | 7,08 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900709 | 7,09 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900710 | 7,1 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900711 | 7,11 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900712 | 7,12 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900713 | 7,13 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900714 | 7,14 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900715 | 7,15 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900716 | 7,16 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900717 | 7,17 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900718 | 7,18 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900719 | 7,19 | 90 | 35 | 0,8 | 8 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900720 | 7,2 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900721 | 7,21 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900722 | 7,22 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900723 | 7,23 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900724 | 7,24 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900725 | 7,25 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900726 | 7,26 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900727 | 7,27 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900728 | 7,28 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900729 | 7,29 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900730 | 7,3 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900731 | 7,31 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900732 | 7,32 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900733 | 7,33 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900734 | 7,34 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900735 | 7,35 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900736 | 7,36 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900737 | 7,37 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900738 | 7,38 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900739 | 7,39 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900740 | 7,4 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900741 | 7,41 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900742 | 7,42 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900743 | 7,43 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900744 | 7,44 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900745 | 7,45 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900746 | 7,46 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900747 | 7,47 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900748 | 7,48 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900749 | 7,49 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900750 | 7,5 | 90 | 35 | 0,8 | 8 | 6 | 3 |
| 8900751 | 7,51 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900752 | 7,52 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900753 | 7,53 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900754 | 7,54 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900755 | 7,55 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900756 | 7,56 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900757 | 7,57 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900758 | 7,58 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900759 | 7,59 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900760 | 7,6 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900761 | 7,61 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900762 | 7,62 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900763 | 7,63 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900764 | 7,64 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900765 | 7,65 | 90 | 40 | 0,8 | 8 | 6 | 3 |

# CRM

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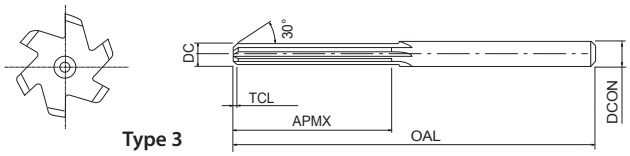
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900766 | 7,66 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900767 | 7,67 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900768 | 7,68 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900769 | 7,69 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900770 | 7,7 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900771 | 7,71 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900772 | 7,72 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900773 | 7,73 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900774 | 7,74 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900775 | 7,75 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900776 | 7,76 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900777 | 7,77 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900778 | 7,78 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900779 | 7,79 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900780 | 7,8 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900781 | 7,81 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900782 | 7,82 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900783 | 7,83 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900784 | 7,84 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900785 | 7,85 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900786 | 7,86 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900787 | 7,87 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900788 | 7,88 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900789 | 7,89 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900790 | 7,9 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900791 | 7,91 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900792 | 7,92 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900793 | 7,93 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900794 | 7,94 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900795 | 7,95 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900796 | 7,96 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900797 | 7,97 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900798 | 7,98 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900799 | 7,99 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900800 | 8 | 90 | 40 | 0,8 | 8 | 6 | 3 |
| 8900801 | 8,01 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900802 | 8,02 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900803 | 8,03 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900804 | 8,04 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900805 | 8,05 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900806 | 8,06 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900807 | 8,07 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900808 | 8,08 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900809 | 8,09 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900810 | 8,1 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900811 | 8,11 | 90 | 40 | 1 | 9 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900812 | 8,12 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900813 | 8,13 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900814 | 8,14 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900815 | 8,15 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900816 | 8,16 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900817 | 8,17 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900818 | 8,18 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900819 | 8,19 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900820 | 8,2 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900821 | 8,21 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900822 | 8,22 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900823 | 8,23 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900824 | 8,24 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900825 | 8,25 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900826 | 8,26 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900827 | 8,27 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900828 | 8,28 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900829 | 8,29 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900830 | 8,3 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900831 | 8,31 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900832 | 8,32 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900833 | 8,33 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900834 | 8,34 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900835 | 8,35 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900836 | 8,36 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900837 | 8,37 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900838 | 8,38 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900839 | 8,39 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900840 | 8,4 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900841 | 8,41 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900842 | 8,42 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900843 | 8,43 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900844 | 8,44 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900845 | 8,45 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900846 | 8,46 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900847 | 8,47 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900848 | 8,48 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900849 | 8,49 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900850 | 8,5 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900851 | 8,51 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900852 | 8,52 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900853 | 8,53 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900854 | 8,54 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900855 | 8,55 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900856 | 8,56 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900857 | 8,57 | 90 | 40 | 1 | 9 | 6 | 3 |

# CRM

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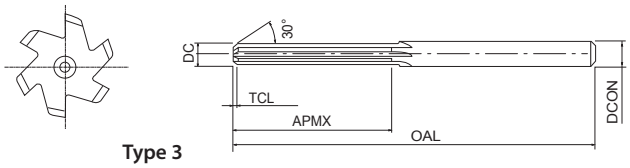
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P ◉ C <0,2% | P ◉ 0,25<C<0,4 | P ◉ C ≥ 0,45% | P ◉ SCM | M ○ INOX | K ◉ GG | N ◉ Al | N ◉ AC, ADC | S ○ Ti | H ◉ 25-35 HRC | H ◉ 35-45 HRC | H ○ 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900858 | 8,58 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900859 | 8,59 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900860 | 8,6 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900861 | 8,61 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900862 | 8,62 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900863 | 8,63 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900864 | 8,64 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900865 | 8,65 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900866 | 8,66 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900867 | 8,67 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900868 | 8,68 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900869 | 8,69 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900870 | 8,7 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900871 | 8,71 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900872 | 8,72 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900873 | 8,73 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900874 | 8,74 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900875 | 8,75 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900876 | 8,76 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900877 | 8,77 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900878 | 8,78 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900879 | 8,79 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900880 | 8,8 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900881 | 8,81 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900882 | 8,82 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900883 | 8,83 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900884 | 8,84 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900885 | 8,85 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900886 | 8,86 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900887 | 8,87 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900888 | 8,88 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900889 | 8,89 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900890 | 8,9 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900891 | 8,91 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900892 | 8,92 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900893 | 8,93 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900894 | 8,94 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900895 | 8,95 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900896 | 8,96 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900897 | 8,97 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900898 | 8,98 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900899 | 8,99 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900900 | 9 | 90 | 40 | 1 | 9 | 6 | 3 |
| 8900901 | 9,01 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900902 | 9,02 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900903 | 9,03 | 100 | 40 | 1 | 10 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900904 | 9,04 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900905 | 9,05 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900906 | 9,06 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900907 | 9,07 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900908 | 9,08 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900909 | 9,09 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900910 | 9,1 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900911 | 9,11 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900912 | 9,12 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900913 | 9,13 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900914 | 9,14 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900915 | 9,15 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900916 | 9,16 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900917 | 9,17 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900918 | 9,18 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900919 | 9,19 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900920 | 9,2 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900921 | 9,21 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900922 | 9,22 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900923 | 9,23 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900924 | 9,24 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900925 | 9,25 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900926 | 9,26 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900927 | 9,27 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900928 | 9,28 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900929 | 9,29 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900930 | 9,3 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900931 | 9,31 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900932 | 9,32 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900933 | 9,33 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900934 | 9,34 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900935 | 9,35 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900936 | 9,36 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900937 | 9,37 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900938 | 9,38 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900939 | 9,39 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900940 | 9,4 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900941 | 9,41 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900942 | 9,42 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900943 | 9,43 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900944 | 9,44 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900945 | 9,45 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900946 | 9,46 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900947 | 9,47 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900948 | 9,48 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900949 | 9,49 | 100 | 40 | 1 | 10 | 6 | 3 |

# CRM

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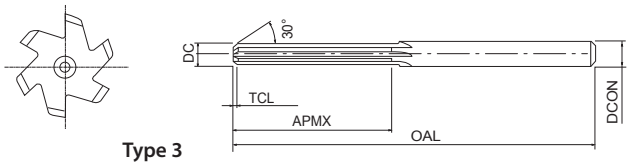
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900950 | 9,5 | 100 | 40 | 1 | 10 | 6 | 3 |
| 8900951 | 9,51 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900952 | 9,52 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900953 | 9,53 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900954 | 9,54 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900955 | 9,55 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900956 | 9,56 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900957 | 9,57 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900958 | 9,58 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900959 | 9,59 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900960 | 9,6 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900961 | 9,61 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900962 | 9,62 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900963 | 9,63 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900964 | 9,64 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900965 | 9,65 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900966 | 9,66 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900967 | 9,67 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900968 | 9,68 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900969 | 9,69 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900970 | 9,7 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900971 | 9,71 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900972 | 9,72 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900973 | 9,73 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900974 | 9,74 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900975 | 9,75 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900976 | 9,76 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900977 | 9,77 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900978 | 9,78 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900979 | 9,79 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900980 | 9,8 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900981 | 9,81 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900982 | 9,82 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900983 | 9,83 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900984 | 9,84 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900985 | 9,85 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900986 | 9,86 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900987 | 9,87 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900988 | 9,88 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900989 | 9,89 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900990 | 9,9 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900991 | 9,91 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900992 | 9,92 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900993 | 9,93 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900994 | 9,94 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900995 | 9,95 | 100 | 45 | 1 | 10 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8900996 | 9,96 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900997 | 9,97 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900998 | 9,98 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8900999 | 9,99 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8901000 | 10 | 100 | 45 | 1 | 10 | 6 | 3 |
| 8901001 | 10,01 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901002 | 10,02 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901003 | 10,03 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901004 | 10,04 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901005 | 10,05 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901006 | 10,06 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901007 | 10,07 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901008 | 10,08 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901009 | 10,09 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901010 | 10,1 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901011 | 10,11 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901012 | 10,12 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901013 | 10,13 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901014 | 10,14 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901015 | 10,15 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901016 | 10,16 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901017 | 10,17 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901018 | 10,18 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901019 | 10,19 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901020 | 10,2 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901021 | 10,21 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901022 | 10,22 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901023 | 10,23 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901024 | 10,24 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901025 | 10,25 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901026 | 10,26 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901027 | 10,27 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901028 | 10,28 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901029 | 10,29 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901030 | 10,3 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901031 | 10,31 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901032 | 10,32 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901033 | 10,33 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901034 | 10,34 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901035 | 10,35 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901036 | 10,36 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901037 | 10,37 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901038 | 10,38 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901039 | 10,39 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901040 | 10,4 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901041 | 10,41 | 100 | 45 | 1 | 11 | 6 | 3 |

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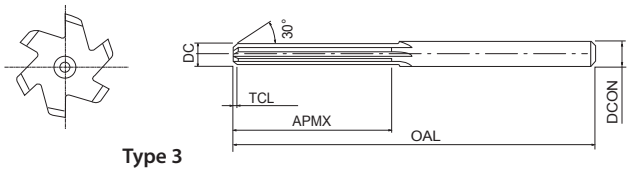
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901042 | 10,42 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901043 | 10,43 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901044 | 10,44 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901045 | 10,45 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901046 | 10,46 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901047 | 10,47 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901048 | 10,48 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901049 | 10,49 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901050 | 10,5 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901051 | 10,51 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901052 | 10,52 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901053 | 10,53 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901054 | 10,54 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901055 | 10,55 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901056 | 10,56 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901057 | 10,57 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901058 | 10,58 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901059 | 10,59 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901060 | 10,6 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901061 | 10,61 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901062 | 10,62 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901063 | 10,63 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901064 | 10,64 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901065 | 10,65 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901066 | 10,66 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901067 | 10,67 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901068 | 10,68 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901069 | 10,69 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901070 | 10,7 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901071 | 10,71 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901072 | 10,72 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901073 | 10,73 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901074 | 10,74 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901075 | 10,75 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901076 | 10,76 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901077 | 10,77 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901078 | 10,78 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901079 | 10,79 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901080 | 10,8 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901081 | 10,81 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901082 | 10,82 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901083 | 10,83 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901084 | 10,84 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901085 | 10,85 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901086 | 10,86 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901087 | 10,87 | 100 | 45 | 1 | 11 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901088 | 10,88 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901089 | 10,89 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901090 | 10,9 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901091 | 10,91 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901092 | 10,92 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901093 | 10,93 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901094 | 10,94 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901095 | 10,95 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901096 | 10,96 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901097 | 10,97 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901098 | 10,98 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901099 | 10,99 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901100 | 11 | 100 | 45 | 1 | 11 | 6 | 3 |
| 8901101 | 11,01 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901102 | 11,02 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901103 | 11,03 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901104 | 11,04 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901105 | 11,05 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901106 | 11,06 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901107 | 11,07 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901108 | 11,08 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901109 | 11,09 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901110 | 11,1 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901111 | 11,11 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901112 | 11,12 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901113 | 11,13 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901114 | 11,14 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901115 | 11,15 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901116 | 11,16 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901117 | 11,17 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901118 | 11,18 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901119 | 11,19 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901120 | 11,2 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901121 | 11,21 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901122 | 11,22 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901123 | 11,23 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901124 | 11,24 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901125 | 11,25 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901126 | 11,26 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901127 | 11,27 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901128 | 11,28 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901129 | 11,29 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901130 | 11,3 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901131 | 11,31 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901132 | 11,32 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901133 | 11,33 | 110 | 45 | 1 | 12 | 6 | 3 |

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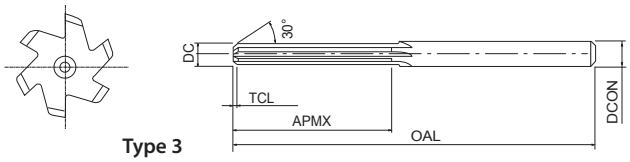
## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

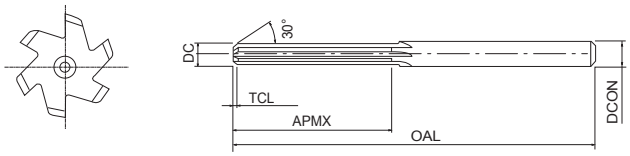
| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901134 | 11,34 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901135 | 11,35 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901136 | 11,36 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901137 | 11,37 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901138 | 11,38 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901139 | 11,39 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901140 | 11,4 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901141 | 11,41 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901142 | 11,42 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901143 | 11,43 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901144 | 11,44 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901145 | 11,45 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901146 | 11,46 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901147 | 11,47 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901148 | 11,48 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901149 | 11,49 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901150 | 11,5 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901151 | 11,51 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901152 | 11,52 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901153 | 11,53 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901154 | 11,54 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901155 | 11,55 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901156 | 11,56 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901157 | 11,57 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901158 | 11,58 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901159 | 11,59 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901160 | 11,6 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901161 | 11,61 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901162 | 11,62 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901163 | 11,63 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901164 | 11,64 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901165 | 11,65 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901166 | 11,66 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901167 | 11,67 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901168 | 11,68 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901169 | 11,69 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901170 | 11,7 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901171 | 11,71 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901172 | 11,72 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901173 | 11,73 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901174 | 11,74 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901175 | 11,75 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901176 | 11,76 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901177 | 11,77 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901178 | 11,78 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901179 | 11,79 | 110 | 45 | 1 | 12 | 6 | 3 |

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901180 | 11,8 | 110 | 45 | 1 | 12 | 6 | 3 |
| 8901181 | 11,81 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901182 | 11,82 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901183 | 11,83 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901184 | 11,84 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901185 | 11,85 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901186 | 11,86 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901187 | 11,87 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901188 | 11,88 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901189 | 11,89 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901190 | 11,9 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901191 | 11,91 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901192 | 11,92 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901193 | 11,93 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901194 | 11,94 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901195 | 11,95 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901196 | 11,96 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901197 | 11,97 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901198 | 11,98 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901199 | 11,99 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901200 | 12 | 110 | 50 | 1 | 12 | 6 | 3 |
| 8901201 | 12,01 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901202 | 12,02 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901203 | 12,03 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901204 | 12,04 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901205 | 12,05 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901206 | 12,06 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901207 | 12,07 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901208 | 12,08 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901209 | 12,09 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901210 | 12,1 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901211 | 12,11 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901212 | 12,12 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901213 | 12,13 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901214 | 12,14 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901215 | 12,15 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901216 | 12,16 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901217 | 12,17 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901218 | 12,18 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901219 | 12,19 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901220 | 12,2 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901221 | 12,21 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901222 | 12,22 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901223 | 12,23 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901224 | 12,24 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901225 | 12,25 | 110 | 50 | 1 | 13 | 6 | 3 |

# CRM

INDEX

## Carbide reamers




Type 3

- First choice in quality and performance
- Carbide straight reamer, bright finish
- From Ø 0,3 - 13,05 mm in 0,01 mm increments
- 1276 sizes

P C <0,2% | P 0,25<C<0,4 | P C ≥ 0,45% | P SCM | M INOX | K GG | N Al | N AC, ADC | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC

CARBIDE | 0~+0.005 | h6

B.512

| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901226 | 12,26 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901227 | 12,27 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901228 | 12,28 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901229 | 12,29 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901230 | 12,3 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901231 | 12,31 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901232 | 12,32 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901233 | 12,33 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901234 | 12,34 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901235 | 12,35 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901236 | 12,36 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901237 | 12,37 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901238 | 12,38 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901239 | 12,39 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901240 | 12,4 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901241 | 12,41 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901242 | 12,42 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901243 | 12,43 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901244 | 12,44 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901245 | 12,45 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901246 | 12,46 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901247 | 12,47 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901248 | 12,48 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901249 | 12,49 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901250 | 12,5 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901251 | 12,51 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901252 | 12,52 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901253 | 12,53 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901254 | 12,54 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901255 | 12,55 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901256 | 12,56 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901257 | 12,57 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901258 | 12,58 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901259 | 12,59 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901260 | 12,6 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901261 | 12,61 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901262 | 12,62 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901263 | 12,63 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901264 | 12,64 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901265 | 12,65 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901266 | 12,66 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901267 | 12,67 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901268 | 12,68 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901269 | 12,69 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901270 | 12,7 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901271 | 12,71 | 110 | 50 | 1 | 13 | 6 | 3 |

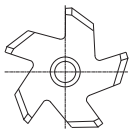
| EDP | DC | OAL | APMX | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8901272 | 12,72 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901273 | 12,73 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901274 | 12,74 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901275 | 12,75 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901276 | 12,76 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901277 | 12,77 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901278 | 12,78 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901279 | 12,79 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901280 | 12,8 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901281 | 12,81 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901282 | 12,82 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901283 | 12,83 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901284 | 12,84 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901285 | 12,85 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901286 | 12,86 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901287 | 12,87 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901288 | 12,88 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901289 | 12,89 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901290 | 12,9 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901291 | 12,91 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901292 | 12,92 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901293 | 12,93 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901294 | 12,94 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901295 | 12,95 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901296 | 12,96 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901297 | 12,97 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901298 | 12,98 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901299 | 12,99 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901300 | 13 | 110 | 50 | 1 | 13 | 6 | 3 |
| 8901301 | 13,01 | 110 | 50 | 1 | 14 | 6 | 3 |
| 8901302 | 13,02 | 110 | 50 | 1 | 14 | 6 | 3 |
| 8901303 | 13,03 | 110 | 50 | 1 | 14 | 6 | 3 |
| 8901304 | 13,04 | 110 | 50 | 1 | 14 | 6 | 3 |
| 8901305 | 13,05 | 110 | 50 | 1 | 14 | 6 | 3 |

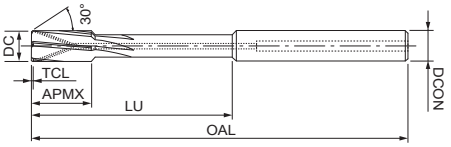
# HS-OIL-CRM

**Carbide reamers**

INDEX

**NEW**






- Carbide low right-hand helix reamer
- Multilayer AlCrN coating
- For high speed reaming in various materials
- Side through coolant
- 86 sizes

B.514

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 4843802970 | 2,97 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843802980 | 2,98 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843802990 | 2,99 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843803000 | 3 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843803010 | 3,01 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843803020 | 3,02 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843803030 | 3,03 | 70 | 12 | 40 | 0,3 | 3 | 5 |
| 4843803250 | 3,25 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803500 | 3,5 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803700 | 3,7 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803800 | 3,8 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803970 | 3,97 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803980 | 3,98 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843803990 | 3,99 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843804000 | 4 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843804010 | 4,01 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843804020 | 4,02 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843804030 | 4,03 | 75 | 12 | 40 | 0,3 | 4 | 5 |
| 4843804170 | 4,17 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804500 | 4,5 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804650 | 4,65 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804800 | 4,8 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804970 | 4,97 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804980 | 4,98 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843804990 | 4,99 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805000 | 5 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805010 | 5,01 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805020 | 5,02 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805030 | 5,03 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805100 | 5,1 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805500 | 5,5 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805550 | 5,55 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805680 | 5,68 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805810 | 5,81 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805970 | 5,97 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805980 | 5,98 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843805990 | 5,99 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843806000 | 6 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843806010 | 6,01 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843806020 | 6,02 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843806030 | 6,03 | 75 | 12 | 40 | 0,3 | 6 | 5 |
| 4843806500 | 6,5 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843806550 | 6,55 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843806680 | 6,68 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807000 | 7 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807400 | 7,4 | 100 | 16 | 65 | 0,3 | 8 | 5 |

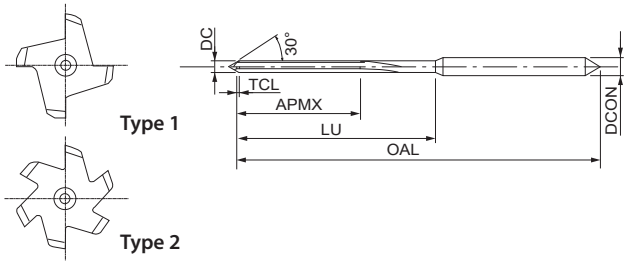
| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 4843807500 | 7,5 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807550 | 7,55 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807680 | 7,68 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807810 | 7,81 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807970 | 7,97 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807980 | 7,98 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843807990 | 7,99 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843808000 | 8 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843808010 | 8,01 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843808020 | 8,02 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843808030 | 8,03 | 100 | 16 | 65 | 0,3 | 8 | 5 |
| 4843808400 | 8,4 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843808500 | 8,5 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809000 | 9 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809300 | 9,3 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809410 | 9,41 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809500 | 9,5 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809550 | 9,55 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809970 | 9,97 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809980 | 9,98 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843809990 | 9,99 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843810000 | 10 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843810010 | 10,01 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843810020 | 10,02 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843810030 | 10,03 | 100 | 16 | 65 | 0,3 | 10 | 5 |
| 4843810300 | 10,3 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843810500 | 10,5 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811000 | 11 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811150 | 11,15 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811300 | 11,3 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811430 | 11,43 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811500 | 11,5 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811560 | 11,56 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811970 | 11,97 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811980 | 11,98 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843811990 | 11,99 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843812000 | 12 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843812010 | 12,01 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843812020 | 12,02 | 130 | 20 | 85 | 0,5 | 12 | 5 |
| 4843812030 | 12,03 | 130 | 20 | 85 | 0,5 | 12 | 5 |

# AL-CRM

## Carbide reamers



**NEW**




- Carbide straight-fluted reamer
- DLC coating
- For non-ferrous materials
- 98 sizes

N AI

N AC, ADC

CARBIDE | DLC | 0~+0.005 | h6

B.514

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 4843901970 | 1,97 | 60 | 15 | 27 | 0,4 | 3 | 4 | 1 |
| 4843901980 | 1,98 | 60 | 15 | 27 | 0,4 | 3 | 4 | 1 |
| 4843901990 | 1,99 | 60 | 15 | 27 | 0,4 | 3 | 4 | 1 |
| 4843902000 | 2 | 60 | 15 | 27 | 0,4 | 3 | 4 | 1 |
| 4843902010 | 2,01 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902020 | 2,02 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902030 | 2,03 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902130 | 2,13 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902320 | 2,32 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902420 | 2,42 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902500 | 2,5 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902800 | 2,8 | 60 | 20 | 32 | 0,5 | 3 | 4 | 1 |
| 4843902970 | 2,97 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843902980 | 2,98 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843902990 | 2,99 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843903000 | 3 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843903010 | 3,01 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843903020 | 3,02 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843903030 | 3,03 | 70 | 20 | 40 | 0,5 | 3 | 4 | 1 |
| 4843903250 | 3,25 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903500 | 3,5 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903700 | 3,7 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903800 | 3,8 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903970 | 3,97 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903980 | 3,98 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843903990 | 3,99 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843904000 | 4 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843904010 | 4,01 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843904020 | 4,02 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843904030 | 4,03 | 75 | 20 | 40 | 0,5 | 4 | 4 | 1 |
| 4843904170 | 4,17 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904500 | 4,5 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904650 | 4,65 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904800 | 4,8 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904970 | 4,97 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904980 | 4,98 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843904990 | 4,99 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843905000 | 5 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843905010 | 5,01 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843905020 | 5,02 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843905030 | 5,03 | 75 | 25 | 40 | 0,5 | 6 | 6 | 2 |
| 4843905100 | 5,1 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905500 | 5,5 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905550 | 5,55 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905680 | 5,68 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905810 | 5,81 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |

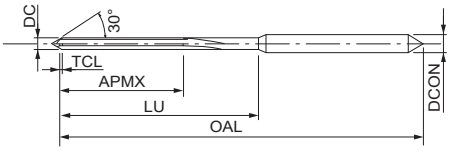
| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 4843905970 | 5,97 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905980 | 5,98 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843905990 | 5,99 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843906000 | 6 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843906010 | 6,01 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843906020 | 6,02 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843906030 | 6,03 | 75 | 25 | 40 | 0,8 | 6 | 6 | 2 |
| 4843906500 | 6,5 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843906550 | 6,55 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843906680 | 6,68 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907000 | 7 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907400 | 7,4 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907500 | 7,5 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907550 | 7,55 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907680 | 7,68 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907810 | 7,81 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907970 | 7,97 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907980 | 7,98 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843907990 | 7,99 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843908000 | 8 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843908010 | 8,01 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843908020 | 8,02 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843908030 | 8,03 | 100 | 25 | 60 | 0,8 | 8 | 6 | 2 |
| 4843908400 | 8,4 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843908500 | 8,5 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909000 | 9 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909300 | 9,3 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909410 | 9,41 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909500 | 9,5 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909550 | 9,55 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909970 | 9,97 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909980 | 9,98 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843909990 | 9,99 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843910000 | 10 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843910010 | 10,01 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843910020 | 10,02 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843910030 | 10,03 | 100 | 30 | 60 | 1 | 10 | 6 | 2 |
| 4843910300 | 10,3 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843910500 | 10,5 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911000 | 11 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911150 | 11,15 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911300 | 11,3 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911430 | 11,43 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911500 | 11,5 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911560 | 11,56 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911970 | 11,97 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |

# AL-CRM

**Carbide reamers**

INDEX

**NEW**




- Carbide straight-fluted reamer
- DLC coating
- For non-ferrous materials
- 98 sizes

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 4843911980 | 11,98 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843911990 | 11,99 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843912000 | 12 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843912010 | 12,01 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843912020 | 12,02 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |
| 4843912030 | 12,03 | 130 | 30 | 85 | 1 | 12 | 6 | 2 |

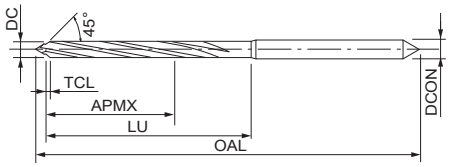
| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|

# H-CRM

## Carbide reamers

INDEX

**NEW**




- Carbide low right-hand helix reamer
- FX coating
- For stainless steel, titanium alloys and hardened material up to 60HRC
- 98 sizes

B.514

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 4844001970 | 1,97 | 60 | 15 | 27 | 0,4 | 3 | 4 |
| 4844001980 | 1,98 | 60 | 15 | 27 | 0,4 | 3 | 4 |
| 4844001990 | 1,99 | 60 | 15 | 27 | 0,4 | 3 | 4 |
| 4844002000 | 2 | 60 | 15 | 27 | 0,4 | 3 | 4 |
| 4844002010 | 2,01 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002020 | 2,02 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002030 | 2,03 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002130 | 2,13 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002320 | 2,32 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002420 | 2,42 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002500 | 2,5 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002800 | 2,8 | 60 | 20 | 32 | 0,5 | 3 | 4 |
| 4844002970 | 2,97 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844002980 | 2,98 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844002990 | 2,99 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844003000 | 3 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844003010 | 3,01 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844003020 | 3,02 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844003030 | 3,03 | 70 | 25 | 40 | 0,5 | 3 | 4 |
| 4844003250 | 3,25 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003500 | 3,5 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003700 | 3,7 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003800 | 3,8 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003970 | 3,97 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003980 | 3,98 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844003990 | 3,99 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844004000 | 4 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844004010 | 4,01 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844004020 | 4,02 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844004030 | 4,03 | 75 | 25 | 40 | 0,5 | 4 | 4 |
| 4844004170 | 4,17 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004500 | 4,5 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004650 | 4,65 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004800 | 4,8 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004970 | 4,97 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004980 | 4,98 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844004990 | 4,99 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844005000 | 5 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844005010 | 5,01 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844005020 | 5,02 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844005030 | 5,03 | 75 | 25 | 40 | 0,5 | 6 | 4 |
| 4844005100 | 5,1 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005500 | 5,5 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005550 | 5,55 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005680 | 5,68 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005810 | 5,81 | 75 | 25 | 40 | 0,8 | 6 | 4 |

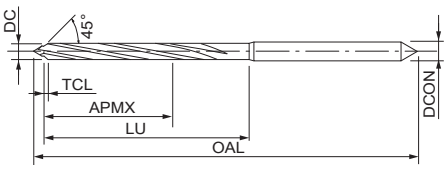
| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 4844005970 | 5,97 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005980 | 5,98 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844005990 | 5,99 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844006000 | 6 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844006010 | 6,01 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844006020 | 6,02 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844006030 | 6,03 | 75 | 25 | 40 | 0,8 | 6 | 4 |
| 4844006500 | 6,5 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844006550 | 6,55 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844006680 | 6,68 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007000 | 7 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007400 | 7,4 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007500 | 7,5 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007550 | 7,55 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007680 | 7,68 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007810 | 7,81 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007970 | 7,97 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007980 | 7,98 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844007990 | 7,99 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844008000 | 8 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844008010 | 8,01 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844008020 | 8,02 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844008030 | 8,03 | 100 | 45 | 65 | 0,8 | 8 | 4 |
| 4844008400 | 8,4 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844008500 | 8,5 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009000 | 9 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009300 | 9,3 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009410 | 9,41 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009500 | 9,5 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009550 | 9,55 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009970 | 9,97 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009980 | 9,98 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844009990 | 9,99 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844010000 | 10 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844010010 | 10,01 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844010020 | 10,02 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844010030 | 10,03 | 100 | 45 | 65 | 1 | 10 | 4 |
| 4844010300 | 10,3 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844010500 | 10,5 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011000 | 11 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011150 | 11,15 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011300 | 11,3 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011430 | 11,43 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011500 | 11,5 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011560 | 11,56 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011970 | 11,97 | 130 | 65 | 85 | 1 | 12 | 4 |

# H-CRM

## Carbide reamers

INDEX

**NEW**




- Carbide low right-hand helix reamer
- FX coating
- For stainless steel, titanium alloys and hardened material up to 60HRC
- 98 sizes

P SCM | M INOX | S Ti | H 25-35 HRC | H 35-45 HRC | H 45-52 HRC | H ~60 HRC

CARBIDE | FX | 0~+0.005 | h6

B.514

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 4844011980 | 11,98 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844011990 | 11,99 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844012000 | 12 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844012010 | 12,01 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844012020 | 12,02 | 130 | 65 | 85 | 1 | 12 | 4 |
| 4844012030 | 12,03 | 130 | 65 | 85 | 1 | 12 | 4 |

| EDP | DC | OAL | APMX | LU | TCL | DCON | ZEFP |
|---|---|---|---|---|---|---|---|

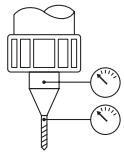
# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## ADO-MICRO 2D/5D

| | Mild Steel - Low Carbon Steel SS400 - S10C ~150HB ~500 N/mm² | | Carbon Steel S35C - S50C ~210HB ~710 N/mm² | | Alloy Steel SCM - SCr - sncm 710 ~900 N/mm² | | Alloy Steel SCM - SCr - sncm 710 ~900 N/mm² | | Austenitic Stainless Steel SUS303 - SUS304 SUS316 - SUS316L | | Special Alloy Steel SUJ2 - SUS440 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~40~60m/min | | 20~40~60m/min | | 20~40~60m/min | | 20~30~40m/min | | 20~30~70m/min | | 25~35~45m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,7 | 18.200 | 0,007 ~ 0,021 | 18.200 | 0,007 ~ 0,021 | 18.200 | 0,014 ~ 0,028 | 13.600 | 0,014 ~ 0,028 | 13.600 | 0,007 ~ 0,021 | 15.900 | 0,007 ~ 0,021 |
| 1 | 12.700 | 0,01 ~ 0,03 | 12.700 | 0,01 ~ 0,03 | 12.700 | 0,02 ~ 0,04 | 9.500 | 0,02 ~ 0,04 | 9.500 | 0,01 ~ 0,03 | 11.100 | 0,01 ~ 0,03 |
| 1,5 | 8.500 | 0,015 ~ 0,045 | 8.500 | 0,015 ~ 0,045 | 8.500 | 0,03 ~ 0,06 | 6.400 | 0,03 ~ 0,06 | 6.400 | 0,015 ~ 0,045 | 7.400 | 0,015 ~ 0,045 |
| 2 | 6.400 | 0,02 ~ 0,06 | 6.400 | 0,02 ~ 0,06 | 6.400 | 0,04 ~ 0,08 | 4.800 | 0,04 ~ 0,08 | 4.800 | 0,02 ~ 0,06 | 5.600 | 0,02 ~ 0,06 |

| | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD450 - FCD600 400 ~600 N/mm² | | Aluminium Alloy AC4C - ADC | | Aluminium A5052 - A7075 | | Titanium Alloy | | Heat Resistant Alloy Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~50~60m/min | | 30~40~50m/min | | 30~50~70m/min | | 20~40~60m/min | | 40~50~60m/min | | 5~10~15m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,7 | 22.700 | 0,014 ~ 0,028 | 18.200 | 0,014 ~ 0,028 | 22.700 | 0,014 ~ 0,042 | 18.200 | 0,007 ~ 0,021 | 22.700 | 0,011 ~ 0,018 | 4.500 | 0,004 ~ 0,014 |
| 1 | 15.900 | 0,02 ~ 0,04 | 12.700 | 0,02 ~ 0,04 | 15.900 | 0,02 ~ 0,06 | 12.700 | 0,01 ~ 0,03 | 15.900 | 0,015 ~ 0,025 | 3.200 | 0,005 ~ 0,02 |
| 1,5 | 10.600 | 0,03 ~ 0,06 | 8.500 | 0,03 ~ 0,06 | 10.600 | 0,03 ~ 0,09 | 8.500 | 0,015 ~ 0,045 | 10.600 | 0,023 ~ 0,038 | 2.100 | 0,008 ~ 0,03 |
| 2 | 8.000 | 0,04 ~ 0,08 | 6.400 | 0,04 ~ 0,08 | 8.000 | 0,04 ~ 0,12 | 6.400 | 0,02 ~ 0,06 | 8.000 | 0,03 ~ 0,05 | 1.600 | 0,01 ~ 0,04 |

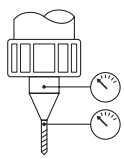


1. This cutting condition chart is based on the usage of water-soluble coolant and internal oil supply.
2. Please use quality water-soluble coolant with a dilution factor of approximately 20 times.
3. Please use a precision filter (approximation of 3μm to 5μm) to prevent the oil holes from clogging.
4. Although the recommended coolant pressure is 3 MPa or more, please adjust accordingly if the level of flow volume is unsatisfactory due to the type and concentration of cutting oil used.
5. For accurate mounting, acceptable deflection of the body cylindrical part at the shank end should be less than 0.002μm, as shown in the illustrated figure.
6. For work material with poor chip evacuation characteristic, please perform step drilling as required.
7. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.

## ADO-MICRO 12D/15D/20D/25D/30D

| | Mild Steel - Low Carbon Steel SS400 - S10C ~150HB ~500 N/mm² | | Carbon Steel S35C - S50C ~210HB ~710 N/mm² | | Alloy Steel SCM - SCr - sncm 710 ~900 N/mm² | | Alloy Steel SCM - SCr - sncm 710 ~900 N/mm² | | Austenitic Stainless Steel SUS303 - SUS304 SUS316 - SUS316L | | Special Alloy Steel SUJ2 - SUS440 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~40~60m/min | | 20~40~60m/min | | 20~40~60m/min | | 20~30~40m/min | | 20~30~70m/min | | 25~35~45m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1 | 12.700 | 0,01 ~ 0,03 | 12.700 | 0,01 ~ 0,03 | 12.700 | 0,02 ~ 0,04 | 9.500 | 0,02 ~ 0,04 | 9.500 | 0,01 ~ 0,03 | 11.100 | 0,01 ~ 0,03 |
| 1,5 | 8.500 | 0,015 ~ 0,045 | 8.500 | 0,015 ~ 0,045 | 8.500 | 0,03 ~ 0,06 | 6.400 | 0,03 ~ 0,06 | 6.400 | 0,015 ~ 0,045 | 7.400 | 0,015 ~ 0,045 |
| 2 | 6.400 | 0,02 ~ 0,06 | 6.400 | 0,02 ~ 0,06 | 6.400 | 0,04 ~ 0,08 | 4.800 | 0,04 ~ 0,08 | 4.800 | 0,02 ~ 0,06 | 5.600 | 0,02 ~ 0,06 |

| | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD450 - FCD600 400 ~600 N/mm² | | Aluminium Alloy AC4C - ADC | | Aluminium A5052 - A7075 | | Titanium Alloy | | Heat Resistant Alloy Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~50~60m/min | | 30~40~50m/min | | 30~50~70m/min | | 20~40~60m/min | | 40~50~60m/min | | 5~10~15m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1 | 15.900 | 0,02 ~ 0,04 | 12.700 | 0,02 ~ 0,04 | 15.900 | 0,02 ~ 0,06 | 12.700 | 0,01 ~ 0,03 | 15.900 | 0,015 ~ 0,025 | 3.200 | 0,005 ~ 0,02 |
| 1,5 | 10.600 | 0,03 ~ 0,06 | 8.500 | 0,03 ~ 0,06 | 10.600 | 0,03 ~ 0,09 | 8.500 | 0,015 ~ 0,045 | 10.600 | 0,023 ~ 0,038 | 2.100 | 0,008 ~ 0,03 |
| 2 | 8.000 | 0,04 ~ 0,08 | 6.400 | 0,04 ~ 0,08 | 8.000 | 0,04 ~ 0,12 | 6.400 | 0,02 ~ 0,06 | 8.000 | 0,03 ~ 0,05 | 1.600 | 0,01 ~ 0,04 |



1. This cutting condition chart is based on the usage of water-soluble coolant and internal oil supply.
2. Please use quality water-soluble coolant with a dilution factor of approximately 20 times.
3. Please use a precision filter (approximation of 3μm to 5μm) to prevent the oil holes from clogging.
4. Although the recommended coolant pressure is 3 MPa or more, please adjust accordingly if the level of flow volume is unsatisfactory due to the type and concentration of cutting oil used.
5. For accurate mounting, acceptable deflection of the body cylindrical part at the shank end should be less than 0.002μm, as shown in the illustrated figure.
6. For work material with poor chip evacuation characteristic, please perform step drilling as required.
7. From 12D type included, please use a 2D type drill to prepare a pilot hole prior to processing.
8. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## WX-MS-GDS

| | Carbon Steel<br>Ck15 • Ck50<br>~900 N/mm² | | SCM<br>SCM440<br>~1060 N/mm² | | Special Alloy<br>SUJ2 • SUS 440 | | Kovart<br>FE-NI-CO | | Cu<br>C1020 • C26 | | Al<br>A5052 • 7075 | | AC<br>AC4C • ADC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20 ~ 80 m/min | | 20 ~ 56 m/min | | 20 ~ 36 m/min | | 20 ~ 45 m/min | | 20 ~ 45 m/min | | 32 ~ 80 m/min | | 32 ~ 63 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) |
| 0,2 | 25.000 | 0,002 | 25.000 | 0,002 | 25.000 | 0,002 | 25.000 | 0,002 | 25.000 | 0,002 | 25.000 | 0,004 | 25.000 | 0,002 |
| 0,3 | 20.000 | 0,003 | 20.000 | 0,003 | 20.000 | 0,003 | 20.000 | 0,003 | 20.000 | 0,003 | 20.000 | 0,007 | 20.000 | 0,003 |
| 0,5 | 15.000 | 0,007 | 14.000 | 0,007 | 13.000 | 0,007 | 13.000 | 0,007 | 13.000 | 0,007 | 15.000 | 0,015 | 15.000 | 0,007 |
| 1 | 12.000 | 0,02 | 11.000 | 0,02 | 10.000 | 0,02 | 6.400 | 0,01 | 6.400 | 0,01 | 12.000 | 0,03 | 12.000 | 0,01 |
| 1,5 | 10.000 | 0,02~0,04 | 8.400 | 0,02~0,04 | 6.800 | 0,03~0,05 | 4.800 | 0,012~0,03 | 4.800 | 0,012~0,03 | 10.000 | 0,03~0,08 | 10.000 | 0,012~0,030 |
| 2 | 8.000 | 0,03~0,05 | 6.500 | 0,03~0,05 | 5.000 | 0,04~0,06 | 4.000 | 0,016~0,04 | 4.000 | 0,016~0,04 | 8.000 | 0,04~0,1 | 8.000 | 0,016~0,04 |
| 3 | 5.500 | 0,07~0,07 | 4.500 | 0,04~0,07 | 3.400 | 0,06~0,09 | 3.000 | 0,024~0,06 | 3.000 | 0,024~0,06 | 6.500 | 0,06~0,15 | 6.500 | 0,024~0,06 |
| 4 | 4.000 | 0,06~0,10 | 3.200 | 0,06~0,10 | 2.500 | 0,08~0,12 | 2.500 | 0,03~0,08 | 2.500 | 0,03~0,08 | 5.000 | 0,08~0,20 | 5.000 | 0,03~0,08 |
| 5 | 3.200 | 0,07~0,12 | 2.600 | 0,07~0,12 | 2.000 | 0,10~0,15 | 2.000 | 0,04~0,10 | 2.000 | 0,04~0,10 | 4.200 | 0,10~0,25 | 4.000 | 0,04~0,10 |

## MRS-GDL

| | Martensitic Stainless Steel<br>SUS420J2 • SUS440C | | Austenitic Stainless Steel<br>SUS303 • SUS304 • SUS316 • SUS316L | | Ferritic Stainless Steel<br>SUS430 • SUS430F | | Precipitation Hardening Stainless Steel<br>SUS630 | |
|---|---|---|---|---|---|---|---|---|
| Vc | 20 ~ 50 m/min | | 15 ~ 40 m/min | | 20 ~ 50 m/min | | 15 ~ 40 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) |
| 0,5 | 12.700 ~ 31.800 | 0,005 ~ 0,015 | 9.500 ~ 25.400 | 0,005 ~ 0,015 | 12.700 ~ 31.800 | 0,005 ~ 0,015 | 9.500 ~ 25.400 | 0,005 ~ 0,015 |
| 1 | 6.300 ~ 15.900 | 0,010 ~ 0,030 | 4.700 ~ 12.700 | 0,010 ~ 0,030 | 6.300 ~ 15.900 | 0,010 ~ 0,030 | 4.700 ~ 12.700 | 0,010 ~ 0,030 |
| 1,5 | 4.200 ~ 10.600 | 0,015 ~ 0,045 | 3.100 ~ 8.400 | 0,015 ~ 0,045 | 4.200 ~ 10.600 | 0,015 ~ 0,045 | 3.100 ~ 8.400 | 0,015 ~ 0,045 |
| 2 | 3.180 ~ 7.900 | 0,020 ~ 0,060 | 2.300 ~ 6.300 | 0,020 ~ 0,060 | 3.180 ~ 7.900 | 0,020 ~ 0,060 | 2.300 ~ 6.300 | 0,020 ~ 0,060 |
| 2,5 | 2.500 ~ 6.300 | 0,025 ~ 0,075 | 1.900 ~ 5.000 | 0,025 ~ 0,075 | 2.500 ~ 6.300 | 0,025 ~ 0,075 | 1.900 ~ 5.000 | 0,025 ~ 0,075 |
| 3 | 2.100 ~ 5.300 | 0,030 ~ 0,090 | 1.500 ~ 4.200 | 0,030 ~ 0,090 | 2.100 ~ 5.300 | 0,030 ~ 0,090 | 1.500 ~ 4.200 | 0,030 ~ 0,090 |

# CUTTING CONDITIONS

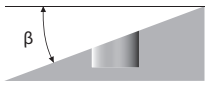
**Drilling | Solid | Cutting conditions**

## ADF-2D

| | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm² | | Carbon Steel S35C • S50C ~210HB ~710N/mm² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm² | | Plastic Mold Steel NAK80 ~40HRC | | Stainless Steel SUS304 480 ~ 800N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 30~100m/min | | 30~100m/min | | 30~90m/min | | 20~40m/min | | 10~30m/min | |
| Ø | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) |
| 0,2 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,004 | 40.000 | 0,001 ~ 0,004 |
| 0,5 | 28.700 | 0,003 ~ 0,015 | 28.700 | 0,003 ~ 0,015 | 25.500 | 0,003 ~ 0,015 | 19.000 | 0,003 ~ 0,01 | 15.900 | 0,003 ~ 0,01 |
| 1 | 17,500 | 0,005 ~ 0,03 | 17,500 | 0,005 ~ 0,03 | 15.900 | 0,005 ~ 0,03 | 9.550 | 0,005 ~ 0,02 | 8.000 | 0,005 ~ 0,02 |
| 1,5 | 13,800 | 0,008 ~ 0,045 | 13,800 | 0,008 ~ 0,045 | 12.700 | 0,008 ~ 0,045 | 6.350 | 0,008 ~ 0,03 | 5.300 | 0,008 ~ 0,03 |
| 2 | 12.700 | 0,01 ~ 0,06 | 12.700 | 0,01 ~ 0,06 | 9.550 | 0,01 ~ 0,06 | 4.750 | 0,01 ~ 0,04 | - | - |
| 3 | 8.500 | 0,015 ~ 0,09 | 8.500 | 0,015 ~ 0,09 | 6.350 | 0,015 ~ 0,09 | 3.200 | 0,015 ~ 0,06 | - | - |
| 4 | 6.350 | 0,02 ~ 0,12 | 6.350 | 0,02 ~ 0,12 | 4.750 | 0,02 ~ 0,12 | 2.400 | 0,02 ~ 0,08 | - | - |
| 6 | 4.250 | 0,03 ~ 0,18 | 4.250 | 0,03 ~ 0,18 | 3.200 | 0,03 ~ 0,18 | 1.600 | 0,03 ~ 0,12 | - | - |
| 8 | 3.200 | 0,04 ~ 0,24 | 3.200 | 0,04 ~ 0,24 | 2.400 | 0,04 ~ 0,24 | 1.200 | 0,04 ~ 0,16 | - | - |
| 10 | 2.550 | 0.05 ~ 0.3 | 2.550 | 0.05 ~ 0.3 | 1.900 | 0.05 ~ 0.3 | 950 | 0.05 ~ 0.2 | - | - |
| 12 | 2.100 | 0.06 ~ 0.3 | 2.100 | 0.06 ~ 0.3 | 1.600 | 0.06 ~ 0.3 | 800 | 0.06 ~ 0.24 | - | - |
| 14 | 1.800 | 0.07 ~ 0.35 | 1.800 | 0.07 ~ 0.35 | 1.350 | 0.07 ~ 0.35 | 700 | 0.07 ~ 0.28 | - | - |
| 16 | 1.600 | 0.08 ~ 0.36 | 1.600 | 0.08 ~ 0.36 | 1.200 | 0.08 ~ 0.36 | 600 | 0.08 ~ 0.32 | - | - |
| 18 | 1.400 | 0.09 ~ 0.38 | 1.400 | 0.09 ~ 0.38 | 1.050 | 0.09 ~ 0.38 | 550 | 0.09 ~ 0.36 | - | - |
| 20 | 1.250 | 0.1 ~ 0.4 | 1.250 | 0.1 ~ 0.4 | 950 | 0.1 ~ 0.4 | 500 | 0.1 ~ 0.4 | - | - |

| | Special Alloy Steel - Hardened Steel - Prehardened Steel FC250 ~45HRC | | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD600 400 ~600N/mm² | | Aluminium A5052 • A7075 ~350N/mm² | | Aluminium Alloy AC4C • ADC 400~600N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~30m/min | | 30~120m/min | | 30~80m/min | | 30~200m/min | | 30~200m/min | |
| Ø | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) |
| 0,2 | 40.000 | 0,001 ~ 0,004 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,006 | 40.000 | 0,001 ~ 0,006 |
| 0,5 | 15.900 | 0,003 ~ 0,01 | 32.000 | 0,003 ~ 0,015 | 25.000 | 0,003 ~ 0,015 | 35.000 | 0,003 ~ 0,015 | 35.000 | 0,003 ~ 0,015 |
| 1 | 7.950 | 0,005 ~ 0,02 | 22.500 | 0,005 ~ 0,03 | 15.900 | 0,005 ~ 0,03 | 30.000 | 0,005 ~ 0,03 | 30.000 | 0,005 ~ 0,03 |
| 1,5 | 5.300 | 0,008 ~ 0,03 | 17.000 | 0,008 ~ 0,045 | 11.500 | 0,008 ~ 0,045 | 25.000 | 0,008 ~ 0,045 | 25.000 | 0,008 ~ 0,045 |
| 2 | 4.000 | 0,01 ~ 0,03 | 14.300 | 0,01 ~ 0,06 | 10.350 | 0,01 ~ 0,06 | 22.300 | 0,01 ~ 0,06 | 22.300 | 0,01 ~ 0,06 |
| 3 | 2.650 | 0,015 ~ 0,045 | 9.550 | 0,015 ~ 0,09 | 6.900 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 |
| 4 | 2.000 | 0,02 ~ 0,06 | 7.150 | 0,02 ~ 0,12 | 5.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 |
| 6 | 1.350 | 0,03 ~ 0,09 | 4.750 | 0,03 ~ 0,18 | 3.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 |
| 8 | 1.000 | 0,04 ~ 0,12 | 3.600 | 0,04 ~ 0,24 | 2.600 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 |
| 10 | 800 | 0,05 ~ 0,15 | 2.850 | 0,05 ~ 0,3 | 2.050 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 |
| 12 | 650 | 0,06 ~ 0,18 | 2.400 | 0,06 ~ 0,3 | 1.700 | 0,06 ~ 0,3 | 3.700 | 0,06 ~ 0,36 | 3.700 | 0,06 ~ 0,36 |
| 14 | 550 | 0,07 ~ 0,21 | 2.050 | 0,07 ~ 0,35 | 1.500 | 0,07 ~ 0,35 | 3.200 | 0,07 ~ 0,42 | 3.200 | 0,07 ~ 0,42 |
| 16 | 500 | 0,08 ~ 0,24 | 1.800 | 0,08 ~ 0,36 | 1.300 | 0,08 ~ 0,36 | 2.800 | 0,08 ~ 0,48 | 2.800 | 0,08 ~ 0,48 |
| 18 | 450 | 0,09 ~ 0,27 | 1.600 | 0,09 ~ 0,38 | 1.150 | 0,09 ~ 0,38 | 2.500 | 0,09 ~ 0,54 | 2.500 | 0,09 ~ 0,54 |
| 20 | 400 | 0,1 ~ 0,3 | 1.450 | 0,1 ~ 0,4 | 1.050 | 0,1 ~ 0,4 | 2.250 | 0,1 ~ 0,6 | 2,250 | 0,1 ~ 0,6 |

1. Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
2. When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
3. Use a rigid and precise machine and holder.
4. Please minimize tool hang over as much as possible during machining.
5. Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
6. Please set up the drill so that the runout of the cutting edge is under 0.01 mm.
7. When machining an inclined plane,adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
   - When the machining incline angle(β) is less than 30°, please reduce the feed to 40~60%.
   - When the machining incline angle(β) is over 30°, please reduce the speed to 60~80% , the feed to 20~40%.
8. Please use step drilling in pilot holes to improve cutting chip separation.
9. If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).



# CUTTING CONDITIONS

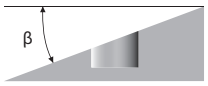


## ADFLS-2D

| | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm² | | Carbon Steel S35C • S50C ~210HB ~710N/mm² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm² | | Plastic Mold Steel NAK80 ~40HRC | | Special Alloy Steel-Hardened Steel-Pre-hardened steel SKD61 ~50HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 60~100m/min | | 60~100m/min | | 30~90m/min | | 20~40m/min | | 20~30m/min | |
| Ø | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) |
| 3 | 8.500 | 0,045 ~ 0,075 | 8.500 | 0,045 ~ 0,075 | 6.350 | 0,045 ~ 0,075 | 3.200 | 0,045 ~ 0,06 | 2.650 | 0,03 ~ 0,06 |
| 4 | 6.350 | 0,06 ~ 0,1 | 6.350 | 0,06 ~ 0,1 | 4.750 | 0,06 ~ 0,1 | 2.400 | 0,06 ~ 0,08 | 2.000 | 0,04 ~ 0,08 |
| 6 | 4.250 | 0,09 ~ 0,15 | 4.250 | 0,09 ~ 0,15 | 3.200 | 0,09 ~ 0,15 | 1.600 | 0,09 ~ 0,12 | 1.350 | 0,06 ~ 0,12 |
| 8 | 3.200 | 0,12 ~ 0,2 | 3.200 | 0,12 ~ 0,2 | 2.400 | 0,12 ~ 0,2 | 1.200 | 0,12 ~ 0,16 | 1.000 | 0,08 ~ 0,16 |
| 10 | 2.550 | 0,15 ~ 0,25 | 2.550 | 0,15 ~ 0,25 | 1.900 | 0,15 ~ 0,25 | 950 | 0,15 ~ 0,2 | 800 | 0,1 ~ 0,2 |
| 12 | 2.100 | 0,18 ~ 0,3 | 2.100 | 0,18 ~ 0,3 | 1.600 | 0,18 ~ 0,3 | 800 | 0,18 ~ 0,24 | 650 | 0,12 ~ 0,24 |
| 14 | 1.800 | 0,21 ~ 0,35 | 1.800 | 0,21 ~ 0,35 | 900 | 0,21 ~ 0,35 | 700 | 0,21 ~ 0,28 | 550 | 0,14 ~ 0,28 |
| 16 | 1.600 | 0,24 ~ 0,4 | 1.600 | 0,24 ~ 0,4 | 800 | 0,24 ~ 0,4 | 600 | 0,24 ~ 0,32 | 500 | 0,16 ~ 0,32 |
| 18 | 1.400 | 0,27 ~ 0,45 | 1.400 | 0,27 ~ 0,45 | 700 | 0,27 ~ 0,45 | 550 | 0,27 ~ 0,36 | 450 | 0,18 ~ 0,36 |
| 20 | 1.250 | 0,3 ~ 0,5 | 1.250 | 0,3 ~ 0,5 | 650 | 0,3 ~ 0,5 | 500 | 0,3 ~ 0,4 | 400 | 0,2 ~ 0,4 |

| | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD600 400 ~600N/mm² | | Aluminium A5052 • A7075 ~350N/mm² | | Aluminium Alloy AC4C • ADC 400~600N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 60~120m/min | | 50~80m/min | | 80~200m/min | | 80~200m/min | |
| Ø | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) | Speed ($min^{-1}$) | Feed Rate (mm/rev.) |
| 3 | 9.550 | 0,06 ~ 0,09 | 6.900 | 0,06 ~ 0,09 | 14.850 | 0,015 ~ 0,09 | 14.850 | 0,015 ~ 0,09 |
| 4 | 7.150 | 0,08 ~ 0,12 | 5.150 | 0,08 ~ 0,12 | 11.150 | 0,02 ~ 0,12 | 11.150 | 0,02 ~ 0,12 |
| 6 | 4.750 | 0,12 ~ 0,18 | 3.450 | 0,12 ~ 0,18 | 7.450 | 0,03 ~ 0,18 | 7.450 | 0,03 ~ 0,18 |
| 8 | 3.600 | 0,16 ~ 0,24 | 2.600 | 0,16 ~ 0,24 | 5.550 | 0,04 ~ 0,24 | 5.550 | 0,04 ~ 0,24 |
| 10 | 2.850 | 0,2 ~ 0,3 | 2.050 | 0,2 ~ 0,3 | 4.450 | 0,05 ~ 0,3 | 4.450 | 0,05 ~ 0,3 |
| 12 | 2.400 | 0,24 ~ 0,36 | 1.700 | 0,24 ~ 0,36 | 3.700 | 0,06 ~ 0,36 | 3.700 | 0,06 ~ 0,36 |
| 14 | 2.050 | 0,28 ~ 0,42 | 1.500 | 0,28 ~ 0,42 | 3.200 | 0,07 ~ 0,42 | 3.200 | 0,07 ~ 0,42 |
| 16 | 1.800 | 0,32 ~ 0,48 | 1.300 | 0,32 ~ 0,48 | 2.800 | 0,08 ~ 0,48 | 2.800 | 0,08 ~ 0,48 |
| 18 | 1.600 | 0,36 ~ 0,54 | 1.150 | 0,36 ~ 0,54 | 2.500 | 0,09 ~ 0,54 | 2.500 | 0,09 ~ 0,54 |
| 20 | 1.450 | 0,4 ~ 0,6 | 1.050 | 0,4 ~ 0,6 | 2.250 | 0,1 ~ 0,6 | 2.250 | 0,1 ~ 0,6 |

1. To process flat surfaces, prior Centre-drilling with a larger diameter is required.
2. Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
3. When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
4. Use a rigid and precise machine and holder.
5. Please minimize tool hang over as much as possible during machining.
6. Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
7. Please set up the drill so that the runout of the cutting edge is under 0.01 mm.
8. When machining an inclined plane,adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
   - When the machining incline angle(β) is less than 30°, please reduce the feed to 40~60%.
   - When the machining incline angle(β) is over 30°, please reduce the speed to 60~80% , the feed to 20~40%.
9. Please use step drilling in pilot holes to improve cutting chip separation.
10. If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).



# CUTTING CONDITIONS

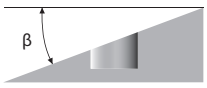
**Drilling | Solid | Cutting conditions**

## ADFO-3D

| | Low Carbon Steel - Alloy Steel (C<0.3%) SS400 • SCM ~710N/mm² | | Carbon Steel S35C • S50C ~210HB ~710N/mm² | | Alloy Steel SCM • SCr • SNCM 28~35HRC 900~1,100N/mm² | | Plastic Mold Steel NAK80 ~40HRC | | Stainless Steel SUS304 480~800N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80~120m/min | | 80~120m/min | | 50~90m/min | | 20~40m/min | | 40~60m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 3 | 10.600 | 0,045 ~ 0,09 | 10.600 | 0,045 ~ 0,09 | 7.450 | 0,045 ~ 0,09 | 3,200 | 0,045 ~ 0,09 | 5.300 | 0,045 ~ 0,09 |
| 4 | 8.000 | 0,045 ~ 0,12 | 8.000 | 0,045 ~ 0,12 | 5.550 | 0,045 ~ 0,12 | 2,400 | 0,045 ~ 0,12 | 4.000 | 0,045 ~ 0,12 |
| 6 | 5.300 | 0,06 ~ 0,18 | 5.300 | 0,06 ~ 0,18 | 3.700 | 0,06 ~ 0,18 | 1,600 | 0,06 ~ 0,18 | 2.650 | 0,06 ~ 0,18 |
| 8 | 4.000 | 0,08 ~ 0,24 | 4.000 | 0,08 ~ 0,24 | 2.800 | 0,08 ~ 0,24 | 1,200 | 0,08 ~ 0,24 | 2.000 | 0,08 ~ 0,24 |
| 10 | 3.200 | 0,10 ~ 0,30 | 3.200 | 0,10 ~ 0,30 | 2.250 | 0,10 ~ 0,30 | 950 | 0,10 ~ 0,30 | 1.600 | 0,10 ~ 0,30 |
| 12 | 2.650 | 0,12 ~ 0,36 | 2.650 | 0,12 ~ 0,36 | 1.850 | 0,12 ~ 0,36 | 800 | 0,12 ~ 0,36 | 1.350 | 0,12 ~ 0,36 |
| 14 | 2.250 | 0,14 ~ 0,42 | 2.250 | 0,14 ~ 0,42 | 1.600 | 0,14 ~ 0,42 | 700 | 0,14 ~ 0,42 | 1.150 | 0,14 ~ 0,42 |
| 16 | 2.000 | 0,16 ~ 0,48 | 2.000 | 0,16 ~ 0,48 | 1.400 | 0,16 ~ 0,48 | 600 | 0,16 ~ 0,48 | 1.000 | 0,16 ~ 0,48 |
| 18 | 1.750 | 0,18 ~ 0,54 | 1.750 | 0,18 ~ 0,54 | 1.250 | 0,18 ~ 0,54 | 550 | 0,18 ~ 0,54 | 900 | 0,18 ~ 0,54 |
| 20 | 1.600 | 0,20 ~ 0,60 | 1.600 | 0,20 ~ 0,60 | 1.100 | 0,20 ~ 0,60 | 500 | 0,20 ~ 0,60 | 800 | 0,20 ~ 0,60 |

| | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD600 400 ~600N/mm² | | Aluminium A5052 • A7075 ~350N/mm² | | Aluminium Alloy AC4C • ADC 400~600N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 80~120m/min | | 60~100m/min | | 120~200m/min | | 120~200m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 3 | 10.600 | 0,045 ~ 0,09 | 8.500 | 0,045 ~ 0,09 | 17.000 | 0,045 ~ 0,09 | 17.000 | 0,045 ~ 0,09 |
| 4 | 8.000 | 0,045 ~ 0,12 | 6.350 | 0,045 ~ 0,12 | 12.750 | 0,045 ~ 0,12 | 12.750 | 0,045 ~ 0,12 |
| 6 | 5.300 | 0,06 ~ 0,18 | 4.250 | 0,06 ~ 0,18 | 8.500 | 0,06 ~ 0,18 | 8.500 | 0,06 ~ 0,18 |
| 8 | 4.000 | 0,08 ~ 0,24 | 3.200 | 0,08 ~ 0,24 | 6.350 | 0,08 ~ 0,24 | 6.350 | 0,08 ~ 0,24 |
| 10 | 3.200 | 0,10 ~ 0,30 | 2.550 | 0,10 ~ 0,30 | 5.100 | 0,10 ~ 0,30 | 5.100 | 0,10 ~ 0,30 |
| 12 | 2.650 | 0,12 ~ 0,36 | 2.100 | 0,12 ~ 0,36 | 4.250 | 0,12 ~ 0,36 | 4.250 | 0,12 ~ 0,36 |
| 14 | 2.250 | 0,14 ~ 0,42 | 1.800 | 0,14 ~ 0,42 | 3.650 | 0,14 ~ 0,42 | 3.650 | 0,14 ~ 0,42 |
| 16 | 2.000 | 0,16 ~ 0,48 | 1.600 | 0,16 ~ 0,48 | 3.200 | 0,16 ~ 0,48 | 3.200 | 0,16 ~ 0,48 |
| 18 | 1.750 | 0,18 ~ 0,54 | 1.400 | 0,18 ~ 0,54 | 2.850 | 0,18 ~ 0,54 | 2.850 | 0,18 ~ 0,54 |
| 20 | 1.600 | 0,20 ~ 0,60 | 1.250 | 0,20 ~ 0,60 | 2.550 | 0,20 ~ 0,60 | 2.550 | 0,20 ~ 0,60 |

1. Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
2. Use a rigid and precise machine and holder.
3. Please minimize overhang length as much as possible during machining.
4. Adjust the rotational speed and the feed in accordance with conditions such as the machining shape, machine rigidity, or work holding.
5. Please set up the drill so that the runout of the cutting edge is under 0.02 mm.
6. Please select a cutting fluid that is most suitable for the work material with minimal smoke formation.
7. In the case of dry machining, please use air blow to remove chips to prevent clogging. Please do not machine stainless steel dry.
8. When machining an inclined plane, adjust the rotational speed and the feed in accordance with the angle of the incline (β).
   When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
   When the machining incline angle (β) is over 30°, please reduce the speed to 60-80% , the feed to 20-40%.
9. Please use step drilling in pilot holes to improve cutting chip separation.
10. If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed as indicated above (in accordance with the machining precision requirement).
11. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.




## AD-2D/AD-4D

### Standard drilling

| | C<0,35% (C<0,35%) St40 • SCM ~710 N/mm2 | | C≥0,35% (C≥0,35%) CK50 ~1060 N/mm2 | | Special Alloy SUJ2 | | SUS Serie SUS300 Serie SUS400 | | Hardened Steel SKD61 43 HRC | | Hardened Steel 43 ~ 48 HRC | | GG GG25 ~ 350 N/mm² | | GGG GGG40 ~ 500 N/mm² | | AL, AC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 63 ~ 100 m/min | | 63 ~ 100 m/min | | 50 ~ 71 m/min | | 25 ~ 40 m/min | | 40 ~ 63 m/min | | 32 ~ 45 m/min | | 63 ~ 100 m/min | | 50 ~ 80 m/min | | 120 ~ 220 m/min |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | F (mm/rev.) |
| 2 | 11.000 | 0,06~0,08 | 11.000 | 0,06~0,08 | 9.000 | 0,06~0,08 | 4.700 | 0,06~0,08 | 7.600 | 0,06~0,08 | 6.000 | 0,06~0,08 | 12.000 | 0,06~0,08 | 10.000 | 0,06~0,08 | |
| 3 | 8.000 | 0,09~0,12 | 8.000 | 0,09~0,12 | 6.000 | 0,09~0,12 | 3.200 | 0,09~0,12 | 5.000 | 0,09~0,12 | 4.000 | 0,09~0,12 | 8.000 | 0,09~0,12 | 6.900 | 0,09~0,12 | 0,09~0,28 |
| 4 | 6.300 | 0,10~0,15 | 6.300 | 0,10~0,15 | 4.750 | 0,10~0,15 | 2.400 | 0,10~0,15 | 3.800 | 0,10~0,15 | 3.000 | 0,10~0,15 | 6.300 | 0,10~0,15 | 5.200 | 0,10~0,15 | 0,10~0,38 |
| 5 | 5.000 | 0,12~0,18 | 5.000 | 0,12~0,18 | 3.800 | 0,12~0,18 | 1.900 | 0,12~0,18 | 3.000 | 0,12~0,18 | 2.450 | 0,12~0,18 | 5.000 | 0,12~0,18 | 4.100 | 0,12~0,18 | 0,12-0,40 |
| 6 | 4.200 | 0,14~0,20 | 4.200 | 0,14~0,20 | 3.200 | 0,14~0,20 | 1.600 | 0,14~0,20 | 2.550 | 0,14~0,20 | 2.050 | 0,14~0,20 | 4.200 | 0,14~0,20 | 3.450 | 0,14~0,20 | 0,14~0,48 |
| 8 | 3.200 | 0,16~0,24 | 3.200 | 0,16~0,24 | 2.400 | 0,16~0,24 | 1.200 | 0,16~0,24 | 1.900 | 0,16~0,24 | 1.550 | 0,16~0,24 | 3.200 | 0,16~0,24 | 2.600 | 0,16~0,24 | 0,16~0,53 |
| 10 | 2.550 | 0,18~0,27 | 2.550 | 0,18~0,27 | 1.900 | 0,18~0,27 | 950 | 0,18~0,27 | 1.550 | 0,18~0,27 | 1.250 | 0,18~0,27 | 2.600 | 0,18~0,27 | 2.100 | 0,18~0,27 | 0,18-0,63 |
| 12 | 2.100 | 0,20~0,30 | 2.100 | 0,20~0,30 | 1.600 | 0,20~0,30 | 800 | 0,20~0,30 | 1.300 | 0,20~0,30 | 1.050 | 0,20~0,30 | 2.200 | 0,20~0,30 | 1.750 | 0,20~0,30 | 0,20~0,75 |
| 14 | 1.800 | 0,22~0,35 | 1.800 | 0,22~0,35 | 1.350 | 0,22~0,35 | 700 | 0,22~0,35 | 1.100 | 0,22~0,35 | 880 | 0,22~0,35 | 1.800 | 0,22~0,35 | 1.500 | 0,22~0,35 | 0,22-0,81 |
| 16 | 1.600 | 0,25~0,36 | 1.600 | 0,25~0,36 | 1.200 | 0,25~0,36 | 600 | 0,25~0,36 | 950 | 0,25~0,36 | 770 | 0,25~0,36 | 1.600 | 0,25~0,36 | 1.300 | 0,25~0,36 | 0,25-0,85 |
| 18 | 1.400 | 0,28~0,38 | 1.400 | 0,28~0,38 | 1.050 | 0,28~0,38 | 530 | 0,28~0,38 | 850 | 0,28~0,38 | 680 | 0,28~0,38 | 1.400 | 0,28~0,38 | 1.200 | 0,28~0,38 | 0,28~0,90 |
| 20 | 1.300 | 0,30~0,40 | 1.300 | 0,30~0,40 | 960 | 0,30~0,40 | 480 | 0,30~0,40 | 760 | 0,30~0,40 | 610 | 0,30~0,40 | 1.300 | 0,30~0,40 | 1.050 | 0,30~0,40 | 0,30~0,98 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## ADO-SUS-3D/5D/8D

| | Carbon Steel S50C | | Alloy Steel SCM440 | | Alloy Steel SCM440 • 30HRC | | Stainless Steel SUS304~SUS316 | | Super Duplex SUS630 • 17-4PH • 15-5PH | | Ti Alloy | | AL, AC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 90 m/min | | 60 ~ 100 m/min | | 30 ~ 60 m/min | | 20 ~ 50 m/min | | 150 ~ 300 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 12.700 | 0,04~0,08 | 12.700 | 0,04~0,08 | 11.900 | 0,04~0,08 | 12.700 | 0,04~0,08 | 9.500 | 0,04~0,08 | 6.400 | 0,04~0,08 | 30.000 | 0,08~0,12 |
| 3 | 10.600 | 0,06~0,12 | 10.600 | 0,06~0,12 | 7.400 | 0,06~0,12 | 8.500 | 0,06~0,12 | 4.800 | 0,06~0,09 | 3.700 | 0,05~0,09 | 21.000 | 0,12~0,18 |
| 4 | 8.000 | 0,08~0,16 | 8.000 | 0,08~0,16 | 5.600 | 0,08~0,16 | 6.400 | 0,08~0,16 | 3.600 | 0,08~0,12 | 2.800 | 0,06~0,12 | 16.000 | 0,16~0,24 |
| 5 | 6.400 | 0,10~0,20 | 6.400 | 0,10~0,20 | 4.500 | 0,10~0,20 | 5.100 | 0,10~0,20 | 2.900 | 0,10~0,15 | 2.200 | 0,08~0,15 | 12.500 | 0,20~0,30 |
| 6 | 5.300 | 0,12~0,24 | 5.300 | 0,12~0,24 | 3.700 | 0,12~0,24 | 4.200 | 0,12~0,24 | 2.400 | 0,12~0,18 | 1.900 | 0,09~0,18 | 10.500 | 0,24~0,36 |
| 7 | 4.500 | 0,14~0,26 | 4.500 | 0,14~0,26 | 3.200 | 0,14~0,26 | 3.600 | 0,14~0,26 | 2.000 | 0,14~0,21 | 1.600 | 0,11~0,21 | 9.000 | 0,28~0,42 |
| 8 | 4.000 | 0,16~0,28 | 4.000 | 0,16~0,28 | 2.800 | 0,16~0,28 | 3.200 | 0,16~0,28 | 1.800 | 0,16~0,24 | 1.400 | 0,12~0,24 | 8.000 | 0,32~0,48 |
| 9 | 3.500 | 0,18~0,30 | 3.500 | 0,18~0,30 | 2.500 | 0,18~0,30 | 2.800 | 0,18~0,30 | 1.600 | 0,18~0,27 | 1.200 | 0,14~0,27 | 7.000 | 0,36~0,54 |
| 10 | 3.200 | 0,20~0,30 | 3.200 | 0,20~0,30 | 2.200 | 0,20~0,30 | 2.500 | 0,20~0,30 | 1.400 | 0,20~0,30 | 1.100 | 0,15~0,30 | 6.400 | 0,40~0,60 |
| 11 | 2.900 | 0,20~0,30 | 2.900 | 0,20~0,30 | 2.000 | 0,20~0,30 | 2.300 | 0,20~0,30 | 1.300 | 0,20~0,30 | 1.000 | 0,15~0,30 | 5.800 | 0,44~0,66 |
| 12 | 2.700 | 0,21~0,30 | 2.700 | 0,21~0,30 | 1.900 | 0,21~0,30 | 2.100 | 0,21~0,30 | 1.200 | 0,21~0,30 | 900 | 0,16~0,30 | 5.300 | 0,48~0,72 |
| 13 | 2.400 | 0,21~0,33 | 2.400 | 0,21~0,33 | 1.700 | 0,21~0,33 | 2.000 | 0,21~0,33 | 1.100 | 0,21~0,33 | 900 | 0,18~0,33 | 4.900 | 0,52~0,78 |
| 14 | 2.300 | 0,22~0,35 | 2.300 | 0,22~0,35 | 1.600 | 0,22~0,35 | 1.800 | 0,22~0,35 | 1.000 | 0,22~0,35 | 800 | 0,19~0,35 | 4.550 | 0,56~0,84 |
| 16 | 2.000 | 0,25~0,36 | 2.000 | 0,25~0,36 | 1.400 | 0,25~0,36 | 1.600 | 0,25~0,36 | 900 | 0,25~0,36 | 700 | 0,22~0,36 | 4.000 | 0,64~0,96 |
| 18 | 1.800 | 0,28~0,38 | 1.800 | 0,28~0,38 | 1.200 | 0,28~0,38 | 1.400 | 0,28~0,38 | 800 | 0,28~0,38 | 600 | 0,24~0,38 | 3.500 | 0,72~1,08 |
| 20 | 1.600 | 0,30~0,40 | 1.600 | 0,30~0,40 | 1.100 | 0,30~0,40 | 1.300 | 0,30~0,40 | 700 | 0,30~0,40 | 600 | 0,27~0,40 | 3.200 | 0,80~1,20 |

## ADO-3D/5D/ADO-PLT

| | Carbon Steel S50C | | Alloy Steel SCM440 | | Alloy Steel SCM440 • 30HRC | | Cast Iron FC250 | | Ductile Cast IRON FCD700 | | Stainless Steel SUS304 | | AL, AC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 90 m/min | | 80 ~ 120 m/min | | 60 ~ 100 m/min | | 40 ~ 70 m/min | | 150 ~ 300 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 12.700 | 0,04~0,08 | 12.700 | 0,04~0,08 | 11.100 | 0,04~0,08 | 12.700 | 0,04~0,08 | 12.700 | 0,04~0,08 | 9.500 | 0,04~0,08 | 30.000 | 0,06~0,10 |
| 3 | 10.600 | 0,06~0,12 | 10.600 | 0,06~0,12 | 7.400 | 0,06~0,12 | 10.600 | 0,06~0,12 | 8.500 | 0,06~0,12 | 6.400 | 0,06~0,12 | 21.000 | 0,09~0,15 |
| 4 | 8.000 | 0,08~0,16 | 8.000 | 0,08~0,16 | 5.600 | 0,08~0,16 | 8.000 | 0,08~0,16 | 6.400 | 0,08~0,16 | 4.800 | 0,08~0,16 | 16.000 | 0,12~0,20 |
| 5 | 6.400 | 0,10~0,20 | 6.400 | 0,10~0,20 | 4.500 | 0,10~0,20 | 6.400 | 0,10~0,20 | 5.100 | 0,10~0,20 | 3.800 | 0,10~0,20 | 12.500 | 0,15~0,25 |
| 6 | 5.300 | 0,12~0,24 | 5.300 | 0,12~0,24 | 3.700 | 0,12~0,24 | 5.300 | 0,12~0,24 | 4.200 | 0,12~0,24 | 3.200 | 0,12~0,24 | 10.500 | 0,18~0,30 |
| 7 | 4.500 | 0,14~0,26 | 4.500 | 0,14~0,26 | 3.200 | 0,14~0,26 | 4.500 | 0,14~0,26 | 3.600 | 0,14~0,26 | 2.700 | 0,14~0,26 | 9.000 | 0,21~0,35 |
| 8 | 4.000 | 0,16~0,28 | 4.000 | 0,16~0,28 | 2.800 | 0,16~0,28 | 4.000 | 0,16~0,28 | 3.200 | 0,16~0,28 | 2.400 | 0,16~0,28 | 8.000 | 0,24~0,40 |
| 9 | 3.500 | 0,18~0,30 | 3.500 | 0,18~0,30 | 2.500 | 0,18~0,30 | 3.500 | 0,18~0,30 | 2.800 | 0,18~0,30 | 2.100 | 0,18~0,30 | 7.000 | 0,27~0,45 |
| 10 | 3.200 | 0,20~0,30 | 3.200 | 0,20~0,30 | 2.200 | 0,20~0,30 | 3.200 | 0,20~0,30 | 2.500 | 0,20~0,30 | 1.900 | 0,20~0,30 | 6.400 | 0,30~0,50 |
| 11 | 2.900 | 0,20~0,30 | 2.900 | 0,20~0,30 | 2.000 | 0,20~0,30 | 2.900 | 0,20~0,30 | 2.300 | 0,20~0,30 | 1.700 | 0,20~0,30 | 5.800 | 0,33~0,55 |
| 12 | 2.700 | 0,21~0,30 | 2.700 | 0,21~0,30 | 1.900 | 0,21~0,30 | 2.700 | 0,21~0,30 | 2.100 | 0,21~0,30 | 1.600 | 0,21~0,30 | 5.300 | 0,36~0,60 |
| 13 | 2.400 | 0,21~0,33 | 2.400 | 0,21~0,33 | 1.700 | 0,21~0,33 | 2.400 | 0,21~0,33 | 2.000 | 0,21~0,33 | 1.500 | 0,21~0,33 | 4.900 | 0,39~0,65 |
| 14 | 2.300 | 0,22~0,35 | 2.300 | 0,22~0,35 | 1.600 | 0,22~0,35 | 2.300 | 0,22~0,35 | 1.800 | 0,22~0,35 | 1.400 | 0,22~0,35 | 4.550 | 0,42~0,70 |
| 16 | 2.000 | 0,25~0,36 | 2.000 | 0,25~0,36 | 1.400 | 0,25~0,36 | 2.000 | 0,25~0,36 | 1.600 | 0,25~0,36 | 1.200 | 0,25~0,36 | 4.000 | 0,48~0,80 |
| 18 | 1.800 | 0,28~0,38 | 1.800 | 0,28~0,38 | 1.200 | 0,28~0,38 | 1.800 | 0,28~0,38 | 1.400 | 0,28~0,38 | 1.100 | 0,28~0,38 | 3.500 | 0,54~0,90 |
| 20 | 1.600 | 0,30~0,40 | 1.600 | 0,30~0,40 | 1.100 | 0,30~0,40 | 1.600 | 0,30~0,40 | 1.300 | 0,30~0,40 | 1.000 | 0,30~0,40 | 3.200 | 0,60~1,00 |

## TRS-HO-10D

| | Mild Steel - Low Carbon Steel St-52 ~150HB ~500 N/mm² | | Carbon Steel C45 ~210HB ~710 N/mm² | | Alloys Steel 42CrMo4 16~28HRC 710~900 N/mm² | | Alloys Steel 42CrMo4 16~28HRC 900~110 N/mm² | | Cast Iron GG-25 ~350 N/mm² | | Ductile Cast Iron GGG-60 400~600 N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 100 m/min | | 60 ~ 90 m/min | | 80 ~ 150 m/min | | 60 ~ 120 m/min | |
| Ø | S ($min^{-1}$) 10D | F (mm/rev.) | S ($min^{-1}$) 10D | F (mm/rev.) | S ($min^{-1}$) 10D | F (mm/rev.) | S ($min^{-1}$) 10D | F (mm/rev.) | S ($min^{-1}$) 10D | F (mm/rev.) | S ($min^{-1}$) 10D | F (mm/rev.) |
| 5 | 6.400 | 0,18 ~ 0,25 | 6.400 | 0,18 ~ 0,25 | 4.800 | 0,18 ~ 0,25 | 5.700 | 0,18 ~ 0,25 | 6.400 | 0,18 ~ 0,30 | 6.400 | 0,18 ~ 0,25 |
| 6 | 5.300 | 0,21 ~ 0,30 | 5.300 | 0,21 ~ 0,30 | 4.000 | 0,21 ~ 0,30 | 4.800 | 0,21 ~ 0,30 | 5.300 | 0,21 ~ 0,36 | 5.300 | 0,21 ~ 0,30 |
| 7 | 4.500 | 0,25 ~ 0,35 | 4.500 | 0,25 ~ 0,35 | 3.400 | 0,25 ~ 0,35 | 4.100 | 0,25 ~ 0,35 | 4.500 | 0,25 ~ 0,42 | 4.500 | 0,25 ~ 0,35 |
| 8 | 4.000 | 0,28 ~ 0,40 | 4.000 | 0,28 ~ 0,40 | 3.000 | 0,28 ~ 0,40 | 3.600 | 0,28 ~ 0,40 | 4.000 | 0,28 ~ 0,48 | 4.000 | 0,28 ~ 0,40 |
| 9 | 3.500 | 0,32 ~ 0,45 | 3.500 | 0,32 ~ 0,45 | 2.700 | 0,32 ~ 0,45 | 3.200 | 0,32 ~ 0,45 | 3.500 | 0,32 ~ 0,54 | 3.500 | 0,32 ~ 0,45 |
| 10 | 3.200 | 0,35 ~ 0,50 | 3.200 | 0,35 ~ 0,50 | 2.400 | 0,35 ~ 0,50 | 2.900 | 0,35 ~ 0,50 | 3.200 | 0,35 ~ 0,60 | 3.200 | 0,35 ~ 0,50 |
| 11 | 2.900 | 0,39 ~ 0,55 | 2.900 | 0,39 ~ 0,55 | 2.200 | 0,39 ~ 0,50 | 2.600 | 0,39 ~ 0,50 | 2.900 | 0,39 ~ 0,66 | 2.900 | 0,39 ~ 0,55 |
| 12 | 2.700 | 0,42 ~ 0,60 | 2.700 | 0,42 ~ 0,60 | 2.000 | 0,42 ~ 0,54 | 2.400 | 0,42 ~ 0,54 | 2.700 | 0,42 ~ 0,72 | 2.700 | 0,42 ~ 0,60 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## ADO-TRS-3D/5D

| | Mild Steel - Low Carbon Steel<br>SS400 - S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C - S50C<br>~210HB ~710 N/mm² | | Alloy Steel<br>SCM - SCr - sncm<br>710 ~900 N/mm² | |
|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 100 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 3 | 10.000 | 0,11 ~ 0,15 | 10.000 | 0,11 ~ 0,15 | 8.500 | 0,11 ~ 0,15 |
| 4 | 8.000 | 0,14 ~ 0,2 | 8.000 | 0,14 ~ 0,2 | 6.400 | 0,14 ~ 0,2 |
| 5 | 6.400 | 0,18 ~ 0,25 | 6.400 | 0,18 ~ 0,25 | 5.100 | 0,18 ~ 0,25 |
| 6 | 5.300 | 0,21 ~ 0,3 | 5.300 | 0,21 ~ 0,3 | 4.200 | 0,21 ~ 0,3 |
| 7 | 4.500 | 0,25 ~ 0,35 | 4.500 | 0,25 ~ 0,35 | 3.600 | 0,25 ~ 0,35 |
| 8 | 4.000 | 0,28 ~ 0,4 | 4.000 | 0,28 ~ 0,4 | 3.200 | 0,28 ~ 0,4 |
| 9 | 3.500 | 0,32 ~ 0,45 | 3.500 | 0,32 ~ 0,45 | 2.800 | 0,32 ~ 0,45 |
| 10 | 3.200 | 0,35 ~ 0,5 | 3.200 | 0,35 ~ 0,5 | 2.500 | 0,35 ~ 0,5 |
| 11 | 2.900 | 0,39 ~ 0,55 | 2.900 | 0,39 ~ 0,55 | 2.300 | 0,39 ~ 0,55 |
| 12 | 2.700 | 0,42 ~ 0,6 | 2.700 | 0,42 ~ 0,6 | 2.100 | 0,42 ~ 0,6 |
| 13 | 2.400 | 0,46 ~ 0,65 | 2.400 | 0,46 ~ 0,65 | 2.000 | 0,46 ~ 0,65 |
| 14 | 2.300 | 0,49 ~ 0,7 | 2.300 | 0,49 ~ 0,7 | 1.800 | 0,49 ~ 0,7 |
| 15 | 2.100 | 0,53 ~ 0,75 | 2.100 | 0,53 ~ 0,7 | 1.700 | 0,53 ~ 0,7 |
| 16 | 2.000 | 0,56 ~ 0,8 | 2.000 | 0,56 ~ 0,72 | 1.600 | 0,56 ~ 0,72 |
| 17 | 1.900 | 0,6 ~ 0,85 | 1.900 | 0,6 ~ 0,77 | 1.500 | 0,6 ~ 0,77 |
| 18 | 1.800 | 0,63 ~ 0,9 | 1.800 | 0,63 ~ 0,81 | 1.400 | 0,63 ~ 0,81 |
| 19 | 1.700 | 0,67 ~ 0,9 | 1.700 | 0,67 ~ 0,86 | 1.300 | 0,67 ~ 0,86 |
| 20 | 1.600 | 0,7 ~ 0,9 | 1.600 | 0,7 ~ 0,9 | 1.300 | 0,7 ~ 0,9 |

| | Alloy Steel<br>SCM - SCr - sncm<br>900 ~1.100 N/mm² | | Cast Iron<br>FC250<br>~350N/mm² | | Ductile Cast Iron<br>FCD450 - FCD600<br>400 ~600 N/mm² | | AL, AC | |
|---|---|---|---|---|---|---|---|---|
| Vc | 60 ~ 90 m/min | | 80 ~ 120 m/min | | 60 ~ 100 m/min | | 150 ~ 300 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 3 | 8.000 | 0,11 ~ 0,15 | 10.000 | 0,11 ~ 0,18 | 8.500 | 0,11 ~ 0,15 | 30000 | 0,08 ~ 0,12 |
| 4 | 6.000 | 0,14 ~ 0,2 | 8.000 | 0,14 ~ 0,24 | 6.400 | 0,14 ~ 0,2 | 21000 | 0,12 ~ 0,18 |
| 5 | 4.800 | 0,18 ~ 0,25 | 6.400 | 0,18 ~ 0,3 | 5.100 | 0,18 ~ 0,25 | 16000 | 0,16 ~ 0,24 |
| 6 | 4.000 | 0,21 ~ 0,3 | 5.300 | 0,21 ~ 0,36 | 4.200 | 0,21 ~ 0,3 | 12500 | 0,2 ~ 0,3 |
| 7 | 3.400 | 0,25 ~ 0,35 | 4.500 | 0,25 ~ 0,42 | 3.600 | 0,25 ~ 0,35 | 10500 | 0,24 ~ 0,36 |
| 8 | 3.000 | 0,28 ~ 0,4 | 4.000 | 0,28 ~ 0,48 | 3.200 | 0,28 ~ 0,4 | 9000 | 0,28 ~ 0,42 |
| 9 | 2.700 | 0,32 ~ 0,45 | 3.500 | 0,32 ~ 0,54 | 2.800 | 0,32 ~ 0,45 | 8000 | 0,32 ~ 0,48 |
| 10 | 2.400 | 0,35 ~ 0,5 | 3.200 | 0,35 ~ 0,6 | 2.500 | 0,35 ~ 0,5 | 7000 | 0,36 ~ 0,54 |
| 11 | 2.200 | 0,39 ~ 0,55 | 2.900 | 0,39 ~ 0,66 | 2.300 | 0,39 ~ 0,55 | 6400 | 0,4 ~ 0,6 |
| 12 | 2.000 | 0,42 ~ 0,6 | 2.700 | 0,42 ~ 0,72 | 2.100 | 0,42 ~ 0,6 | 5800 | 0,44 ~ 0,66 |
| 13 | 1.800 | 0,46 ~ 0,65 | 2.400 | 0,46 ~ 0,78 | 2.000 | 0,46 ~ 0,65 | 5300 | 0,48 ~ 0,72 |
| 14 | 1.700 | 0,49 ~ 0,7 | 2.300 | 0,49 ~ 0,84 | 1.800 | 0,49 ~ 0,7 | 4900 | 0,52 ~ 0,78 |
| 15 | 1.600 | 0,53 ~ 0,70 | 2.100 | 0,53 ~ 0,75 | 1.700 | 0,53 ~ 0,7 | 4550 | 0,56 ~ 0,84 |
| 16 | 1.500 | 0,56 ~ 0,72 | 2.000 | 0,56 ~ 0,8 | 1.600 | 0,56 ~ 0,72 | 4000 | 0,64 ~ 0,96 |
| 17 | 1.400 | 0,6 ~ 0,77 | 1.900 | 0,6 ~ 0,85 | 1.500 | 0,6 ~ 0,77 | 3500 | 0,72 ~ 1,08 |
| 18 | 1.300 | 0,63 ~ 0,81 | 1.800 | 0,63 ~ 0,9 | 1.400 | 0,63 ~ 0,81 | 3200 | 0,8 ~ 1,2 |
| 19 | 1.300 | 0,67 ~ 0,86 | 1.700 | 0,67 ~ 0,95 | 1.300 | 0,67 ~ 0,86 | 1.300 | 0,67 ~ 0,86 |
| 20 | 1.200 | 0,7 ~ 0,9 | 1.600 | 0,7 ~ 1 | 1.300 | 0,7 ~ 0,9 | 1.300 | 0,7 ~ 0,9 |

1. The indicated speeds and feeds are for drilling with water-soluble coolant.
2. Water-soluble high density coolant (less than 20 times dilution) is recommended.
3. When using non-water-soluble or water-soluble coolant (over 20 times dilution), reduce cutting speed by 30%.
4. Equip the drill with a scratch- and dust-free collet and minimize drill deflection to less than 0.02mm.
5. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
6. A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## ADO-10D/15D/20D/25D/30D

| | Mild Steel - Low Carbon Steel<br>SS400 • S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C • S50C<br>~210HB ~710 N/mm² | | Alloys Steel<br>SCM • SCr • SNCM<br>16~28HRC<br>710~900 N/mm² | | Cast Iron<br>FC250<br>~350 N/mm² | | Ductile Cast Iron<br>FCD450 • FCD600<br>400~600 N/mm² | | Stainless Steel<br>SUS400<br>400 ~ 800 N/mm² | | AL, AC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 50 ~ 80 m/min | | 40 ~ 80 m/min | | 60 ~ 125 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 2 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 | 8.000 | 0,04 ~ 0,08 | 11.000 | 0,04 ~ 0,08 |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 |
| 4 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 | 5.000 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 |
| 5 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 |
| 6 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 3.800 | 0,12 ~ 0,24 | 3.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 |
| 8 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 | 3.600 | 0,16 ~ 0,28 |
| 10 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 | 2.300 | 0,20 ~ 0,35 | 2.300 | 0,20 ~ 0,35 | 2.900 | 0,20 ~ 0,35 |
| 12 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 | 1.900 | 0,24 ~ 0,42 | 1.900 | 0,24 ~ 0,42 | 2.400 | 0,24 ~ 0,42 |

## ADO-40D/50D

| | Mild Steel - Low Carbon Steel<br>SS400 - S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C - S50C<br>~210HB ~710 N/mm² | | Alloy Steel<br>SCM - SCr - sncm<br>16~28HRC<br>710 ~900 N/mm² | | Alloy Steel<br>(C ≥0,3%)<br>SCM440<br>28~35HRC<br>900~1,060N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 60~90m/min | | 60~90m/min | | 50~80m/min | | 40~70m/min | |
| Ø | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 6.400 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,11 |
| 4 | 5.600 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 | 4.800 | 0,08 ~ 0,16 | 4.000 | 0,08 ~ 0,14 |
| 5 | 4.500 | 0,1 ~ 0,2 | 4.500 | 0,1 ~ 0,2 | 3.800 | 0,1 ~ 0,2 | 3.200 | 0,1 ~ 0,17 |
| 6 | 3.700 | 0,12 ~ 0,24 | 3.700 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.700 | 0,12 ~ 0,21 |
| 8 | 2.800 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 | 2.400 | 0,16 ~ 0,28 | 2.000 | 0,16 ~ 0,24 |
| 10 | 2.300 | 0,2 ~ 0,35 | 2.300 | 0,2 ~ 0,35 | 1.900 | 0,2 ~ 0,35 | 1.600 | 0,2 ~ 0,3 |

| | Cast Iron<br>FC250<br>~350N/mm² | | Ductile Cast Iron<br>FCD450 - FCD600<br>400 ~600 N/mm² | | Stainless Steel<br>SUS300/400<br>480 ~800 N/mm² | | AL, AC | |
|---|---|---|---|---|---|---|---|---|
| Vc | 60~90m/min | | 50~80m/min | | 40~60m/min | | 60~90m/min | |
| Ø | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) | S (min⁻¹) | f (mm/rev.) |
| 3 | 7.500 | 0,06 ~ 0,12 | 6.400 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 |
| 4 | 5.600 | 0,08 ~ 0,16 | 4.800 | 0,08 ~ 0,16 | 4.000 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 |
| 5 | 4.500 | 0,1 ~ 0,2 | 3.800 | 0,1 ~ 0,2 | 3.200 | 0,1 ~ 0,2 | 4.500 | 0,1 ~ 0,2 |
| 6 | 3.700 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.700 | 0,12 ~ 0,24 | 3.700 | 0,12 ~ 0,24 |
| 8 | 2.800 | 0,16 ~ 0,28 | 2.400 | 0,16 ~ 0,28 | 2.000 | 0,16 ~ 0,28 | 2.800 | 0,16 ~ 0,28 |
| 10 | 2.300 | 0,2 ~ 0,35 | 1.900 | 0,2 ~ 0,35 | 1.600 | 0,2 ~ 0,35 | 2.300 | 0,2 ~ 0,35 |

1. The indicated speeds and feeds are for drilling with water-soluble coolant or MQL (mist drilling in stainless steels is not recommended).
2. Water-soluble high density coolant (20-30 times dilution) is recommended.
3. When using non-water-soluble coolant, set the cutting speed between 70-100% of the lowest limit.
4. Make a pilot hole before using in accordance with the recommended operation.
5. A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.
6. Peck drilling of 1D - 2D is strongly recommended.

*If it is difficult to process or if the straightness of the hole needed to be improved, use the coolant-through carbide drill ADO-20/30D after drilling a pilot hole, then process with the ADO-40/50D. When processing with 3 tools, the ADO-40/50D may be used at a more aggressive cutting condition than those listed above.

## CAO-GDXL

**Standard drilling**

| | AC<br>ADC • AC | | Al<br>A20... • A70... | | Al<br>A50... • A60... | | Cu<br>C1020 • C1100 | | Cu<br>CrCu | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 200 m/min | | 60 ~ 120 m/min | | 80 ~ 200 m/min | | 80 ~ 200 m/min | | 60 ~ 120 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 3 | 12.800 | 0,09~0,15 | 10.700 | 0,09~0,15 | 12.800 | 0,06~0,12 | 12.800 | 0,06~0,12 | 10.700 | 0,05~0,09 |
| 4 | 9.600 | 0,12~0,20 | 8.000 | 0,12~0,20 | 9.600 | 0,08~0,16 | 9.600 | 0,08~0,16 | 8.000 | 0,06~0,10 |
| 5 | 7.700 | 0,15~0,25 | 6.400 | 0,15~0,25 | 7.700 | 0,10~0,20 | 7.700 | 0,10~0,20 | 6.400 | 0,06~0,10 |
| 6 | 6.400 | 0,18~0,30 | 5.400 | 0,18~0,30 | 6.400 | 0,12~0,20 | 6.400 | 0,12~0,20 | 5.400 | 0,06~0,10 |
| 8 | 4.800 | 0,20~0,40 | 4.000 | 0,20~0,40 | 4.800 | 0,12~0,25 | 4.800 | 0,12~0,25 | 4.000 | 0,08~0,15 |
| 10 | 3.900 | 0,25~0,50 | 3.200 | 0,25~0,50 | 3.900 | 0,15~0,25 | 3.900 | 0,15~0,25 | 3.200 | 0,08~0,15 |

# CUTTING CONDITIONS



## HYP-HP-3D/HYP-HPO-3D/-HE/-HB

### Standard drilling

| | Steel | | | Cu | A5052 /A7075 | Al < 13% Si < 130 HB |
|---|---|---|---|---|---|---|
| | < 700 N/mm² | < 850 N/mm² | < 1000 N/mm² | | | |
| Vc | 100 ~ 150 m/min | 80 ~ 120 m/min | 70 ~ 110 m/min | 50 ~ 90 m/min | 60 ~ 110 m/min | 120 ~ 220 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 3 | 0,09~0,12 | 0,09~0,12 | 0,09~0,12 | 0,02~0,03 | 0,09~0,20 | 0,09~0,28 |
| 4 | 0,10~0,15 | 0,10~0,15 | 0,10~0,15 | 0,02~0,04 | 0,10~0,24 | 0,10~0,38 |
| 5 | 0,12~0,18 | 0,12~0,18 | 0,12~0,18 | 0,03~0,05 | 0,12~0,28 | 0,12~0,40 |
| 6 | 0,14~0,20 | 0,14~0,20 | 0,14~0,20 | 0,03~0,06 | 0,14~0,34 | 0,14~0,48 |
| 8 | 0,16~0,24 | 0,16~0,24 | 0,16~0,24 | 0,04~0,08 | 0,16~0,38 | 0,16~0,53 |
| 10 | 0,18~0,27 | 0,18~0,27 | 0,18~0,27 | 0,05~0,10 | 0,18~0,45 | 0,18~0,63 |
| 12 | 0,20~0,30 | 0,20~0,30 | 0,20~0,30 | 0,06~0,12 | 0,20~0,53 | 0,20~0,75 |
| 14 | 0,22~0,35 | 0,22~0,35 | 0,22~0,35 | 0,08~0,16 | 0,22~0,57 | 0,22~0,81 |
| 16 | 0,25~0,36 | 0,25~0,36 | 0,25~0,36 | 0,10~0,18 | 0,25~0,61 | 0,25~0,85 |
| 18 | 0,28~0,38 | 0,28~0,38 | 0,28~0,38 | 0,12~0,20 | 0,28~0,63 | 0,28~0,90 |
| 20 | 0,30~0,40 | 0,30~0,40 | 0,30~0,40 | 0,20~0,28 | 0,28~0,68 | 0,30~0,98 |

| | GG (G) | | SUS | High-Alloy Steel | Special Alloys | Hardened Steel |
|---|---|---|---|---|---|---|
| | < 180 HB | < 300 HB | < 820 HB | < 1200 N/mm² | < 30 HRC | < 60 HRC |
| Vc | 150 ~ 200 m/min | 100 ~ 150 m/min | 40 ~ 50 m/min | 50 ~ 60 m/min | 15 ~ 25 m/min | 15 ~ 25 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 3 | 0,12~0,15 | 0,12~0,15 | 0,09~0,12 | 0,07~0,11 | 0,05~0,09 | 0,03~0,05 |
| 4 | 0,13~0,18 | 0,13~0,18 | 0,10~0,15 | 0,08~0,13 | 0,06~0,10 | 0,04~0,06 |
| 5 | 0,15~0,22 | 0,15~0,22 | 0,12~0,18 | 0,10~0,15 | 0,08~0,12 | 0,05~0,07 |
| 6 | 0,18~0,25 | 0,18~0,25 | 0,14~0,20 | 0,12~0,18 | 0,09~0,15 | 0,05~0,07 |
| 8 | 0,20~0,30 | 0,20~0,30 | 0,16~0,24 | 0,14~0,22 | 0,12~0,20 | 0,06~0,08 |
| 10 | 0,23~0,33 | 0,23~0,33 | 0,18~0,27 | 0,15~0,25 | 0,13~0,23 | 0,07~0,10 |
| 12 | 0,25~0,38 | 0,25~0,38 | 0,20~0,30 | 0,17~0,26 | 0,14~0,24 | 0,09~0,12 |
| 14 | 0,30~0,43 | 0,30~0,43 | 0,22~0,35 | 0,18~0,30 | 0,15~0,26 | 0,10~0,13 |
| 16 | 0,35~0,50 | 0,35~0,50 | 0,25~0,36 | 0,20~0,32 | 0,16~0,26 | 0,10~0,13 |
| 18 | 0,38~0,55 | 0,38~0,55 | 0,28~0,38 | 0,23~0,33 | 0,18~0,28 | 0,12~0,16 |
| 20 | 0,40~0,63 | 0,40~0,63 | 0,30~0,40 | 0,25~0,35 | 0,20~0,30 | 0,14~0,18 |

## HYP-HP-5D/HYP-HPO-5D/-HE/-HB/HYP-HPO-8D

### Standard drilling

| | Steel | | | Cu | A5052 /A7075 | Al < 13% Si < 130 HB |
|---|---|---|---|---|---|---|
| | < 700 N/mm² | < 850 N/mm² | < 1000 N/mm² | | | |
| Vc | 100 ~ 150 m/min | 80 ~ 120 m/min | 70 ~ 110 m/min | 50 ~ 90 m/min | 60 ~ 110 m/min | 120 ~ 220 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 1 | 0,01~0,03 | 0,01~0,03 | 0,01~0,03 | 0,007~0,01 | 0,01~0,03 | 0,02~0,06 |
| 2 | 0,02~0,06 | 0,02~0,06 | 0,02~0,06 | 0,014~0,02 | 0,02~0,06 | 0,04~0,12 |
| 3 | 0,09~0,12 | 0,09~0,12 | 0,09~0,12 | 0,02~0,03 | 0,09~0,20 | 0,09~0,28 |
| 4 | 0,10~0,15 | 0,10~0,15 | 0,10~0,15 | 0,02~0,04 | 0,10~0,24 | 0,10~0,38 |
| 5 | 0,12~0,18 | 0,12~0,18 | 0,12~0,18 | 0,03~0,05 | 0,12~0,28 | 0,12~0,40 |
| 6 | 0,14~0,20 | 0,14~0,20 | 0,14~0,20 | 0,03~0,06 | 0,14~0,34 | 0,14~0,48 |
| 8 | 0,16~0,24 | 0,16~0,24 | 0,16~0,24 | 0,04~0,08 | 0,16~0,38 | 0,16~0,53 |
| 10 | 0,18~0,27 | 0,18~0,27 | 0,18~0,27 | 0,05~0,10 | 0,18~0,45 | 0,18~0,63 |
| 12 | 0,20~0,30 | 0,20~0,30 | 0,20~0,30 | 0,06~0,12 | 0,20~0,53 | 0,20~0,75 |
| 14 | 0,22~0,35 | 0,22~0,35 | 0,22~0,35 | 0,08~0,16 | 0,22~0,57 | 0,22~0,81 |
| 16 | 0,25~0,36 | 0,25~0,36 | 0,25~0,36 | 0,10~0,18 | 0,25~0,61 | 0,25~0,85 |
| 18 | 0,28~0,38 | 0,28~0,38 | 0,28~0,38 | 0,12~0,20 | 0,28~0,63 | 0,28~0,90 |
| 20 | 0,30~0,40 | 0,30~0,40 | 0,30~0,40 | 0,20~0,28 | 0,28~0,68 | 0,30~0,98 |

| | GG (G) | | SUS | High-Alloy Steel | Special Alloys | H ardened Steel |
|---|---|---|---|---|---|---|
| | < 180 HB | < 300 HB | < 820 HB | < 1200 N/mm² | < 30 HRC | < 60 HRC |
| Vc | 150 ~ 200 m/min | 100 ~ 150 m/min | 40 ~ 50 m/min | 50 ~ 60 m/min | 15 ~ 25 m/min | 15 ~ 25 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 1 | 0,02~0,04 | 0,02~0,04 | 0,01~0,03 | 0,01~0,03 | 0,015~0,03 | 0,01~0,015 |
| 2 | 0,04~0,08 | 0,04~0,08 | 0,02~0,06 | 0,02~0,06 | 0,03~0,06 | 0,02~0,03 |
| 3 | 0,12~0,15 | 0,12~0,15 | 0,09~0,12 | 0,07~0,11 | 0,05~0,09 | 0,03~0,05 |
| 4 | 0,13~0,18 | 0,13~0,18 | 0,10~0,15 | 0,08~0,13 | 0,06~0,10 | 0,04~0,06 |
| 5 | 0,15~0,22 | 0,15~0,22 | 0,12~0,18 | 0,10~0,15 | 0,08~0,12 | 0,05~0,07 |
| 6 | 0,18~0,25 | 0,18~0,25 | 0,14~0,20 | 0,12~0,18 | 0,09~0,15 | 0,05~0,07 |
| 8 | 0,20~0,30 | 0,20~0,30 | 0,16~0,24 | 0,14~0,22 | 0,12~0,20 | 0,06~0,08 |
| 10 | 0,23~0,33 | 0,23~0,33 | 0,18~0,27 | 0,15~0,25 | 0,13~0,23 | 0,07~0,10 |
| 12 | 0,25~0,38 | 0,25~0,38 | 0,20~0,30 | 0,17~0,26 | 0,14~0,24 | 0,09~0,12 |
| 14 | 0,30~0,43 | 0,30~0,43 | 0,22~0,35 | 0,18~0,30 | 0,15~0,26 | 0,10~0,13 |
| 16 | 0,35~0,50 | 0,35~0,50 | 0,25~0,36 | 0,20~0,32 | 0,16~0,26 | 0,10~0,13 |
| 18 | 0,38~0,55 | 0,38~0,55 | 0,28~0,38 | 0,23~0,33 | 0,18~0,28 | 0,12~0,16 |
| 20 | 0,40~0,63 | 0,40~0,63 | 0,30~0,40 | 0,25~0,35 | 0,20~0,30 | 0,14~0,18 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## HYP-AL-3D

| | Cast Aluminum | | Aluminum Alloy | | Copper Alloy | | Magnesium Alloy | |
|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 200 m/min | | 80 ~ 150 m/min | | 40 ~ 100 m/min | | 60 ~ 100 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) |
| 1 | 25000 | 0,02 ~ 0,08 | 25000 | 0,02 ~ 0,05 | 22300 | 0,008 ~ 0,02 | 25000 | 0,02 ~ 0,05 |
| 2 | 22300 | 0,04 ~ 0,16 | 18300 | 0,04 ~ 0,10 | 11100 | 0,016 ~ 0,04 | 12700 | 0,04 ~ 0,10 |
| 3 | 14900 | 0,06 ~ 0,24 | 12200 | 0,06 ~ 0,15 | 7400 | 0,024 ~ 0,06 | 8500 | 0,06 ~ 0,15 |
| 4 | 11100 | 0,08 ~ 0,32 | 9200 | 0,08 ~ 0,20 | 5600 | 0,032 ~ 0,08 | 6400 | 0,08 ~ 0,20 |
| 6 | 7400 | 0,12 ~ 0,48 | 6100 | 0,12 ~ 0,30 | 3700 | 0,048 ~ 0,12 | 4200 | 0,12 ~ 0,30 |
| 8 | 5600 | 0,16 ~ 0,64 | 4600 | 0,16 ~ 0,40 | 2800 | 0,064 ~ 0,16 | 3200 | 0,16 ~ 0,40 |
| 10 | 4500 | 0,20 ~ 0,80 | 3700 | 0,20 ~ 0,50 | 2200 | 0,080 ~ 0,20 | 2500 | 0,20 ~ 0,50 |
| 12 | 3700 | 0,24 ~ 0,96 | 3100 | 0,24 ~ 0,60 | 1900 | 0,096 ~ 0,24 | 2100 | 0,24 ~ 0,60 |

## HYP-ALO-5D

| | Cast Aluminum | | Aluminum Alloy | | Copper Alloy | | Magnesium Alloy | |
|---|---|---|---|---|---|---|---|---|
| Vc | 120 ~ 250 m/min | | 80 ~ 200 m/min | | 40 ~ 120 m/min | | 60 ~ 130 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) |
| 1 | 25000 | 0,02 ~ 0,08 | 25000 | 0,02 ~ 0,05 | 25000 | 0,008 ~ 0,02 | 25000 | 0,02 ~ 0,05 |
| 2 | 29500 | 0,04 ~ 0,16 | 22300 | 0,04 ~ 0,10 | 12700 | 0,016 ~ 0,04 | 15100 | 0,04 ~ 0,10 |
| 3 | 19600 | 0,06 ~ 0,24 | 14900 | 0,06 ~ 0,15 | 8500 | 0,024 ~ 0,06 | 10100 | 0,06 ~ 0,15 |
| 4 | 14700 | 0,08 ~ 0,32 | 11100 | 0,08 ~ 0,20 | 6400 | 0,032 ~ 0,08 | 7600 | 0,08 ~ 0,20 |
| 6 | 9800 | 0,12 ~ 0,48 | 7400 | 0,12 ~ 0,30 | 4200 | 0,048 ~ 0,12 | 5000 | 0,12 ~ 0,30 |
| 8 | 7400 | 0,16 ~ 0,64 | 5600 | 0,16 ~ 0,40 | 3200 | 0,064 ~ 0,16 | 3800 | 0,16 ~ 0,40 |
| 10 | 5900 | 0,20 ~ 0,80 | 4500 | 0,20 ~ 0,50 | 2500 | 0,080 ~ 0,20 | 3000 | 0,20 ~ 0,50 |
| 12 | 4900 | 0,24 ~ 0,96 | 3700 | 0,24 ~ 0,60 | 2100 | 0,096 ~ 0,24 | 2500 | 0,24 ~ 0,60 |

## D-STAD

| | CFRP | |
|---|---|---|
| Vc | 50 ~ 100 m/min | |
| Ø | RPM | F (mm/rev.) |
| 4 | 4.000 ~ 8.000 | 0,03 ~ 0,05 |
| 6 | 2.600 ~ 5.300 | 0,04 ~ 0,075 |
| 6,35 | 2.500 ~ 5.000 | 0,04 ~ 0,075 |
| 8 | 2.000 ~ 4.000 | 0,05 ~ 0,08 |

## WH55-5D

| | SKD61 Special Alloy Steel • Hardened Steel • Pre-hardened steel 40 ~ 45 HRC | | DAC55, DH31S, SKD61, SKD11, STAVAX | | | |
|---|---|---|---|---|---|---|
| | | | 45 ~ 50 HRC | | 50 ~ 56 HRC | |
| Vc | 30 ~ 50 m/min | | 20 ~ 30 m/min | | 20 ~ 30 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 6.400 | 0,02 ~ 0,04 | 4.000 | 0,02 ~ 0,04 | 4.000 | 0,02 ~ 0,04 |
| 3 | 4.200 | 0,03 ~ 0,06 | 2.700 | 0,03 ~ 0,06 | 2.700 | 0,03 ~ 0,06 |
| 4 | 3.200 | 0,04 ~ 0,08 | 2.000 | 0,04 ~ 0,08 | 2.000 | 0,04 ~ 0,08 |
| 5 | 2.500 | 0,05 ~ 0,10 | 1.600 | 0,05 ~ 0,10 | 1.600 | 0,05 ~ 0,10 |
| 6 | 2.100 | 0,06 ~ 0,12 | 1.300 | 0,06 ~ 0,12 | 1.300 | 0,06 ~ 0,12 |
| 7 | 1.800 | 0,07 ~ 0,14 | 1.100 | 0,07 ~ 0,14 | 1.100 | 0,07 ~ 0,14 |
| 8 | 1.600 | 0,08 ~ 0,16 | 1.000 | 0,08 ~ 0,16 | 1.000 | 0,08 ~ 0,16 |
| 9 | 1.400 | 0,09 ~ 0,18 | 900 | 0,09 ~ 0,18 | 900 | 0,09 ~ 0,18 |
| 10 | 1.300 | 0,10 ~ 0,20 | 800 | 0,10 ~ 0,20 | 800 | 0,10 ~ 0,20 |
| 11 | 1.150 | 0,11 ~ 0,22 | 720 | 0,11 ~ 0,22 | 720 | 0,11 ~ 0,22 |
| 12 | 1.100 | 0,12 ~ 0,24 | 700 | 0,12 ~ 0,24 | 700 | 0,12 ~ 0,24 |

# CUTTING CONDITIONS



## WHO55-5D

| | SKD61<br>Special Alloy Steel • Hardened Steel • Pre-hardened steel<br>40 ~ 45 HRC | | DAC55, DH31S, SKD61, SKD11, STAVAX | | | | Inconel<br>38 ~ 43 HRC | |
|---|---|---|---|---|---|---|---|---|
| | | | 45 ~ 50 HRC | | 50 ~ 56 HRC | | | |
| Vc | 30 ~ 50 m/min | | 20 ~ 30 m/min | | 20 ~ 30 m/min | | 10 ~ 30 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 3,3 | 3.900 | 0,033 ~ 0,066 | 2.400 | 0,033 ~ 0,066 | 2.400 | 0,033 ~ 0,066 | 1.900 | 0,033 ~ 0,066 |
| 4 | 3.200 | 0,04 ~ 0,08 | 2.000 | 0,04 ~ 0,08 | 2.000 | 0,04 ~ 0,08 | 1.600 | 0,04 ~ 0,08 |
| 5 | 2.500 | 0,05 ~ 0,10 | 1.600 | 0,05 ~ 0,10 | 1.600 | 0,05 ~ 0,10 | 1.300 | 0,05 ~ 0,10 |
| 6 | 2.100 | 0,06 ~ 0,12 | 1.300 | 0,06 ~ 0,12 | 1.300 | 0,06 ~ 0,12 | 1.100 | 0,06 ~ 0,12 |
| 7 | 1.800 | 0,07 ~ 0,14 | 1.100 | 0,07 ~ 0,14 | 1.100 | 0,07 ~ 0,14 | 900 | 0,07 ~ 0,14 |
| 8 | 1.600 | 0,08 ~ 0,16 | 1.000 | 0,08 ~ 0,16 | 1.000 | 0,08 ~ 0,16 | 800 | 0,08 ~ 0,16 |
| 9 | 1.400 | 0,09 ~ 0,18 | 900 | 0,09 ~ 0,18 | 900 | 0,09 ~ 0,18 | 700 | 0,09 ~ 0,18 |
| 10 | 1.300 | 0,10 ~ 0,20 | 800 | 0,10 ~ 0,20 | 800 | 0,10 ~ 0,20 | 600 | 0,10 ~ 0,20 |
| 11 | 1.150 | 0,11 ~ 0,22 | 720 | 0,11 ~ 0,22 | 720 | 0,11 ~ 0,22 | 600 | 0,11 ~ 0,22 |
| 12 | 1.100 | 0,12 ~ 0,24 | 700 | 0,12 ~ 0,24 | 700 | 0,12 ~ 0,24 | 500 | 0,12 ~ 0,24 |

## WH70-DRL

| | SKD11 • SKT • SUS440<br>55 ~ 60HRC | | SKH • SKD11 • SKS<br>60 ~ 70HRC | |
|---|---|---|---|---|
| Vc | 10 ~ 16 m/min | | 8 ~ 13 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 2.000 | ~ 0,04 | 1.900 | ~ 0,04 |
| 3 | 1.330 | ~ 0,04 | 1.250 | ~ 0,04 |
| 4 | 1.000 | ~ 0,04 | 950 | ~ 0,04 |
| 5 | 800 | ~ 0,04 | 750 | ~ 0,04 |
| 6 | 670 | ~ 0,04 | 630 | ~ 0,04 |
| 8 | 500 | ~ 0,04 | 480 | ~ 0,04 |
| 10 | 400 | ~ 0,04 | 380 | ~ 0,04 |
| 12 | 330 | ~ 0,04 | 320 | ~ 0,04 |
| 14,1 | 280 | ~ 0,04 | 270 | ~ 0,04 |
| 16,1 | 250 | ~ 0,04 | 240 | ~ 0,04 |
| 17,6 | 235 | ~ 0,04 | 190 | ~ 0,04 |
| 18,6 | 220 | ~ 0,04 | 180 | ~ 0,04 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## VPH-GDS

| | ~ 35HRC • 35~45 HRC • 45~50 HRC • 50~70 HRC | | | | | | SKD | | | | SCM | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 34~43 HRC 1060~1400 N/mm² | | 43~48 HRC 1400~1600 N/mm² | | 48~53 HRC 1600~1900 N/mm² | | SKD11 ~1060 N/mm² | | SKD61 ~900 N/mm² | | 100Cr6 710~900 N/mm² | |
| Vc | 12 ~ 18 m/min | | 6 ~ 10 m/min | | 5 ~ 8 m/min | | 10 ~ 16 m/min | | 12 ~ 20 m/min | | 25 ~ 32 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,5 | 8.000 | 0,005~0,013 | 5.000 | 0,005~0,01 | 3.800 | 0,005~0,01 | 6.400 | 0,01~0,025 | 7.600 | 0,01~0,025 | 15.000 | 0,01~0,025 |
| 1 | 4.000 | 0,01~0,03 | 2.500 | 0,01~0,02 | 1.800 | 0,01~0,02 | 3.200 | 0,03~0,045 | 5.000 | 0,03~0,045 | 8.000 | 0,03~0,045 |
| 2 | 2.550 | 0,02~0,05 | 1.250 | 0,02~0,04 | 1.050 | 0,02~0,04 | 2.100 | 0,06~0,09 | 2.550 | 0,06~0,09 | 4.500 | 0,06~0,09 |
| 3 | 1.700 | 0,03~0,08 | 850 | 0,03~0,06 | 700 | 0,03~0,06 | 1.400 | 0,10~0,13 | 1.700 | 0,10~0,13 | 3.000 | 0,10~0,13 |
| 4 | 1.250 | 0,04~0,10 | 640 | 0,04~0,08 | 520 | 0,04~0,08 | 1.030 | 0,11~0,15 | 1.270 | 0,11~0,15 | 2.250 | 0,11~0,15 |
| 5 | 1.000 | 0,05~0,13 | 510 | 0,05~0,10 | 400 | 0,05~0,10 | 830 | 0,12~0,18 | 1.020 | 0,12~0,18 | 1.800 | 0,12~0,18 |
| 6 | 850 | 0,06~0,15 | 430 | 0,06~0,12 | 350 | 0,06~0,12 | 690 | 0,13~0,19 | 850 | 0,13~0,19 | 1.500 | 0,13~0,19 |
| 7 | 730 | 0,07~0,18 | 360 | 0,07~0,14 | 260 | 0,07~0,14 | 600 | 0,15~0,22 | 730 | 0,15~0,22 | 1.300 | 0,15~0,22 |
| 8 | 640 | 0,08~0,20 | 320 | 0,08~0,16 | 230 | 0,08~0,16 | 520 | 0,16~0,24 | 640 | 0,16~0,24 | 1.100 | 0,16~0,24 |
| 9 | 570 | 0,09~0,23 | 280 | 0,09~0,18 | 210 | 0,09~0,18 | 460 | 0,18~0,26 | 570 | 0,18~0,26 | 1.000 | 0,18~0,26 |
| 10 | 510 | 0,10~0,25 | 260 | 0,10~0,20 | 200 | 0,10~0,20 | 410 | 0,20~0,28 | 510 | 0,20~0,28 | 900 | 0,20~0,28 |
| 11 | 460 | 0,11~0,28 | 230 | 0,11~0,22 | 180 | 0,11~0,22 | 380 | 0,22~0,31 | 460 | 0,22~0,31 | 820 | 0,22~0,31 |
| 12 | 430 | 0,12~0,30 | 210 | 0,12~0,24 | 170 | 0,12~0,24 | 350 | 0,24~0,34 | 430 | 0,24~0,34 | 760 | 0,24~0,34 |
| 13 | 400 | 0,13~0,32 | 200 | 0,13~0,26 | 160 | 0,13~0,26 | 320 | 0,26~0,36 | 390 | 0,26~0,36 | 700 | 0,26~0,36 |

| | Ti Alloy Ti-6Al-4V (32~38 HRC) | | Inconel Inconel 718 (38~43 HRC) | | Carbon Steel CK50 500 ~ 710 N/mm² | | C≤0,2% 41CrMo4 ~500 N/mm² | | GG GG25 ~350 N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 6 ~ 10 m/min | | 6 ~ 8 m/min | | 25 ~ 36 m/min | | 38 ~ 50 m/min | | 40 ~ 63 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,5 | 5.000 | 0,005~0,01 | 3.800 | 0,005~0,01 | 15.000 | 0,015~0,025 | Note* | 0,005~0,01 | Note* | 0,005~0,01 |
| 1 | 2.400 | 0,01~0,02 | 2.000 | 0,01~0,02 | 8.000 | 0,03~0,045 | 12.000 | 0,01~0,02 | 12.000 | 0,01~0,02 |
| 2 | 1.200 | 0,02~0,04 | 1.100 | 0,02~0,04 | 5.000 | 0,06~0,09 | 6.350 | 0,06~0,09 | 8.400 | 0,08~0,11 |
| 3 | 800 | 0,03~0,06 | 740 | 0,03~0,06 | 3.400 | 0,10~0,13 | 4.250 | 0,10~0,13 | 5.600 | 0,11~0,16 |
| 4 | 700 | 0,04~0,08 | 550 | 0,04~0,08 | 2.550 | 0,11~0,15 | 3.200 | 0,11~0,15 | 4.220 | 0,13~0,19 |
| 5 | 500 | 0,05~0,10 | 450 | 0,05~0,10 | 2.050 | 0,12~0,18 | 2.550 | 0,12~0,18 | 3.370 | 0,16~0,22 |
| 6 | 440 | 0,06~0,12 | 370 | 0,06~0,12 | 1.700 | 0,13~0,19 | 2.100 | 0,13~0,19 | 2.800 | 0,19~0,26 |
| 7 | 350 | 0,07~0,14 | 320 | 0,07~0,14 | 1.450 | 0,15~0,22 | 1.800 | 0,15~0,22 | 2.400 | 0,20~0,28 |
| 8 | 320 | 0,08~0,16 | 280 | 0,08~0,16 | 1.270 | 0,16~0,24 | 1.600 | 0,16~0,24 | 2.100 | 0,21~0,30 |
| 9 | 280 | 0,09~0,18 | 250 | 0,09~0,18 | 1.130 | 0,18~0,26 | 1.400 | 0,18~0,26 | 1.900 | 0,23~0,33 |
| 10 | 260 | 0,10~0,20 | 220 | 0,10~0,20 | 1.000 | 0,20~0,28 | 1.270 | 0,20~0,28 | 1.700 | 0,25~0,36 |
| 11 | 230 | 0,11~0,22 | 200 | 0,11~0,22 | 930 | 0,22~0,31 | 1.150 | 0,22~0,31 | 1.550 | 0,28~0,39 |
| 12 | 210 | 0,12~0,24 | 190 | 0,12~0,24 | 850 | 0,24~0,34 | 1.060 | 0,24~0,34 | 1.400 | 0,30~0,42 |
| 13 | 200 | 0,13~0,26 | 170 | 0,13~0,26 | 790 | 0,26~0,36 | 980 | 0,26~0,36 | 1.300 | 0,31~0,42 |

*Note: For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible.
Tool life may be decreased.

## VP-GDR

| | C≤0,2% CK15 • St40 ~500 N/mm² | | C≥0,3% CK50 500~710 N/mm² | | SCM 100Cr6 710~900 N/mm² | | Special Alloy SKD61 ~28 HRC ~900 N/mm² | | Special Alloy SKD11 28~34 HRC 900~1060 N/mm² | | GG GG25 ~ 350 N/mm² | | AC AC4C • ADC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 38 ~ 50 m/min | | 25 ~ 36 m/min | | 25 ~ 32 m/min | | 12 ~ 20 m/min | | 10 ~ 16 m/min | | 40 ~ 63 m/min | | 70 ~ 120 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 2 | 6.350 | 0,06~0,09 | 5.100 | 0,06~0,09 | 4.450 | 0,06~0,09 | 2.550 | 0,06~0,09 | 2.050 | 0,06~0,09 | 8.435 | 0,08~0,11 | 15.000 | 0,12~0,18 |
| 3 | 4.250 | 0,10~0,13 | 3.400 | 0,10~0,13 | 2.970 | 0,10~0,13 | 1.700 | 0,10~0,13 | 1.370 | 0,10~0,13 | 5.620 | 0,11~0,16 | 10.000 | 0,20~0,28 |
| 4 | 3.200 | 0,11~0,15 | 2.550 | 0,11~0,15 | 2.230 | 0,11~0,15 | 1.270 | 0,11~0,15 | 1.035 | 0,11~0,15 | 4.220 | 0,13~0,19 | 8.000 | 0,24~0,38 |
| 5 | 2.550 | 0,12~0,18 | 2.040 | 0,12~0,18 | 1.780 | 0,12~0,18 | 1.020 | 0,12~0,18 | 825 | 0,12~0,18 | 3.375 | 0,16~0,22 | 6.350 | 0,28~0,40 |
| 6 | 2.100 | 0,13~0,19 | 1.700 | 0,13~0,19 | 1.490 | 0,13~0,19 | 850 | 0,13~0,19 | 690 | 0,13~0,19 | 2.810 | 0,19~0,26 | 5.300 | 0,34~0,48 |
| 8 | 1.600 | 0,16~0,24 | 1.270 | 0,16~0,24 | 1.110 | 0,16~0,24 | 635 | 0,16~0,24 | 515 | 0,16~0,24 | 2.110 | 0,21~0,30 | 4.000 | 0,38~0,53 |
| 10 | 1.270 | 0,20~0,28 | 1.020 | 0,20~0,28 | 890 | 0,20~0,28 | 510 | 0,20~0,28 | 410 | 0,20~0,28 | 1.690 | 0,25~0,36 | 3.200 | 0,45~0,63 |
| 12 | 1.060 | 0,24~0,34 | 850 | 0,24~0,34 | 740 | 0,24~0,34 | 425 | 0,24~0,34 | 345 | 0,24~0,34 | 1.400 | 0,30~0,42 | 2.700 | 0,53~0,75 |
| 13 | 980 | 0,26~0,36 | 780 | 0,26~0,36 | 690 | 0,26~0,36 | 390 | 0,26~0,36 | 320 | 0,26~0,36 | 1.300 | 0,31~0,42 | 2.500 | 0,56~0,79 |
| 14 | 900 | 0,28~0,39 | 720 | 0,28~0,39 | 640 | 0,28~0,39 | 360 | 0,28~0,39 | 300 | 0,28~0,39 | 1.200 | 0,32~0,44 | 2.300 | 0,57~0,81 |
| 16 | 800 | 0,30~0,43 | 640 | 0,30~0,43 | 560 | 0,30~0,43 | 320 | 0,30~0,43 | 260 | 0,30~0,43 | 1.050 | 0,34~0,46 | 2.000 | 0,61~0,85 |
| 18 | 700 | 0,34~0,49 | 560 | 0,34~0,49 | 500 | 0,34~0,49 | 280 | 0,34~0,49 | 230 | 0,34~0,49 | 950 | 0,36~0,50 | 1.800 | 0,63~0,90 |
| 20 | 650 | 0,36~0,50 | 500 | 0,36~0,50 | 450 | 0,36~0,50 | 260 | 0,36~0,50 | 210 | 0,36~0,50 | 830 | 0,40~0,56 | 1.600 | 0,68~0,98 |
| 22 | 580 | 0,40~0,55 | 460 | 0,40~0,55 | 400 | 0,40~0,55 | 230 | 0,40~0,55 | 190 | 0,40~0,55 | 750 | 0,42~0,59 | 1.500 | 0,73~1,06 |
| 24 | 530 | 0,41~0,60 | 420 | 0,41~0,60 | 370 | 0,41~0,60 | 210 | 0,41~0,60 | 170 | 0,41~0,60 | 700 | 0,46~0,65 | 1.350 | 0,77~1,13 |
| 26 | 500 | 0,42~0,65 | 400 | 0,42~0,65 | 340 | 0,42~0,65 | 200 | 0,42~0,65 | 160 | 0,42~0,65 | 650 | 0,47~0,68 | 1.250 | 0,81~1,20 |
| 28 | 450 | 0,45~0,70 | 360 | 0,45~0,70 | 320 | 0,45~0,70 | 180 | 0,45~0,70 | 150 | 0,45~0,70 | 600 | 0,50~0,73 | 1.150 | 0,84~1,26 |
| 30 | 420 | 0,48~0,75 | 340 | 0,48~0,75 | 300 | 0,48~0,75 | 170 | 0,48~0,75 | 140 | 0,48~0,75 | 550 | 0,54~0,78 | 1.100 | 0,87~1,32 |
| 32 | 400 | 0,51~0,80 | 320 | 0,51~0,80 | 280 | 0,51~0,80 | 160 | 0,51~0,80 | 130 | 0,51~0,80 | 520 | 0,58~0,83 | 1.000 | 0,90~1,38 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## NEXUS-GDS/NEXUS-GDR

| | SUS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | AUSTENITIC SUS304 - 200 | | AUSTENITIC SUS304 - 200 | | MARTENSITIC SUS420 - 440 | | FERRITIC SUS430 - 405 | | PRECIPITATION SUS630 - 631 | |
| Vc | 12 ~ 15 m/min | | 15 ~ 25 m/min | | 15 ~ 25 m/min | | 15 ~ 30 m/min | | 10 ~ 20 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 1 | 4.460 | 0,01~0,018 | 6.370 | 0,02~0,04 | 6.370 | 0,01~0,02 | 7.000 | 0,01~0.03 | 4.770 | 0,01~0,03 |
| 2 | 2.230 | 0,02~0,036 | 3.180 | 0,05~0,07 | 3.180 | 0,02~0,04 | 3.500 | 0,03~0,05 | 2.390 | 0,03~0,05 |
| 3 | 1.490 | 0,03~0,054 | 2.120 | 0,06~0,09 | 2.120 | 0,03~0,06 | 2.330 | 0,04~0,06 | 1.590 | 0,04~0,06 |
| 4 | 1.030 | 0,04~0,08 | 1.590 | 0,08~0,12 | 1.590 | 0,04~0,08 | 1.750 | 0,06~0,08 | 1.190 | 0,06~0,08 |
| 5 | 830 | 0,05~0,10 | 1.270 | 0,10~0,15 | 1.270 | 0,05~0,10 | 1.400 | 0,08~0,10 | 950 | 0,08~0,10 |
| 6 | 690 | 0,06~0,12 | 1.060 | 0,12~0,18 | 1.060 | 0,06~0,12 | 1.170 | 0,09~0,12 | 800 | 0,09~0,12 |
| 8 | 480 | 0,08~0,16 | 800 | 0,16~0,24 | 800 | 0,08~0,16 | 880 | 0,12~0,16 | 600 | 0,12~0,16 |
| 10 | 380 | 0,10~ 0,20 | 640 | 0,20~0,28 | 640 | 0,10~0,20 | 700 | 0,15~0,20 | 480 | 0,15~0,20 |
| 12 | 320 | 0,12~0,24 | 530 | 0,24~0,34 | 530 | 0,12~0,24 | 580 | 0,18~0,24 | 400 | 0,18~0,24 |

| | Al A5052 - 7075 | | AC AC4C - ADC | | Cu C1020 - 2600 | | C≤0,2% S15C - SS400 ~500 N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 32 ~ 63 m/min | | 63 ~ 100 m/min | | 40 ~ 60 m/min | | 40 ~ 60 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 1 | 15.000 | 0,02~0,06 | 25.000 | 0,02~0,06 | 15.920 | 0,01~0,03 | 15.920 | 0,02~0,05 |
| 2 | 8.000 | 0,04~0,12 | 10.000 | 0,04~0,12 | 7.960 | 0,04~0,06 | 7.960 | 0,06~0,09 |
| 3 | 5.300 | 0,06~0,18 | 6.700 | 0,06~0,18 | 5.310 | 0,06~0,09 | 5.310 | 0,10~0,13 |
| 4 | 4.000 | 0,08~0,24 | 6.400 | 0,08~0,24 | 3.980 | 0,08~0,11 | 3.980 | 0,11~0,15 |
| 5 | 3.200 | 0,10~0,30 | 5.000 | 0,10~0,30 | 3.180 | 0,10~0,13 | 3.180 | 0,12~0,18 |
| 6 | 2.700 | 0,12~0,36 | 4.200 | 0,12~0,36 | 2.650 | 0,12~0,15 | 2.650 | 0,13~0,19 |
| 8 | 2.000 | 0,16~0,45 | 3.200 | 0,16~0,45 | 1.990 | 0,16~0,20 | 1.990 | 0,17~0,24 |
| 10 | 1.600 | 0,20~ 0,55 | 2.500 | 0,20~0,55 | 1.590 | 0,20~0,25 | 1.590 | 0,20~0,28 |
| 12 | 1.350 | 0,24~0,66 | 2.100 | 0,24~0,66 | 1.330 | 0,24~0,30 | 1.330 | 0,24~0,34 |

| Drilling depth | ≤4D | ≤5D | ≤6D |
|---|---|---|---|
| Coefficient for reducing speed | x0,9 | x0,8 | x0,8 |
| D= drill dia | | | |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## V-SDR

| | C≤0,2% CK15 • St40 ~500 N/mm² | | Carbon Steel CK45 • CK50 500 ~ 710 N/mm² | | SCM SCM • SNC • SNCM 710 ~ 900 N/mm² | | Special Steel SKD61 35 HRC | | Special Steel SKD11 | | GG GG25 ~ 350 N/mm² | | AC AC4C • ADC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 22 ~ 40 m/min | | 16 ~ 30 m/min | | 12 ~ 25 m/min | | 8 ~ 16 m/min | | 6 ~ 12 m/min | | 22 ~ 40 m/min | | 50 ~ 100 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 2 | 5.700 | 0,02~0,08 | 4.000 | 0,02~0,08 | 3.500 | 0,02~0,08 | 1.900 | 0,02~0,08 | 1.600 | 0,02~0,08 | 5.700 | 0,07~0,10 | 10.000 | 0,07~0,10 |
| 3 | 3.850 | 0,03~0,10 | 2.800 | 0,03~0,10 | 2.400 | 0,03~0,10 | 1.320 | 0,03~0,10 | 1.060 | 0,03~0,10 | 3.850 | 0,11~0,14 | 10.000 | 0,11~0,14 |
| 4 | 2.900 | 0,04~0,13 | 2.100 | 0,04~0,13 | 1.800 | 0,04~0,13 | 950 | 0,04~0,13 | 800 | 0,04~0,13 | 2.900 | 0,12~0,17 | 7.500 | 0,12~0,17 |
| 5 | 2.260 | 0,05~0,15 | 1.600 | 0,05~0,15 | 1.400 | 0,05~0,15 | 750 | 0,05~0,15 | 630 | 0,05~0,15 | 2.260 | 0,14~0,20 | 6.300 | 0,14~0,20 |
| 6 | 1.900 | 0,06~0,17 | 1.320 | 0,06~0,17 | 1.180 | 0,06~0,17 | 630 | 0,06~0,17 | 530 | 0,06~0,17 | 1.900 | 0,17~0,24 | 5.000 | 0,17~0,24 |
| 8 | 1.400 | 0,08~0,21 | 1.000 | 0,08~0,21 | 900 | 0,08~0,21 | 480 | 0,08~0,21 | 400 | 0,08~0,21 | 1.400 | 0,19~0,28 | 4.000 | 0,19~0,28 |
| 10 | 1.120 | 0,10~0,22 | 800 | 0,10~0,22 | 710 | 0,10~0,22 | 380 | 0,10~0,22 | 320 | 0,10~0,22 | 1.120 | 0,22~0,33 | 3.150 | 0,22~0,33 |
| 12 | 950 | 0,12~0,27 | 670 | 0,12~0,27 | 600 | 0,12~0,27 | 320 | 0,12~0,27 | 270 | 0,12~0,27 | 950 | 0,26~0,38 | 2.650 | 0,26~0,38 |
| 13 | 880 | 0,13~0,29 | 620 | 0,13~0,29 | 550 | 0,13~0,29 | 300 | 0,13~0,29 | 250 | 0,13~0,29 | 880 | 0,27~0,39 | 2.450 | 0,27~0,39 |

## EX-SUS-GDS/EX-SUS-GDR

| | SUS Austenitic SUS304 SUS200 | | SUS Martensitic SUS420 SUS440 | | SUS Ferritic SUS430 SUS405 | | SUS Precipitation SUS630 SUS631 | | Al A5052 - 7075 | | AC AC4C - ADC | | Cu C1020 - 2600 | | C≤0,2% CK15 - St40 ~500 N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 13 ~ 18 m/min | | 15 ~ 20 m/min | | 15 ~ 20 m/min | | 8 ~ 12 m/min | | 32 ~ 63 m/min | | 63 ~ 100 m/min | | 25 ~ 50 m/min | | 32 ~ 40 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1 | 4.800 | 0,02~0,04 | 5.550 | 0,02~0,04 | 5.550 | 0,01~0,03 | 3.200 | 0,01~0,03 | 15.000 | 0,02~0,06 | 25.000 | 0,02~0,06 | 12.000 | 0,01~0,03 | 10.000 | 0,02~0,05 |
| 2 | 2.400 | 0,05~0,07 | 2.850 | 0,05~0,07 | 2.850 | 0,03~0,05 | 1.600 | 0,03~0,05 | 8.000 | 0,04~0,12 | 10.000 | 0,04~0,12 | 5.100 | 0,04~0,06 | 5.700 | 0,06~0,09 |
| 3 | 1.600 | 0,06~0,09 | 1.900 | 0,06~0,09 | 1.900 | 0,04~0,06 | 1.100 | 0,04~0,06 | 5.300 | 0,06~0,18 | 6.700 | 0,06~0,18 | 3.400 | 0,06~0,09 | 3.850 | 0,10~0,13 |
| 4 | 1.200 | 0,08~0,12 | 1.450 | 0,08~0,12 | 1.450 | 0,06~0,08 | 800 | 0,06~0,08 | 4.000 | 0,08~0,24 | 6.400 | 0,08~0,24 | 2.550 | 0,08~0,11 | 2.900 | 0,11~0,15 |
| 5 | 950 | 0,10~0,15 | 1.150 | 0,12~0,15 | 1.150 | 0,08~0,10 | 650 | 0,08~0,10 | 3.200 | 0,10~0,30 | 5.000 | 0,10~0,30 | 2.050 | 0,10~0,13 | 2.260 | 0,12~0,18 |
| 6 | 800 | 0,12~0,18 | 950 | 0,15~0,18 | 950 | 0,09~0,12 | 550 | 0,09~0,12 | 2.700 | 0,12~0,36 | 4.200 | 0,12~0,36 | 1.700 | 0,12~0,15 | 1.900 | 0,13~0,19 |
| 8 | 600 | 0,16~0,24 | 720 | 0,20~0,24 | 720 | 0,12~0,16 | 400 | 0,12~0,16 | 2.000 | 0,16~0,45 | 3.200 | 0,16~0,45 | 1.250 | 0,16~0,20 | 1.400 | 0,17~0,24 |
| 10 | 480 | 0,20~0,28 | 570 | 0,25~0,30 | 570 | 0,15~0,20 | 320 | 0,15~0,20 | 1.600 | 0,20~0,55 | 2.500 | 0,20~0,55 | 1.000 | 0,20~0,25 | 1.120 | 0,20~0,28 |
| 12 | 400 | 0,24~0,34 | 480 | 0,30~0,36 | 480 | 0,18~0,24 | 280 | 0,18~0,24 | 1.350 | 0,24~0,66 | 2.100 | 0,24~0,66 | 850 | 0,24~0,30 | 950 | 0,24~0,34 |
| 13 | 370 | 0,26~0,36 | 440 | 0,32~0,40 | 440 | 0,20~0,26 | 250 | 0,20~0,26 | 1.250 | 0,25~0,72 | 2.000 | 0,25~0,72 | 780 | 0,26~0,32 | 880 | 0,26~0,36 |
| 14 | 340 | 0,28~0,39 | 410 | 0,35~0,45 | 410 | 0,21~0,30 | 225 | 0,21~0,30 | 1.140 | 0,27~0,74 | 1.850 | 0,27~0,74 | 730 | 0,26~0,34 | 820 | 0,27~0,39 |
| 15 | 320 | 0,29~0,40 | 380 | 0,36~0,48 | 380 | 0,22~0,31 | 210 | 0,22~0,31 | 1.060 | 0,29~0,80 | 1.700 | 0,29~0,80 | 680 | 0,26~0,36 | 760 | 0,28~0,42 |
| 16 | 300 | 0,30~0,43 | 355 | 0,37~0,50 | 355 | 0,23~0,32 | 200 | 0,23~0,32 | 1.000 | 0,30~0,83 | 1.600 | 0,30~0,83 | 640 | 0,27~0,37 | 720 | 0,29~0,43 |
| 17 | 280 | 0,31~0,45 | 335 | 0,38~0,52 | 335 | 0,24~0,34 | 185 | 0,24~0,34 | 940 | 0,31~0,88 | 1.500 | 0,31~0,88 | 600 | 0,28~0,39 | 675 | 0,30~0,46 |
| 18 | 265 | 0,32~0,47 | 320 | 0,39~0,54 | 320 | 0,25~0,36 | 175 | 0,25~0,36 | 885 | 0,32~0,94 | 1.450 | 0,32~0,94 | 570 | 0,29~0,41 | 640 | 0,32~0,49 |
| 19 | 250 | 0,33~0,48 | 300 | 0,40~0,55 | 300 | 0,25~0,38 | 170 | 0,25~0,38 | 840 | 0,34~0,97 | 1.350 | 0,34~0,97 | 540 | 0,30~0,43 | 600 | 0,33~0,51 |
| 20 | 240 | 0,34~0,50 | 285 | 0,40~0,56 | 285 | 0,26~0,40 | 160 | 0,26~0,40 | 800 | 0,36~1,00 | 1.300 | 0,36~1,00 | 510 | 0,30~0,44 | 570 | 0,34~0,52 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## EX-GDS

| | 1.05Low Carbon Steel-Mild steel S15C-SS400 ~500N/mm² | | Carbon steel S50c 500~700N/mm² | | Alloy steel SCM-SCr 710~900N/mm² | | Special alloy steel-hardened steel SKD61 ~900N/mm² | | SKD11 900~1060N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 32~40m/min | | 22~30m/min | | 20~25m/min | | 10~16m/min | | 8~12m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1 | 11.500 | 0,03~0,05 | 8.000 | 0,03~0,05 | 7.000 | 0,03~0,05 | 4.000 | 0,03~0,05 | 3.200 | 0,03~0,05 |
| 2 | 5.700 | 0,06~0,09 | 4.000 | 0,06~0,09 | 3.500 | 0,06~0,09 | 2.000 | 0,06~0,09 | 1.600 | 0,06~0,09 |
| 3 | 3.800 | 0,1~0,13 | 2.800 | 0,1~0,13 | 2.400 | 0,1~0,13 | 1.350 | 0,1~0,13 | 1.060 | 0,1~0,13 |
| 4 | 2.900 | 0,11~0,15 | 2.100 | 0,11~0,15 | 1.800 | 0,11~0,15 | 1.000 | 0,11~0,15 | 800 | 0,11~0,15 |
| 5 | 2.300 | 0,12~0,18 | 1.650 | 0,12~0,18 | 1.400 | 0,12~0,18 | 800 | 0,12~0,18 | 640 | 0,12~0,18 |
| 6 | 1.900 | 0,13~0,19 | 1.400 | 0,13~0,19 | 1.200 | 0,13~0,19 | 660 | 0,13~0,19 | 530 | 0,13~0,19 |
| 7 | 1.650 | 0,15~0,22 | 1.200 | 0,15~0,22 | 1.050 | 0,15~0,22 | 570 | 0,15~0,22 | 450 | 0,15~0,22 |
| 8 | 1.400 | 0,17~0,24 | 1.050 | 0,17~0,24 | 920 | 0,17~0,24 | 500 | 0,16~0,24 | 400 | 0,17~0,24 |
| 9 | 1.250 | 0,18~0,26 | 920 | 0,18~0,26 | 810 | 0,18~0,26 | 440 | 0,18~0,26 | 350 | 0,18~0,26 |
| 10 | 1.150 | 0,20~0,28 | 830 | 0,20~0,28 | 730 | 0,20~0,28 | 400 | 0,20~0,28 | 230 | 0,20~0,28 |
| 11 | 1.050 | 0,22~0,32 | 750 | 0,22~0,32 | 670 | 0,22~0,32 | 360 | 0,22~0,31 | 300 | 0,22~0,32 |
| 12 | 950 | 0,24~0,34 | 690 | 0,24~0,34 | 610 | 0,24~0,34 | 330 | 0,24~0,34 | 270 | 0,24~0,34 |
| 13 | 880 | 0,26~0,36 | 640 | 0,26~0,36 | 560 | 0,26~0,36 | 300 | 0,26~0,36 | 250 | 0,26~0,36 |

| | Hardened steel 34~43HRC 1060~1400N/mm² | | Hardened steel 43~48HRC 1400~1600N/mm² | | Inconel 718 38~43HRC | | Cast iron FC250 ~350N/mm² | | Aluminium alloy casting ADC-AC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 10~15m/min | | 6~10m/min | | 6~8m/min | | 32~40m/min | | 63~100m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1 | 3.800 | 0,01~0,03 | 2.500 | 0,01~0,02 | 2.500 | 0,01~0,02 | 10.000 | 0,04~0,06 | 20.000 | 0,06~0,09 |
| 2 | 1.900 | 0,02~0,05 | 1.250 | 0,02~0,04 | 1.250 | 0,02~0,04 | 5.700 | 0,08~0,11 | 10.000 | 0,12~0,18 |
| 3 | 1.250 | 0,03~0,08 | 850 | 0,03~0,06 | 850 | 0,03~0,06 | 3.800 | 0,11~0,16 | 10.000 | 0,18~0,26 |
| 4 | 960 | 0,04~0,1 | 640 | 0,04~0,08 | 630 | 0,04~0,08 | 2.900 | 0,13~0,19 | 7.500 | 0,24~0,34 |
| 5 | 760 | 0,05~0,13 | 510 | 0,05~0,10 | 500 | 0,05~0,10 | 2.300 | 0,16~0,22 | 6.300 | 0,28~0,40 |
| 6 | 640 | 0,06~0,15 | 430 | 0,06~0,12 | 430 | 0,06~0,12 | 1.900 | 0,19~0,26 | 5.000 | 0,34~0,48 |
| 7 | 550 | 0,07~0,18 | 360 | 0,07~0,14 | 360 | 0,07~0,14 | 1.650 | 0,20~0,28 | 4.450 | 0,36~0,50 |
| 8 | 480 | 0,08~0,20 | 320 | 0,08~0,16 | 320 | 0,08~0,16 | 1.450 | 0,21~0,31 | 4.000 | 0,38~0,53 |
| 9 | 430 | 0,09~0,23 | 280 | 0,09~0,18 | 280 | 0,09~0,18 | 1.270 | 0,23~0,33 | 3.450 | 0,41~0,58 |
| 10 | 380 | 0,10~0,25 | 260 | 0,10~0,20 | 260 | 0,10~0,20 | 1.150 | 0,25~0,35 | 3.150 | 0,45~0,63 |
| 11 | 350 | 0,11~0,28 | 230 | 0,11~0,22 | 230 | 0,11~0,22 | 1.050 | 0,27~0,38 | 2.850 | 0,48~0,69 |
| 12 | 320 | 0,12~0,30 | 210 | 0,12~0,24 | 210 | 0,12~0,24 | 960 | 0,30~0,42 | 2.650 | 0,53~0,75 |
| 13 | 300 | 0,13~0,32 | 200 | 0,13~0,26 | 200 | 0,13~0,26 | 880 | 0,31~0,42 | 2.400 | 0,56~0,79 |

## EX-GDR

| | 1.05Low Carbon Steel-Mild steel S15C-SS400 ~500N/mm² | | Carbon steel S50c 500~700N/mm² | | Alloy steel SCM-SCr 710~900N/mm² | | Special alloy steel-hardened steel SKD61 ~900N/mm² | | SKD11 900~1060N/mm² | | Cast iron FC250 ~350N/mm² | | Aluminium alloy casting ADC-AC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 32~40m/min | | 22~30m/min | | 20~25m/min | | 10~16m/min | | 8~12m/min | | 32~40m/min | | 63~100m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 2 | 5.700 | 0,06~0,09 | 4.000 | 0,06~0,09 | 3.500 | 0,06~0,09 | 1.900 | 0,06~0,09 | 1.600 | 0,06~0,09 | 5.700 | 0,08~0,11 | 10.000 | 0,12~0,18 |
| 3 | 3.850 | 0,1~0,13 | 2.800 | 0,1~0,13 | 2.400 | 0,1~0,13 | 1.320 | 0,1~0,13 | 1.060 | 0,1~0,13 | 3.850 | 0,11~0,16 | 10.000 | 0,20~0,28 |
| 4 | 2.900 | 0,11~0,15 | 2.100 | 0,11~0,15 | 1.800 | 0,11~0,15 | 950 | 0,11~0,15 | 800 | 0,11~0,15 | 2.900 | 0,13~0,19 | 7.500 | 0,24~0,34 |
| 5 | 2.260 | 0,12~0,18 | 1.600 | 0,12~0,18 | 1.400 | 0,12~0,18 | 750 | 0,12~0,18 | 630 | 0,12~0,18 | 2.260 | 0,16~0,22 | 6.300 | 0,28~0,40 |
| 6 | 1.900 | 0,13~0,19 | 1.320 | 0,13~0,19 | 1.180 | 0,13~0,19 | 630 | 0,13~0,19 | 530 | 0,13~0,19 | 1.900 | 0,19~0,26 | 5.000 | 0,34~0,48 |
| 8 | 1.400 | 0,17~0,24 | 1.000 | 0,17~0,24 | 900 | 0,17~0,24 | 480 | 0,17~0,24 | 400 | 0,17~0,24 | 1.400 | 0,21~0,30 | 4.000 | 0,38~0,53 |
| 10 | 1.120 | 0,20~0,28 | 800 | 0,20~0,28 | 710 | 0,20~0,28 | 380 | 0,20~0,28 | 320 | 0,20~0,28 | 1.120 | 0,25~0,35 | 3.150 | 0,45~0,63 |
| 12 | 950 | 0,24~0,34 | 670 | 0,24~0,34 | 600 | 0,24~0,34 | 320 | 0,24~0,34 | 270 | 0,24~0,34 | 950 | 0,30~0,42 | 2.650 | 0,53~0,75 |
| 13 | 880 | 0,26~0,36 | 610 | 0,26~0,36 | 540 | 0,26~0,36 | 290 | 0,26~0,36 | 240 | 0,26~0,36 | 880 | 0,31~0,42 | 2.400 | 0,56~0,79 |
| 14 | 820 | 0,28~0,39 | 570 | 0,28~0,39 | 500 | 0,28~0,39 | 270 | 0,28~0,39 | 230 | 0,28~0,39 | 820 | 0,32~0,44 | 2.250 | 0,57~0,81 |
| 16 | 720 | 0,30~0,43 | 500 | 0,30~0,43 | 440 | 0,30~0,43 | 240 | 0,30~0,43 | 200 | 0,30~0,43 | 720 | 0,34~0,46 | 1.950 | 0,61~0,85 |
| 18 | 640 | 0,34~0,49 | 440 | 0,34~0,49 | 390 | 0,34~0,49 | 210 | 0,34~0,49 | 180 | 0,34~0,49 | 640 | 0,36~0,50 | 1.750 | 0,63~0,90 |
| 20 | 570 | 0,36~0,50 | 400 | 0,36~0,50 | 350 | 0,36~0,50 | 190 | 0,36~0,50 | 160 | 0,36~0,50 | 570 | 0,40~0,56 | 1.550 | 0,68~0,98 |
| 22 | 520 | 0,40~0,55 | 360 | 0,40~0,55 | 320 | 0,40~0,55 | 170 | 0,40~0,55 | 150 | 0,40~0,55 | 520 | 0,42~0,59 | 1.400 | 0,73~1,06 |
| 24 | 480 | 0,41~0,60 | 330 | 0,41~0,60 | 290 | 0,41~0,60 | 160 | 0,41~0,60 | 135 | 0,41~0,60 | 480 | 0,46~0,65 | 1.300 | 0,77~1,13 |
| 26 | 440 | 0,42~0,65 | 310 | 0,42~0,65 | 270 | 0,42~0,65 | 150 | 0,42~0,65 | 120 | 0,42~0,65 | 440 | 0,47~0,68 | 1.200 | 0,81~1,20 |
| 28 | 410 | 0,45~0,70 | 290 | 0,45~0,70 | 250 | 0,45~0,70 | 140 | 0,45~0,70 | 110 | 0,45~0,70 | 410 | 0,50~0,73 | 1.100 | 0,84~1,26 |
| 30 | 380 | 0,48~0,75 | 270 | 0,48~0,75 | 230 | 0,48~0,75 | 130 | 0,48~0,75 | 105 | 0,48~0,75 | 380 | 0,54~0,78 | 1.000 | 0,87~1,32 |
| 32 | 360 | 0,51~0,80 | 250 | 0,51~0,80 | 220 | 0,51~0,80 | 120 | 0,51~0,80 | 100 | 0,51~0,80 | 360 | 0,58~0,83 | 950 | 0,9~1,38 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## V-HDO-GDR

| | C≤0,2% St37 ~500 N/mm² | | C≤0,3% CK50 500~710 N/mm² | | SCM 100Cr6 750~1200 N/mm² | | SUS SUS300 SUS400 | | SKD SKD61 ~ 35 HRC | | SKD X40CrMoV51 35 ~ 40 HRC | | GG GG25 - GGG40 | | AC AIMG3 - AIMG51 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 32 ~ 63 m/min | | 22 ~ 36 m/min | | 20 ~ 32 m/min | | 16 ~ 24 m/min | | 10 ~ 18 m/min | | 8 ~ 12 m/min | | 32 ~ 50 m/min | | 63 ~ 125 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 6 | 2.100 | 0,13~0,19 | 1.550 | 0,13~0,19 | 1.400 | 0,13~0,19 | 1.050 | 0,13~0,19 | 740 | 0,13~0,19 | 530 | 0,06~0,12 | 2.200 | 0,19~0,26 | 5.000 | 0,34~0,48 |
| 8 | 1.600 | 0,17~0,24 | 1.150 | 0,17~0,24 | 1.050 | 0,17~0,24 | 800 | 0,17~0,24 | 550 | 0,17~0,24 | 400 | 0,08~0,16 | 1.650 | 0,21~0,30 | 3.750 | 0,38~0,53 |
| 10 | 1.250 | 0,20~0,28 | 920 | 0,20~0,28 | 830 | 0,20~0,28 | 640 | 0,20~0,28 | 445 | 0,20~0,28 | 320 | 0,10~0,20 | 1.300 | 0,25~0,36 | 3.000 | 0,45~0,63 |
| 12 | 1.050 | 0,24~0,34 | 770 | 0,24~0,34 | 700 | 0,24~0,34 | 530 | 0,24~0,34 | 370 | 0,24~0,34 | 265 | 0,12~0,24 | 1.100 | 0,30~0,42 | 2.500 | 0,53~0,75 |
| 14 | 900 | 0,28~0,39 | 660 | 0,28~0,39 | 600 | 0,28~0,39 | 450 | 0,28~0,39 | 320 | 0,28~0,39 | 230 | 0,16~0,29 | 950 | 0,32~0,44 | 2.150 | 0,57~0,81 |
| 16 | 800 | 0,30~0,43 | 580 | 0,30~0,43 | 520 | 0,30~0,43 | 400 | 0,30~0,43 | 280 | 0,30~0,43 | 200 | 0,16~0,29 | 820 | 0,34~0,46 | 1.900 | 0,61~0,85 |
| 18 | 700 | 0,34~0,49 | 510 | 0,34~0,49 | 460 | 0,34~0,49 | 350 | 0,34~0,49 | 250 | 0,34~0,49 | 180 | 0,18~0,32 | 730 | 0,36~0,50 | 1.700 | 0,63~0,90 |
| 20 | 650 | 0,36~0,50 | 460 | 0,36~0,50 | 415 | 0,36~0,50 | 320 | 0,36~0,50 | 220 | 0,36~0,50 | 160 | 0,18~0,34 | 650 | 0,40~0,56 | 1.500 | 0,68~0,98 |
| 22 | 580 | 0,40~0,55 | 420 | 0,40~0,55 | 380 | 0,40~0,55 | 290 | 0,40~0,55 | 200 | 0,40~0,55 | 145 | 0,20~0,37 | 600 | 0,42~0,59 | 1.400 | 0,73~1,06 |
| 24 | 530 | 0,41~0,60 | 380 | 0,41~0,60 | 350 | 0,41~0,60 | 270 | 0,41~0,60 | 185 | 0,41~0,60 | 130 | 0,20~0,38 | 550 | 0,46~0,65 | 1.250 | 0,77~1,13 |
| 26 | 490 | 0,42~0,65 | 360 | 0,42~0,65 | 320 | 0,42~0,65 | 250 | 0,42~0,65 | 170 | 0,42~0,65 | 120 | 0,21~0,42 | 500 | 0,47~0,68 | 1.150 | 0,81~1,20 |
| 28 | 450 | 0,45~0,70 | 330 | 0,45~0,70 | 300 | 0,45~0,70 | 230 | 0,45~0,70 | 160 | 0,45~0,70 | 115 | 0,21~0,45 | 470 | 0,50~0,73 | 1.100 | 0,84~1,26 |
| 30 | 420 | 0,48~0,75 | 310 | 0,48~0,75 | 280 | 0,48~0,75 | 210 | 0,48~0,75 | 150 | 0,48~0,75 | 105 | 0,24~0,46 | 450 | 0,54~0,78 | 1.000 | 0,87~1,32 |
| 32 | 400 | 0,51~0,80 | 300 | 0,51~0,80 | 260 | 0,51~0,80 | 200 | 0,51~0,80 | 140 | 0,51~0,80 | 100 | 0,22~0,48 | 410 | 0,58~0,83 | 950 | 0,90~1,38 |

## TDXL

| | C≤0,2% S50C • S35C 500 ~ 710 N/mm² | | SCM SCr • SNCM 710 ~ 900 N/mm² | | SKD SKD • SK • DH31 • DAC 710 ~ 900 N/mm² | | GGG FCD400 • FCD500 ~ 500 N/mm² | | GG FC200 • FC300 ~ 300 N/mm² | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20 ~ 24 m/min | | 18 ~ 22 m/min | | 12 ~ 16 m/min | | 16 ~ 20 m/min | | 18 ~ 24 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 1,6 | 4.000 | 0,016~0,03 | 4.000 | 0,016~0,03 | 2.700 | 0,016~0,03 | 3.600 | 0,01~0,03 | 4.150 | 0,03~0,05 |
| 2 | 3.200 | 0,02~0,05 | 3.200 | 0,02~0,04 | 2.200 | 0,02~0,04 | 2.850 | 0,01~0,04 | 3.350 | 0,04~0,06 |
| 3 | 2.200 | 0,03~0,08 | 2.200 | 0,03~0,08 | 1.500 | 0,03~0,07 | 1.900 | 0,02~0,08 | 2.250 | 0,06~0,10 |
| 4 | 1.600 | 0,04~0,10 | 1.600 | 0,04~0,10 | 1.150 | 0,04~0,09 | 1.460 | 0,02~0,10 | 1.650 | 0,08~0,13 |
| 5 | 1.300 | 0,05~0,13 | 1.300 | 0,05~0,13 | 900 | 0,05~0,12 | 1.150 | 0,03~0,13 | 1.350 | 0,10~0,16 |
| 6 | 1.100 | 0,06~0,15 | 1.100 | 0,06~0,15 | 750 | 0,06~0,14 | 955 | 0,04~0,15 | 1.100 | 0,12~0,19 |
| 8 | 800 | 0,08~0,20 | 800 | 0,08~0,20 | 550 | 0,08~0,18 | 715 | 0,05~0,20 | 835 | 0,16~0,26 |
| 10 | 650 | 0,10~0,25 | 650 | 0,10~0,25 | 450 | 0,10~0,23 | 575 | 0,06~0,25 | 670 | 0,20~0,32 |
| 12 | 550 | 0,13~0,30 | 550 | 0,12~0,30 | 380 | 0,12~0,28 | 475 | 0,07~0,30 | 555 | 0,24~0,38 |

## EX-GDXL

| | Carbon Steel CK15 • St40 ~500 N/mm² | | Carbon Steel CK45 500 ~ 710 N/mm² | | SCM 710 ~ 900 N/mm² | | Special Alloy Steel SKD61 ~ 900 N/mm² ~ 28 HRC | | Special Alloy Steel SKD11 ~ 1060 N/mm² 28 ~ 34 HRC | | GG FC250 ~ 350 N/mm² | | Al AC AC4C • ADC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 16 ~ 24 m/min | | 20 ~ 25 m/min | | 12 ~ 16 m/min | | 10 ~ 20 m/min | | 6 ~ 10 m/min | | 20 ~ 30 m/min | | 20 ~ 35 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 2 | 3.200 | 0,03~0,07 | 3.600 | 0,03~0,07 | 2.200 | 0,03~0,07 | 2.400 | 0,03~0,07 | 1.270 | 0,02~0,05 | 4.000 | 0,02~0,05 | 4.400 | 0,03~0,07 |
| 3 | 2.100 | 0,05~0,10 | 2.400 | 0,05~0,10 | 1.500 | 0,05~0,10 | 1.700 | 0,05~0,10 | 850 | 0,04~0,07 | 2.700 | 0,04~0,07 | 3.000 | 0,05~0,10 |
| 4 | 1.600 | 0,06~0,12 | 1.800 | 0,06~0,12 | 1.100 | 0,06~0,12 | 1.250 | 0,06~0,12 | 640 | 0,05~0,09 | 2.000 | 0,05~0,09 | 2.200 | 0,06~0,12 |
| 5 | 1.250 | 0,08~0,13 | 1.450 | 0,08~0,13 | 900 | 0,08~0,13 | 1.000 | 0,08~0,13 | 510 | 0,07~0,10 | 1.600 | 0,07~0,10 | 1.800 | 0,08~0,13 |
| 6 | 1.050 | 0,10~0,14 | 1.200 | 0,10~0,14 | 750 | 0,10~0,14 | 850 | 0,10~0,14 | 420 | 0,09~0,12 | 1.350 | 0,09~0,12 | 1.500 | 0,10~0,14 |
| 7 | 900 | 0,12~0,16 | 1.000 | 0,12~0,16 | 640 | 0,12~0,16 | 730 | 0,12~0,16 | 360 | 0,10~0,14 | 1.150 | 0,10~0,14 | 1.300 | 0,12~0,16 |
| 8 | 800 | 0,14~0,18 | 900 | 0,14~0,18 | 560 | 0,14~0,18 | 640 | 0,14~0,18 | 320 | 0,12~0,16 | 1.000 | 0,12~0,16 | 1.100 | 0,14~0,18 |
| 9 | 700 | 0,16~0,20 | 800 | 0,16~0,20 | 500 | 0,16~0,20 | 570 | 0,16~0,20 | 280 | 0,13~0,18 | 900 | 0,13~0,18 | 1.000 | 0,16~0,02 |
| 10 | 640 | 0,18~0,22 | 720 | 0,18~0,22 | 450 | 0,18~0,22 | 510 | 0,18~0,22 | 260 | 0,14~0,20 | 800 | 0,14~0,2 | 900 | 0,18~0,22 |
| 11 | 580 | 0,20~0,24 | 650 | 0,20~0,24 | 400 | 0,20~0,24 | 460 | 0,20~0,24 | 230 | 0,15~0,22 | 750 | 0,15~0,22 | 800 | 0,20~0,24 |
| 12 | 530 | 0,22~0,26 | 600 | 0,22~0,26 | 370 | 0,22~0,26 | 430 | 0,22~0,26 | 210 | 0,17~0,24 | 660 | 0,17~0,24 | 750 | 0,22~0,26 |
| 13 | 490 | 0,24~0,28 | 550 | 0,24~0,28 | 340 | 0,24~0,28 | 390 | 0,24~0,28 | 200 | 0,20~0,26 | 610 | 0,20~0,26 | 700 | 0,24~0,28 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## HYP-LDS

| | C≤0,2% St40 ~ 500 N/mm² | | Carbon Steel CK45 500 ~ 710 N/mm² | | SCM SCM440 710 ~ 900 N/mm² | | Special Steel SKD61 28 HRC | | Special Steel SKD11 34 HRC | | GG GG25 ~ 350 N/mm² | | AC AC4D | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 63 ~ 80 m/min | | 40 ~ 63 m/min | | 32 ~ 50 m/min | | 20 ~ 28 m/min | | 16 ~ 22 m/min | | 63 ~ 100 m/min | | 80 ~ 160 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 3 | 7.500 | 0,04~0,08 | 5.500 | 0,04~0,08 | 4.500 | 0,04~0,08 | 2.500 | 0,04~0,08 | 2.000 | 0,04~0,08 | 8.000 | 0,05~0,09 | 12.000 | 0,10~0,22 |
| 4 | 5.700 | 0,05~0,10 | 4.100 | 0,05~0,10 | 3.300 | 0,05~0,10 | 1.900 | 0,05~0,10 | 1.500 | 0,05~0,10 | 6.500 | 0,07~0,12 | 9.500 | 0,12~0,25 |
| 6 | 3.800 | 0,06~0,12 | 2.700 | 0,06~0,12 | 2.300 | 0,06~0,12 | 1.250 | 0,06~0,12 | 1.000 | 0,06~0,12 | 4.300 | 0,12~0,18 | 6.400 | 0,14~0,28 |
| 8 | 2.800 | 0,08~0,15 | 2.000 | 0,08~0,15 | 1.700 | 0,08~0,15 | 950 | 0,08~0,15 | 750 | 0,08~0,15 | 3.200 | 0,13~0,20 | 4.800 | 0,18~0,32 |
| 10 | 2.300 | 0,10~0,18 | 1.700 | 0,10~0,18 | 1.400 | 0,10~0,18 | 750 | 0,10~0,18 | 600 | 0,10~0,18 | 2.600 | 0,17~0,25 | 3.800 | 0,22~0,36 |
| 12 | 1.900 | 0,12~0,21 | 1.400 | 0,12~0,21 | 1.200 | 0,12~0,21 | 650 | 0,12~0,21 | 500 | 0,12~0,21 | 2.200 | 0,21~0,30 | 3.200 | 0,25~0,40 |
| 16 | 1.400 | 0,16~0,28 | 1.000 | 0,16~0,28 | 900 | 0,16~0,28 | 500 | 0,16~0,28 | 380 | 0,16~0,28 | 1.600 | 0,24~0,32 | 2.400 | 0,32~0,48 |
| 20 | 1.150 | 0,20~0,34 | 820 | 0,20~0,34 | 700 | 0,20~0,34 | 400 | 0,20~0,34 | 300 | 0,20~0,34 | 1.300 | 0,26~0,40 | 1.900 | 0,40~0,60 |
| 25 | 900 | 0,25~0,45 | 650 | 0,25~0,45 | 560 | 0,25~0,45 | 300 | 0,25~0,45 | 250 | 0,25~0,45 | 1.000 | 0,30~0,50 | 1.500 | 0,50~0,75 |

## TIN-NC-LDS/NC-LDS

| | C≤0,2% St40 | | Carbon Steel CK45 | | SCM SCM440 | | Special Steel SKD61 35 HRC | | Special Steel SKD11 34 HRC | | GG GG25 ~ 350 N/mm2 | | SUS SUS304 | | AC AC4D | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 32 ~ 40 m/min | | 22 ~ 30 m/min | | 20 ~ 25 m/min | | 10 ~ 13 m/min | | 8 ~ 12 m/min | | 25 ~ 32 m/min | | 8 ~ 12 m/min | | 51 ~ 100 m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 3 | 3.850 | 0,04~0,08 | 2.800 | 0,04~0,08 | 2.400 | 0,04~0,08 | 1.220 | 0,04~0,08 | 1.060 | 0,04~0,08 | 3.100 | 0,04~0,09 | 1.060 | 0,04~0,08 | 8.000 | 0,10~0,22 |
| 4 | 2.900 | 0,05~0,10 | 2.100 | 0,05~0,10 | 1.800 | 0,05~0,10 | 910 | 0,05~0,10 | 800 | 0,05~0,10 | 2.400 | 0,05~0,12 | 800 | 0,05~0,10 | 6.000 | 0,12~0,25 |
| 6 | 1.900 | 0,06~0,12 | 1.320 | 0,06~0,12 | 1.180 | 0,06~0,12 | 610 | 0,06~0,12 | 530 | 0,06~0,12 | 1.600 | 0,06~0,18 | 530 | 0,06~0,12 | 4.000 | 0,14~0,28 |
| 8 | 1.400 | 0,08~0,15 | 1.000 | 0,08~0,15 | 900 | 0,08~0,15 | 450 | 0,08~0,15 | 400 | 0,08~0,15 | 1.200 | 0,08~0,20 | 400 | 0,08~0,15 | 3.000 | 0,18~0,32 |
| 10 | 1.120 | 0,10~0,18 | 800 | 0,10~0,18 | 710 | 0,10~0,18 | 360 | 0,10~0,18 | 320 | 0,10~0,18 | 950 | 0,10~0,25 | 320 | 0,10~0,18 | 2.400 | 0,22~0,36 |
| 12 | 950 | 0,12~0,21 | 670 | 0,12~0,21 | 600 | 0,12~0,21 | 300 | 0,12~0,21 | 270 | 0,12~0,21 | 800 | 0,12~0,30 | 270 | 0,12~0,21 | 2.000 | 0,25~0,40 |
| 16 | 720 | 0,16~0,28 | 520 | 0,16~0,28 | 450 | 0,16~0,28 | 220 | 0,16~0,28 | 200 | 0,16~0,28 | 600 | 0,16~0,32 | 200 | 0,16~0,28 | 1.500 | 0,32~0,48 |
| 20 | 560 | 0,20~0,34 | 400 | 0,20~0,34 | 360 | 0,20~0,34 | 180 | 0,20~0,34 | 160 | 0,20~0,34 | 480 | 0,20~0,40 | 160 | 0,20~0,34 | 1.200 | 0,40~0,60 |
| 25 | 450 | 0,25~0,45 | 320 | 0,25~0,45 | 290 | 0,25~0,45 | 150 | 0,25~0,45 | 130 | 0,25~0,45 | 380 | 0,25~0,50 | 130 | 0,25~0,45 | 960 | 0,50~0,75 |

## HY-PRO-CARB

### Centre drilling & Grooving

| | C≤0,2% NK2020 | SUS NK2020 | Die steels NK2020 | GG NK1010 | Al NK1010 |
|---|---|---|---|---|---|
| (rev./min) | 3.000 | 2.000 | 3.000 | 3.200 | 4.000 |
| F (mm/min) | 80 | 50 | 50 | 200 | 150 |

### Chamfering

| | C≤0,2% NK2020 | SUS NK2020 | Die steels NK2020 | GG NK1010 | Al NK1010 |
|---|---|---|---|---|---|
| (rev./min) | 3.000 | 2.500 | 3.000 | 3.000 | 4.000 |
| F (mm/min) | 200 | 150 | 150 | 200 | 300 |

# CUTTING CONDITIONS



## D-DAD

| | CFRP | |
|---|---|---|
| Vc | 60 ~ 120 m/min | |
| Ø | Speed ($min^{-1}$) | F (mm/rev.) |
| 2,5 | 11.000 | 0,03 ~ 0,05 |
| 3,27 | 8.700 | 0,03 ~ 0,05 |
| 4,10 | 7.000 | 0,03 ~ 0,05 |
| 4,86 | 6.000 | 0,03 ~ 0,05 |
| 6,37 | 4.500 | 0,05 ~ 0,10 |
| 9,55 | 3.000 | 0,05 ~ 0,10 |

1. Although coolant is not required, please take adequate measurement against dust (use a vacuum system).
2. The machinability of CFRP varies based on resin type, resin content and clamping method. For thin laminates, reduce feed rate near hole penetration according to the above recommended cutting conditions.
3. Reduce cutting speed accordingly when machining thick laminates.
4. Cutting speed up to 200m/min is possible when drilling with approved coolant fluid.

## D-GDN90

| | CFRP | |
|---|---|---|
| Vc | 60 ~ 120 m/min | |
| Ø | Speed ($min^{-1}$) | F (mm/rev.) |
| 2,5 | 11.000 | 0,03 ~ 0,05 |
| 3,27 | 8.700 | 0,03 ~ 0,05 |
| 4,10 | 7.000 | 0,03 ~ 0,05 |
| 4,86 | 6.000 | 0,03 ~ 0,05 |
| 6,37 | 4.500 | 0,05 ~ 0,10 |
| 9,55 | 3.000 | 0,05 ~ 0,10 |

1. Although coolant is not required, please take adequate measurement against dust (use a vacuum system).
2. The machinability of CFRP varies based on resin type, resin content and clamping method. For thin laminates, reduce feed rate near hole penetration according to the above recommended cutting conditions.
3. Reduce cutting speed accordingly when machining thick laminates.
4. Cutting speed up to 200m/min is possible when drilling with approved coolant fluid.

# CUTTING CONDITIONS



# AD-LDS / AD-LS-LDS

## Centring

| | Low Carbon Steel - Mild Steel SS400 ~500N/mm² | | Carbon Steel S50C 500 ~ 710N/mm² | | Alloy Steel SCM 710 ~ 900N/mm² | | Special Alloy Steel-Hardened SKD61 ~28HRC ~ 900N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 63~80m/min | | 40~63m/min | | 32~50m/min | | 20~30m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 0,5 | 20.000 | 0,005 ~ 0,02 | 25.000 | 0,005 ~ 0,02 | 20.000 | 0,005 ~ 0,02 | 16.000 | 0,005 ~ 0,02 |
| 1 | 10.000 | 0,01 ~ 0,03 | 16.000 | 0,01 ~ 0,03 | 10.000 | 0,01 ~ 0,03 | 8.000 | 0,01 ~ 0,03 |
| 2 | 5.000 | 0,03 ~ 0,06 | 8.000 | 0,03 ~ 0,06 | 5.000 | 0,03 ~ 0,06 | 4.000 | 0,03 ~ 0,06 |
| 3 | 7.500 | 0,04 ~ 0,08 | 5.500 | 0,04 ~ 0,08 | 4.500 | 0,04 ~ 0,08 | 2.700 | 0,04 ~ 0,08 |
| 4 | 5.700 | 0,05 ~ 0,1 | 4.100 | 0,05 ~ 0,1 | 3.300 | 0,05 ~ 0,1 | 2.000 | 0,05 ~ 0,1 |
| 6 | 3.800 | 0,06 ~ 0,12 | 2.700 | 0,06 ~ 0,12 | 2.300 | 0,06 ~ 0,12 | 1.300 | 0,06 ~ 0,12 |
| 8 | 2.800 | 0,08 ~ 0,15 | 2.000 | 0,08 ~ 0,15 | 1.700 | 0,08 ~ 0,15 | 1.000 | 0,08 ~ 0,15 |
| 10 | 2.300 | 0,1 ~ 0,18 | 1.700 | 0,1 ~ 0,18 | 1.400 | 0,1 ~ 0,18 | 800 | 0,1 ~ 0,18 |
| 12 | 1.900 | 0,12 ~ 0,21 | 1.400 | 0,12 ~ 0,21 | 1.200 | 0,12 ~ 0,21 | 650 | 0,12 ~ 0,21 |

| | Special Alloy Steel-Hardened SKD11 ~34HRC ~ 1060N/mm² | | Tool Steel | | Cast Iron - Ductile cast iron FCD250-FC400 ~ 500N/mm² | | Aluminium - Alloy Casting ADC - AC4D | |
|---|---|---|---|---|---|---|---|---|
| Vc | 16~22m/min | | 16~22m/min | | 63~100m/min | | 80~160m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 0,5 | 12.000 | 0,005 ~ 0,02 | 12.000 | 0,005 ~ 0,02 | Note 2. | 0,005 ~ 0,015 | Note 2. | 0,02 ~ 0,04 |
| 1 | 6.000 | 0,01 ~ 0,03 | 6.000 | 0,01 ~ 0,03 | 20.000 | 0,01 ~ 0,03 | Note 2. | 0,04 ~ 0,07 |
| 2 | 3.000 | 0,03 ~ 0,06 | 3.000 | 0,03 ~ 0,06 | 12.000 | 0,03 ~ 0,06 | 15.000 | 0,06 ~ 0,14 |
| 3 | 2.000 | 0,04 ~ 0,08 | 2.000 | 0,04 ~ 0,08 | 8.000 | 0,05 ~ 0,09 | 12.000 | 0,1 ~ 0,22 |
| 4 | 1.500 | 0,05 ~ 0,1 | 1.500 | 0,05 ~ 0,1 | 6.500 | 0,07 ~ 0,12 | 9.500 | 0,12 ~ 0,25 |
| 6 | 1.000 | 0,06 ~ 0,12 | 1.000 | 0,06 ~ 0,12 | 4.300 | 0,12 ~ 0,18 | 6.400 | 0,14 ~ 0,28 |
| 8 | 750 | 0,08 ~ 0,15 | 750 | 0,08 ~ 0,15 | 3.200 | 0,13 ~ 0,2 | 4.800 | 0,18 ~ 0,32 |
| 10 | 600 | 0,1 ~ 0,18 | 600 | 0,1 ~ 0,18 | 2.600 | 0,17 ~ 0,25 | 3.800 | 0,22 ~ 0,36 |
| 12 | 500 | 0,12 ~ 0,21 | 500 | 0,12 ~ 0,21 | 2.200 | 0,21 ~ 0,3 | 3.200 | 0,25 ~ 0,4 |

Note1. When using AD-LS-LDS, reduce the feed rate accordingly.
Note2. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible.

1. The indicated speeds and feeds are for drilling with water-soluble coolant.
2. When using non-water-soluble coolant, reduce the drilling speed by 20%.
3. When centering on a curved or inclined surface, reduce the feed rate accordingly.
4. Centering on Austenitic Stainless Steels is not recommended. For these procedures, use the TIN-NC-LDS or the NC-LDS.

## Counter Sinking

| | Low Carbon Steel - Mild Steel SS400 ~500N/mm² | | Carbon Steel S50C 500 ~ 710N/mm² | | Alloy Steel SCM 710 ~ 900N/mm² | | Special Alloy Steel-Hardened SKD61 ~28HRC ~ 900N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 63~80m/min | | 40~63m/min | | 32~50m/min | | 20~30m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 0,5 | 20.000 | 0,005 ~ 0,05 | 25.000 | 0,005 ~ 0,05 | 20.000 | 0,005 ~ 0,05 | 16.000 | 0,005 ~ 0,05 |
| 1 | 10.000 | 0,01 ~ 0,1 | 16.000 | 0,01 ~ 0,1 | 10.000 | 0,01 ~ 0,1 | 8.000 | 0,01 ~ 0,01 |
| 2 | 5.000 | 0,02 ~ 0,18 | 8.000 | 0,02 ~ 0,18 | 5.000 | 0,02 ~ 0,18 | 4.000 | 0,02 ~ 0,18 |
| 3 | 7.500 | 0,04 ~ 0,24 | 5.500 | 0,04 ~ 0,24 | 4.500 | 0,04 ~ 0,24 | 2.700 | 0,04 ~ 0,24 |
| 4 | 5.700 | 0,04 ~ 0,24 | 4.100 | 0,04 ~ 0,24 | 3.300 | 0,04 ~ 0,24 | 2.000 | 0,04 ~ 0,24 |
| 6 | 3.800 | 0,06 ~ 0,36 | 2.700 | 0,06 ~ 0,36 | 2.300 | 0,06 ~ 0,36 | 1.300 | 0,06 ~ 0,36 |
| 8 | 2.800 | 0,08 ~ 0,38 | 2.000 | 0,08 ~ 0,38 | 1.700 | 0,08 ~ 0,38 | 1.000 | 0,08 ~ 0,38 |
| 10 | 2.300 | 0,1 ~ 0,4 | 1.700 | 0,1 ~ 0,4 | 1.400 | 0,1 ~ 0,4 | 800 | 0,1 ~ 0,4 |
| 12 | 1.900 | 0,12 ~ 0,42 | 1.400 | 0,12 ~ 0,42 | 1.200 | 0,12 ~ 0,42 | 650 | 0,12 ~ 0,42 |

| | Special Alloy Steel-Hardened SKD11 ~34HRC ~ 1060N/mm² | | Quenched and Tempered Steel 45~50HRC | | Cast Iron - Ductile cast iron FCD250-FC400 ~ 500N/mm² | | Aluminium - Alloy Casting ADC - AC4D | |
|---|---|---|---|---|---|---|---|---|
| Vc | 20~30m/min | | 20~30m/min | | 63~100m/min | | 80~160m/min | |
| Ø | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) | Speed (min⁻¹) | Feed Rate (mm/rev.) |
| 0,5 | 16.000 | 0,005 ~ 0,05 | 16.000 | 0,005 ~ 0,02 | Note 2. | 0,005 ~ 0,05 | Note 2. | 0,005 ~ 0,05 |
| 1 | 8.000 | 0,01 ~ 0,1 | 8.000 | 0,01 ~ 0,03 | 20.000 | 0,01 ~ 0,1 | Note 2. | 0,01 ~ 0,1 |
| 2 | 4.000 | 0,02 ~ 0,18 | 4.000 | 0,03 ~ 0,06 | 12.000 | 0,02 ~ 0,18 | 15.000 | 0,02 ~ 0,18 |
| 3 | 2.700 | 0,04 ~ 0,24 | 2.700 | 0,04 ~ 0,08 | 8.000 | 0,04 ~ 0,24 | 12.000 | 0,04 ~ 0,24 |
| 4 | 2.000 | 0,04 ~ 0,24 | 2.000 | 0,05 ~ 0,1 | 6.500 | 0,04 ~ 0,24 | 9.500 | 0,04 ~ 0,24 |
| 6 | 1.300 | 0,06 ~ 0,36 | 1.300 | 0,06 ~ 0,12 | 4.300 | 0,06 ~ 0,36 | 6.400 | 0,06 ~ 0,36 |
| 8 | 1.000 | 0,08 ~ 0,38 | 1.000 | 0,08 ~ 0,15 | 3.200 | 0,08 ~ 0,38 | 4.800 | 0,08 ~ 0,38 |
| 10 | 800 | 0,1 ~ 0,4 | 800 | 0,1 ~ 0,18 | 2.600 | 0,1 ~ 0,4 | 3.800 | 0,1 ~ 0,4 |
| 12 | 650 | 0,12 ~ 0,42 | 650 | 0,12 ~ 0,21 | 2.200 | 0,12 ~ 0,42 | 3.200 | 0,12 ~ 0,42 |

Note1. When using AD-LS-LDS, reduce the feed rate accordingly.
Note2. For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible.

1. The indicated speeds and feeds are for drilling with water-soluble coolant.
2. When using non-water-soluble coolant, reduce the drilling speed by 20%.
3. When counter sinking on a curved or inclined surface, reduce the feed rate accordingly.
4. For high-speed machining, double the median value of the above cutting condition to use as upper limit.

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## CRM

| | Low Carbon Steel<br>S15C • SS400<br>AIS11015 | | Carbon Steel<br>S45C • S50C<br>AIS11045 • 1050 | | Alloy Steel<br>SCM • SNC • SNCM | | Alluminium Alloy<br>A7075 • ADC<br>DIN ALZnMgCul.5D | |
|---|---|---|---|---|---|---|---|---|
| Vc | 12 ~ 20 m/min | | 10 ~ 16 m/min | | 8 ~ 12 m/min | | 15 ~ 30 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 0,3 | 0,002~0,005 | 0,03~0,08 | 0,002~0,005 | 0,03~0,08 | 0,002~0,005 | 0,03~0,08 | 0,002~0,005 | 0,03~0,08 |
| 0,5 | 0,004~0,01 | 0,05~0,10 | 0,004~0,01 | 0,05~0,10 | 0,004~0,01 | 0,05~0,10 | 0,004~0,01 | 0,05~0,10 |
| 1 | 0,008~0,015 | 0,05~0,10 | 0,008~0,015 | 0,05~0,10 | 0,008~0,015 | 0,05~0,10 | 0,008~0,015 | 0,05~0,10 |
| 2 | 0,018~0,03 | 0,05~0,15 | 0,018~0,03 | 0,05~0,15 | 0,018~0,03 | 0,05~0,15 | 0,018~0,03 | 0,05~0,15 |
| 3 | 0,028~0,045 | 0,10~0,20 | 0,028~0,045 | 0,10~0,20 | 0,028~0,045 | 0,10~0,20 | 0,028~0,045 | 0,10~0,20 |
| 4 | 0,04~0,06 | 0,10~0,20 | 0,04~0,06 | 0,10~0,20 | 0,04~0,06 | 0,10~0,20 | 0,04~0,06 | 0,10~0,20 |
| 5 | 0,05~0,09 | 0,10~0,20 | 0,05~0,09 | 0,10~0,20 | 0,05~0,09 | 0,10~0,20 | 0,06~0,09 | 0,10~0,20 |
| 6 | 0,06~0,12 | 0,10~0,20 | 0,06~0,12 | 0,10~0,20 | 0,06~0,12 | 0,10~0,20 | 0,07~0,13 | 0,10~0,20 |
| 8 | 0,08~0,15 | 0,10~0,20 | 0,08~0,15 | 0,10~0,20 | 0,08~0,15 | 0,10~0,20 | 0,08~0,18 | 0,10~0,20 |
| 10 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,23 | 0,10~0,30 |
| 12 | 0,12~0,22 | 0,10~0,20 | 0,12~0,22 | 0,10~0,20 | 0,12~0,22 | 0,10~0,20 | 0,12~0,28 | 0,10~0,30 |
| 13 | 0,13~0,23 | 0,10~0,20 | 0,13~0,23 | 0,10~0,20 | 0,13~0,23 | 0,10~0,20 | 0,13~0,30 | 0,10~0,30 |

| | Hardened Steel<br>SKT • SKD | | | | GG<br>FC250 | | Copper<br>C1100<br>DIN ECu57 | | Stainless Steel | | Ti | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~40HRC | | ~50 HRC | | | | | | | | | |
| Vc | 6 ~ 12 m/min | | 4 ~ 10 m/min | | 8 ~ 16 m/min | | 10 ~ 25 m/min | | 6 ~ 8 m/min | | 6 ~ 8 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 0,3 | 0,001~0,004 | 0,03~0,08 | - | - | 0,002~0,005 | 0,03~0,08 | 0,002~0,005 | 0,03~0,08 | 0,001~0,004 | 0,03~0,08 | 0,001~0,004 | 0,03~0,08 |
| 0,5 | 0,003~0,009 | 0,05~0,10 | - | - | 0,004~0,01 | 0,05~0,10 | 0,004~0,01 | 0,05~0,10 | 0,003~0,009 | 0,05~0,10 | 0,003~0,009 | 0,05~0,10 |
| 1 | 0,007~0,014 | 0,05~0,10 | - | - | 0,008~0,015 | 0,05~0,10 | 0,008~0,015 | 0,05~0,10 | 0,007~0,014 | 0,05~0,10 | 0,007~0,014 | 0,05~0,10 |
| 2 | 0,015~0,027 | 0,05~0,15 | - | - | 0,018~0,03 | 0,05~0,15 | 0,018~0,03 | 0,05~0,15 | 0,015~0,027 | 0,05~0,15 | 0,015~0,027 | 0,05~0,15 |
| 3 | 0,023~0,04 | 0,10~0,20 | 0,012~0,03 | 0,03~0,08 | 0,028~0,045 | 0,10~0,20 | 0,028~0,045 | 0,10~0,20 | 0,023~0,04 | 0,10~0,20 | 0,023~0,04 | 0,10~0,20 |
| 4 | 0,032~0,052 | 0,10~0,20 | 0,015~0,035 | 0,03~0,08 | 0,04~0,06 | 0,10~0,20 | 0,04~0,06 | 0,10~0,20 | 0,032~0,052 | 0,10~0,20 | 0,032~0,052 | 0,10~0,20 |
| 5 | 0,04~0,08 | 0,10~0,20 | 0,02~0,05 | 0,03~0,08 | 0,05~0,09 | 0,10~0,20 | 0,05~0,09 | 0,10~0,20 | 0,04~0,08 | 0,10~0,20 | 0,04~0,08 | 0,10~0,20 |
| 6 | 0,05~0,10 | 0,10~0,20 | 0,025~0,055 | 0,03~0,08 | 0,06~0,12 | 0,10~0,20 | 0,06~0,12 | 0,10~0,20 | 0,05~0,10 | 0,10~0,20 | 0,05~0,10 | 0,10~0,20 |
| 8 | 0,06~0,13 | 0,10~0,20 | 0,03~0,075 | 0,03~0,08 | 0,08~0,15 | 0,10~0,20 | 0,08~0,15 | 0,10~0,20 | 0,06~0,13 | 0,10~0,20 | 0,06~0,13 | 0,10~0,20 |
| 10 | 0,08~0,18 | 0,10~0,20 | 0,04~0,08 | 0,03~0,08 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,08~0,18 | 0,10~0,20 | 0,08~0,18 | 0,10~0,20 |
| 12 | 0,10~0,20 | 0,10~0,20 | 0,04~0,09 | 0,03~0,08 | 0,12~0,23 | 0,10~0,20 | 0,12~0,23 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 | 0,10~0,20 |
| 13 | 0,10~0,21 | 0,10~0,20 | 0,04~0,10 | 0,03~0,08 | 0,13~0,25 | 0,10~0,20 | 0,13~0,25 | 0,10~0,20 | 0,10~0,21 | 0,10~0,20 | 0,10~0,21 | 0,10~0,20 |

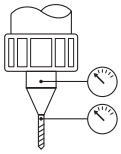
# CUTTING CONDITIONS



## AD-MICRO 4D/10D

| | Mild Steel - Low Carbon Steel<br>SS400 - S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C - S50C<br>~210HB ~710 N/mm² | | Alloy Steel<br>SCM - SCr - sncm<br>710 ~900 N/mm² | | Alloy Steel<br>SCM - SCr - sncm<br>900 ~1.000 N/mm² | | Special Alloy Steel<br>Hardened Steel - Prehardened steel<br>SUJ2 - SUS440 - SKD<br>34~40 HRC | | Stainless Steel<br>SUS300 - SUS400 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 20~70m/min | | 20~65m/min | | 15~55m/min | | 15~25m/min | | 15~20m/min | | 10~20m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,5 | 12.000 | 0,01 ~ 0,025 | 12.000 | 0,008 ~ 0,025 | 9.500 | 0,008 ~ 0,025 | 8.500 | 0,008 ~ 0,02 | 8.000 | 0,008 ~ 0,015 | 8.000 | 0,008 ~ 0,025 |
| 1 | 11.000 | 0,02 ~ 0,05 | 11.500 | 0,015 ~ 0,05 | 9.000 | 0,015 ~ 0,05 | 6.000 | 0,015 ~ 0,04 | 6.000 | 0,015 ~ 0,03 | 6.000 | 0,015 ~ 0,05 |
| 1,5 | 10.000 | 0,03 ~ 0,06 | 10.000 | 0,023 ~ 0,075 | 8.00 | 0,023 ~ 0,075 | 5.000 | 0,023 ~ 0,06 | 4.000 | 0,023 ~ 0,045 | 4.000 | 0,023 ~ 0,075 |
| 2 | 9.000 | 0,04 ~ 0,08 | 7.500 | 0,03 ~ 0,1 | 6.000 | 0,03 ~ 0,1 | 3.800 | 0,03 ~ 0,08 | 3.200 | 0,03 ~ 0,06 | 3.200 | 0,03 ~ 0,08 |
| 2,5 | 8.500 | 0,05 ~ 0,1 | 7.000 | 0,05 ~ 0,1 | 6.000 | 0,05 ~ 0,1 | 2.500 | 0,038 ~ 0,1 | 2.400 | 0,038 ~ 0,075 | 1.300 | 0,038 ~ 0,075 |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.000 | 0,06 ~ 0,12 | 6.000 | 0,06 ~ 0,12 | 2.500 | 0,045 ~ 0,12 | 2.200 | 0,045 ~ 0,09 | 1.100 | 0,045 ~ 0,09 |

| | Precipitation Stainless Steel<br>SUS630 | | Carbon Steel Ductile Cast Iron<br>FC250 - FCD450 - FCD600<br>~600 N/mm² | | Aluminium Alloy<br>AC4C - ADC | | Aluminium<br>A5052 - A7075 | | Titanium Alloy | | Heat Resistant Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 10~15m/min | | 20~70m/min | | 20~70m/min | | 20~70m/min | | 15~25m/min | | 5~8m/min | |
| Ø | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) | S (min⁻¹) | F (mm/rev.) |
| 0,5 | 7.000 | 0,008 ~ 0,025 | 12.000 | 0,01 ~ 0,025 | 12.000 | 0,01 ~ 0,03 | 12.000 | 0,01 ~ 0,02 | 10.000 | 0,008 ~ 0,018 | 4.000 | 0,005 ~ 0,015 |
| 1 | 5.000 | 0,015 ~ 0,05 | 11.000 | 0,02 ~ 0,05 | 11.000 | 0,02 ~ 0,06 | 11.000 | 0,02 ~ 0,04 | 7.500 | 0,015 ~ 0,035 | 2.200 | 0,01 ~ 0,03 |
| 1,5 | 3.500 | 0,023 ~ 0,075 | 10.000 | 0,03 ~ 0,06 | 10.000 | 0,03 ~ 0,09 | 10.000 | 0,03 ~ 0,06 | 5.500 | 0,023 ~ 0,045 | 1.500 | 0,015 ~ 0,045 |
| 2 | 2.500 | 0,03 ~ 0,08 | 9.000 | 0,04 ~ 0,08 | 9.000 | 0,04 ~ 0,12 | 9.000 | 0,04 ~ 0,08 | 4.000 | 0,03 ~ 0,06 | 1.100 | 0,02 ~ 0,06 |
| 2,5 | 1.300 | 0,038 ~ 0,075 | 8.500 | 0,05 ~ 0,1 | 8.500 | 0,05 ~ 0,15 | 8.500 | 0,05 ~ 0,1 | 3.000 | 0,038 ~ 0,075 | 900 | 0,025 ~ 0,075 |
| 3 | 1.100 | 0,045 ~ 0,09 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,18 | 7.500 | 0,06 ~ 0,12 | 2.500 | 0,045 ~ 0,09 | 750 | 0,03 ~ 0,09 |



1. Please use a carbide drill in a machine with precise spindle rotation.
2. The indicated speeds and feeds are for drilling with water-soluble coolant.
3. Water-soluble high density coolant (less than 20 times dilution) is recommended.
4. Adjust the cutting fluid to consistently reach the tool tip and the hole opening.
5. Regardless of hole depth, perform step drilling using 0.2DC to 0.5DC as a guideline.
6. For AD-MICRO 10D DC<1, perform pilot hole machining according to the guideline"AD-MICRO 10D Recommended Drilling Method" (see p.25).
7. When mounting the drill, use a collet free of scratches and dirt. Ensure the runout accuracy is 0.002 mm or less at the cylindrical body or shank end, as shown in the illustrated figure.
8. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
9. Refer to the table above to set the milling conditions in accordance with the actual situation.

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## HS-OIL-CRM

| | Low Carbon Steel C15 | | Carbon Steel C45 | | Alloy Steel 42CrMo | | Tool Steel 30 HRC | | GG/GGG | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 120 ~ 300 m/min | | 120 ~ 300 m/min | | 120 ~ 300 m/min | | 100 ~ 200 m/min | | 120 ~ 300 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 3 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 |
| 4 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 |
| 5 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 |
| 6 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 |
| 8 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 |
| 10 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 |
| 12 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 |

| | Alluminium Alloy A7075 • CAST AL | | Copper C1100 | | Hardened Steel ~40 HRC | | Hardened Steel ~50 HRC | |
|---|---|---|---|---|---|---|---|---|
| Vc | 120 ~ 300 m/min | | 120 ~ 300 m/min | | 120 ~ 300 m/min | | 50 ~ 100 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 3 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 | 0,3~0,6 | 0,05 | 0,05~0,1 | 0,05 |
| 4 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 | 0,4~0,8 | 0,05~0,1 | 0,1~0,2 | 0,05~0,1 |
| 5 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 | 0,5~1,0 | 0,05~0,1 | 0,15~0,3 | 0,05~0,1 |
| 6 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 | 0,6~1,2 | 0,1 | 0,2~0,4 | 0,1 |
| 8 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 | 0,8~1,6 | 0,1~0,2 | 0,2~0,4 | 0,1~0,2 |
| 10 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 | 1,0~2,0 | 0,1~0,2 | 0,3~0,5 | 0,1~0,2 |
| 12 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 | 1,0~2,0 | 0,2 | 0,3~0,5 | 0,2 |

## AL-CRM

| | Alluminium Alloy A7075 • CAST AL | | Copper C1100 | |
|---|---|---|---|---|
| Vc | 40 ~ 120 m/min | | 30 ~ 90 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 2 | 0,05 ~ 0,08 | 0,1 | 0,05 ~ 0,08 | 0,1 |
| 3 | 0,075 ~ 0,12 | 0,1 | 0,075 ~ 0,12 | 0,1 |
| 4 | 0,1 ~ 0,15 | 0,1 | 0,1 ~ 0,15 | 0,1 |
| 5 | 0,12 ~ 0,17 | 0,1 | 0,12 ~ 0,17 | 0,1 |
| 6 | 0,15 ~ 0,2 | 0,2 | 0,15 ~ 0,2 | 0,2 |
| 8 | 0,18 ~ 0,26 | 0,2 | 0,18 ~ 0,26 | 0,2 |
| 10 | 0,2 ~ 0,3 | 0,3 | 0,2 ~ 0,3 | 0,3 |
| 12 | 0,27 ~ 0,36 | 0,3 | 0,27 ~ 0,36 | 0,3 |

## H-CRM

| | Tool Steel | | Stainless Steel | | Ti Alloy | | Hardened Steel ~40 HRC | | Hardened Steel ~50 HRC | | Hardened Steel ~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 15 ~ 30 m/min | | 10 ~ 20 m/min | | 10 ~ 20 m/min | | 9 ~ 18 m/min | | 9 ~ 18 m/min | | 6 ~ 12 m/min | |
| Ø | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) | F (mm/rev.) | Removal Amount (mm) |
| 2 | 0,03 ~ 0,06 | 0,1 | 0,05 ~ 0,08 | 0,1 | 0,017 ~ 0,05 | 0,08 | 0,03 ~ 0,06 | 0,1 | 0,017 ~ 0,05 | 0,08 | 0,017 ~ 0,05 | 0,08 |
| 3 | 0,05 ~ 0,1 | 0,1 | 0,075 ~ 0,12 | 0,1 | 0,025 ~ 0,075 | 0,1 | 0,05 ~ 0,1 | 0,1 | 0,025 ~ 0,075 | 0,1 | 0,025 ~ 0,075 | 0,1 |
| 4 | 0,06 ~ 0,12 | 0,1 | 0,1 ~ 0,15 | 0,1 | 0,03 ~ 0,1 | 0,1 | 0,06 ~ 0,12 | 0,1 | 0,03 ~ 0,1 | 0,1 | 0,03 ~ 0,1 | 0,1 |
| 5 | 0,08 ~ 0,16 | 0,1 | 0,12 ~ 0,17 | 0,1 | 0,04 ~ 0,12 | 0,1 | 0,08 ~ 0,16 | 0,1 | 0,04 ~ 0,12 | 0,1 | 0,04 ~ 0,12 | 0,1 |
| 6 | 0,1 ~ 0,2 | 0,2 | 0,15 ~ 0,2 | 0,2 | 0,05 ~ 0,15 | 0,1 | 0,1 ~ 0,2 | 0,2 | 0,05 ~ 0,15 | 0,1 | 0,05 ~ 0,15 | 0,1 |
| 8 | 0,12 ~ 0,26 | 0,2 | 0,18 ~ 0,26 | 0,2 | 0,06 ~ 0,18 | 0,1 | 0,12 ~ 0,26 | 0,2 | 0,06 ~ 0,18 | 0,1 | 0,06 ~ 0,18 | 0,1 |
| 10 | 0,15 ~ 0,3 | 0,3 | 0,2 ~ 0,3 | 0,3 | 0,07 ~ 0,2 | 0,2 | 0,15 ~ 0,3 | 0,3 | 0,07 ~ 0,2 | 0,2 | 0,07 ~ 0,2 | 0,2 |
| 12 | 0,18 ~ 0,36 | 0,3 | 0,27 ~ 0,36 | 0,3 | 0,09 ~ 0,27 | 0,2 | 0,18 ~ 0,36 | 0,3 | 0,09 ~ 0,27 | 0,2 | 0,09 ~ 0,27 | 0,2 |

# CUTTING CONDITIONS

**Drilling | Solid | Cutting conditions**

## ADOX-3D/5D/8D

| | Mild Steel - Low Carbon Steel<br>SS400 • S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C • S50C<br>~210HB ~710 N/mm² | | Alloy Steel<br>SCM • SCr • SNCM 16~28HRC<br>710~900 N/mm² | | Alloy Steel<br>SCM • SCr • SNCM<br>28~35HRC<br>900~1.100N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 160 m/min | | 80 ~ 120 m/min | | 60 ~ 90 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 12.700 | 0,04 ~ 0,08 | 12.700 | 0,04 ~ 0,08 | 12.700 | 0,04 ~ 0,08 | 11.100 | 0,04 ~ 0,08 |
| 3 | 10.600 | 0,06 ~ 0,12 | 10.600 | 0,06 ~ 0,12 | 10.600 | 0,06 ~ 0,12 | 7.400 | 0,06 ~ 0,12 |
| 4 | 8.000 | 0,08 ~ 0,16 | 8.000 | 0,08 ~ 0,16 | 8.000 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 |
| 5 | 6.400 | 0,10 ~ 0,20 | 6.400 | 0,10 ~ 0,20 | 6.400 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 |
| 6 | 5.300 | 0,12 ~ 0,24 | 5.300 | 0,12 ~ 0,24 | 5.300 | 0,12 ~ 0,24 | 3.700 | 0,12 ~ 0,24 |

| | Cast Iron<br>FC250<br>~350 N/mm² | | Ductile Cast Iron<br>FCD450 - FCD600<br>400 ~600 N/mm² | | Stainless Steel<br>SUS300/400<br>480 ~800 N/mm² | | Special Alloy Steel - Hardened Steel - Prehardened Steel<br>SKD61 (unquenched)<br>34~40HRC<br>1.060~1.250N/mm² | | AL, AC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 60 ~ 100 m/min | | 40 ~ 80 m/min | | 30 ~ 60 m/min | | 100 ~ 200 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2 | 12.700 | 0,04 ~ 0,08 | 12.700 | 0,04 ~ 0,08 | 9.500 | 0,04 ~ 0,08 | 7.200 | 0,04 ~ 0,06 | 24.000 | 0,08 ~ 0,12 |
| 3 | 10.600 | 0,06 ~ 0,12 | 8.500 | 0,06 ~ 0,12 | 6.400 | 0,06 ~ 0,12 | 4.800 | 0,06 ~ 0,09 | 16.000 | 0,12 ~ 0,18 |
| 4 | 8.000 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 4.800 | 0,08 ~ 0,16 | 3.600 | 0,08 ~ 0,12 | 12.000 | 0,16 ~ 0,24 |
| 5 | 6.400 | 0,10 ~ 0,20 | 5.100 | 0,10 ~ 0,20 | 3.800 | 0,10 ~ 0,20 | 2.900 | 0,10 ~ 0,15 | 9.500 | 0,20 ~ 0,30 |
| 6 | 5.300 | 0,12 ~ 0,24 | 4.200 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.400 | 0,12 ~ 0,18 | 8.000 | 0,24 ~ 0,36 |

1. The indicated speeds and feeds are for drilling with water-soluble coolant or MQL.
2. Water-soluble high density coolant (less than 20 times dilution) is recommended.
3. When using non-water-soluble or water-soluble coolant (over 20 times dilution), reduce cutting speed by 30%.
4. These conditions are for drilling depth less than 8 times the drill diameter.
5. Equip the drill with a scratch- and dust-free collet and minimize drill deflection to less than 0.02mm.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
8. 1D - 2D step feeding may be required for drilling high hardened steels and mid-range (8D) work.
9. Depending on actual operation environment, high speed cutting parameters listed above may not be applicables

## ADOX-10D/15D/20D/25D/30D

| | Mild Steel - Low Carbon Steel<br>SS400 - S10C<br>~150HB ~500 N/mm² | | Carbon Steel<br>S35C • S50C<br>~210HB ~710 N/mm² | | Alloy Steel<br>SCM • SCr • SNCM 16~28HRC<br>710~900 N/mm² | | Alloy Steel - Prehardened Steel<br>(C ≥0,3%)<br>SCM440<br>28~34HRC<br>900~1,060N/mm² | |
|---|---|---|---|---|---|---|---|---|
| Vc | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 60 ~ 125 m/min | | 50 ~ 70 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2,5 | 8.900 | 0,05 ~ 0,1 | 8.900 | 0,05 ~ 0,1 | 8.900 | 0,05 ~ 0,1 | 7.600 | 0,05 ~ 0,08 |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 6.300 | 0,08 ~ 0,11 |
| 4 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 6.400 | 0,08 ~ 0,16 | 4.700 | 0,1 ~ 0,15 |
| 5 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 5.800 | 0,10 ~ 0,20 | 3.800 | 0,12 ~ 0,18 |
| 6 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 4.800 | 0,12 ~ 0,24 | 3.100 | 0,14 ~ 0,2 |

| | Cast Iron<br>FC250<br>~350 N/mm² | | Ductile Cast Iron<br>FCD450 - FCD600<br>400 ~600 N/mm² | | Stainless Steel<br>SUS300/400<br>480 ~800 N/mm² | | Special Alloy Steel - Hardened Steel - Prehardened Steel<br>SKD61 (unquenched)<br>34~40HRC<br>1.060~1.250N/mm² | | AL, AC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 60 ~ 125 m/min | | 50 ~ 80 m/min | | 40 ~ 80 m/min | | 30 ~ 50 m/min | | 60 ~ 125 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) | S ($min^{-1}$) | F (mm/rev.) |
| 2,5 | 8.900 | 0,05 ~ 0,1 | 8.900 | 0,05 ~ 0,1 | 6.400 | 0,05 ~ 0,1 | 5.000 | 0,05 ~ 0,08 | 8.900 | 0,05 ~ 0,10 |
| 3 | 7.500 | 0,06 ~ 0,12 | 7.500 | 0,06 ~ 0,12 | 5.300 | 0,06 ~ 0,12 | 4.200 | 0,08 ~ 0,11 | 7.500 | 0,06 ~ 0,12 |
| 4 | 6.400 | 0,08 ~ 0,16 | 5.600 | 0,08 ~ 0,16 | 4.400 | 0,08 ~ 0,16 | 3.100 | 0,1 ~ 0,15 | 6.400 | 0,08 ~ 0,16 |
| 5 | 5.800 | 0,10 ~ 0,20 | 4.500 | 0,10 ~ 0,20 | 3.800 | 0,10 ~ 0,20 | 2.500 | 0,12 ~ 0,18 | 5.800 | 0,10 ~ 0,20 |
| 6 | 4.800 | 0,12 ~ 0,24 | 3.800 | 0,12 ~ 0,24 | 3.200 | 0,12 ~ 0,24 | 2.100 | 0,14 ~ 0,2 | 4.800 | 0,12 ~ 0,24 |

1. The indicated speeds and feeds are for drilling with water-soluble coolant or MQL (mist drilling in stainless steels is not recommended).
2. Water-soluble high density coolant (20-30 times dilution) is recommended.
3. When using non-water-soluble coolant, set the cutting speed between 70-100% of the lowest limit.
4. Make a pilot hole before using in accordance with recommended operation.
5. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.
6. Peck drilling of 1D - 2D is strongly recommended.

# CUTTING CONDITIONS

**Drilling | Indexables | Cutting conditions**

## PXD

| | Mild Steel Low Carbon Steel SS400 - S10C ~ 150HB ~500N/mm² | | Carbon Steel S35C - S50C ~ 210HB ~710N/mm² | | Alloy Steel SCM - SCr - SNCM 16 ~ 30HRC 710 ~ 950N/mm² | | Cast Iron FC250 ~350N/mm² | | Ductile Cast Iron FCD450 - FCD600 400 ~ 600N/mm² | | Aluminium Alloy Casting AC4C • ADC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 120 m/min | | 80 ~ 120 m/min | | 60 ~ 100 m/min | | 80 ~ 180 m/min | |
| Ø | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) | S ($min^{-1}$) | F (mm/rev) |
| 14 | 2.300 | 0,21 0,35 | 2.300 | 0,21 0,35 | 2.000 | 0,21 0,35 | 2.300 | 0,21 0,35 | 1.800 | 0,21 0,35 | 3.000 | 0,28 0,42 |
| 15 | 2.100 | 0,23 0,38 | 2.100 | 0,23 0,38 | 1.900 | 0,23 0,38 | 2.100 | 0,23 0,38 | 1.700 | 0,23 0,38 | 2.800 | 0,3 0,45 |
| 16 | 2.000 | 0,24 0,4 | 2.000 | 0,24 0,4 | 1.800 | 0,24 0,4 | 2.000 | 0,24 0,4 | 1.600 | 0,24 0,4 | 2.600 | 0,32 0,48 |
| 17 | 1.900 | 0,26 0,43 | 1.900 | 0,26 0,43 | 1.700 | 0,26 0,43 | 1.900 | 0,26 0,43 | 1.500 | 0,26 0,43 | 2.400 | 0,34 0,51 |
| 18 | 1.800 | 0,27 0,45 | 1.800 | 0,27 0,45 | 1.600 | 0,27 0,45 | 1.800 | 0,27 0,45 | 1.400 | 0,27 0,45 | 2.300 | 0,36 0,54 |
| 19 | 1.700 | 0,29 0,48 | 1.700 | 0,29 0,48 | 1.500 | 0,29 0,48 | 1.700 | 0,29 0,48 | 1.300 | 0,29 0,48 | 2.200 | 0,38 0,57 |
| 20 | 1.600 | 0,3 0,5 | 1.600 | 0,3 0,5 | 1.400 | 0,3 0,5 | 1.600 | 0,3 0,5 | 1.300 | 0,3 0,5 | 2.100 | 0,4 0,6 |
| 21 | 1.500 | 0,32 0,53 | 1.500 | 0,32 0,53 | 1.400 | 0,32 0,53 | 1.500 | 0,32 0,53 | 1.200 | 0,32 0,53 | 2.000 | 0,42 0,63 |
| 22 | 1.400 | 0,33 0,55 | 1.400 | 0,33 0,55 | 1.300 | 0,33 0,55 | 1.400 | 0,33 0,55 | 1.200 | 0,33 0,55 | 1.900 | 0,44 0,66 |
| 23 | 1.400 | 0,35 0,58 | 1.400 | 0,35 0,58 | 1.200 | 0,35 0,58 | 1.400 | 0,35 0,58 | 1.100 | 0,35 0,58 | 1.800 | 0,46 0,69 |
| 24 | 1.300 | 0,36 0,6 | 1.300 | 0,36 0,6 | 1.200 | 0,36 0,6 | 1.300 | 0,36 0,6 | 1.100 | 0,36 0,6 | 1.700 | 0,48 0,72 |
| 25 | 1.300 | 0,38 0,63 | 1.300 | 0,38 0,63 | 1.100 | 0,38 0,63 | 1.300 | 0,38 0,63 | 1.000 | 0,38 0,63 | 1.700 | 0,5 0,75 |

1. The indicated speeds and feeds are for water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
4. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

## PHP

| | Work Material | Tensile Strength/ Hardness | Drilling speed Vc (m/min) | Feed Rate (mm/rev) | | | |
|---|---|---|---|---|---|---|---|
| | | | | ø14~ø20.5 | ø21~ø28 | ø29~ø34 | ø35~ø40 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (150 ~ 250) | 0,09 (0,06 ~ 0,13) | 0,13 (0,10 ~ 0,18) | 0,18 (0,13 ~ 0,21) | 0,25 (0,20 ~ 0,27) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 160 (100 ~ 220) | 0,09(0,06 ~ 0,13) | 0,13 (0,10 ~ 0,18) | 0,18 (0,13 ~ 0,21) | 0,25 (0,20 ~ 0,27) |
| P | Die steel (SKD11-SKD61) | ~280HB | 140 (80 ~ 180) | 0,08 (0,05 ~ 0,12) | 0,12 (0,06 ~ 0,15) | 0,14 (0,09 ~ 0,18) | 0,15 (0,10 ~ 0,20) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (100 ~ 180) | 0,08 (0,05 ~ 0,12) | 0,10 (0,06 ~ 0,12) | 0,15 (0,10 ~ 0,17) | 0,18 (0,15 ~ 0,20) |
| K | Cast Iron (FC250) | ~350N/mm² | 150 (100 ~ 180) | 0,09 (0,06 ~ 0,13) | 0,13 (0,10 ~ 0,18) | 0,18 (0,13 ~ 0,21) | 0,25 (0,20 ~ 0,27) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 130 (80 ~ 150) | 0,09 (0,06 ~ 0,13) | 0,12 (0,08 ~ 0,16) | 0,16 (0,1 ~ 0,20) | 0,20 (0,15 ~ 0,25) |
| N | Alluminium Alloy | ~13%Si | 220 ( 100 ~ 800) | 0,09 (0,06 ~ 0,20) | 0,13 (0,10 ~ 0,25) | 0,18 (0,13 ~ 0,30) | 0,25 (0,20 ~ 0,35) |
| S | Heat Resistant Aluminium Alloy(Wet) (Inconel 718) | – | 30 (15 ~ 50) | 0,04 (0,02 ~ 0,06) | 0,06 (0,03 ~ 0,10) | 0,08 (0,04 ~ 0,12) | 0,10 (0,06 ~ 0,14) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30 ~ 100) | 0,06 (0,04 ~ 0,08) | 0,08 (0,06 ~ 0,12) | 0,10 (0,08 ~ 0,15) | 0,12 (0,10 ~ 0,15) |

1. The indicated speeds and feeds are for water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Using non-water soluble oil is not recommended.
4. These conditions are for drilling depth less than 3 times the drill diameter.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

# CUTTING CONDITIONS



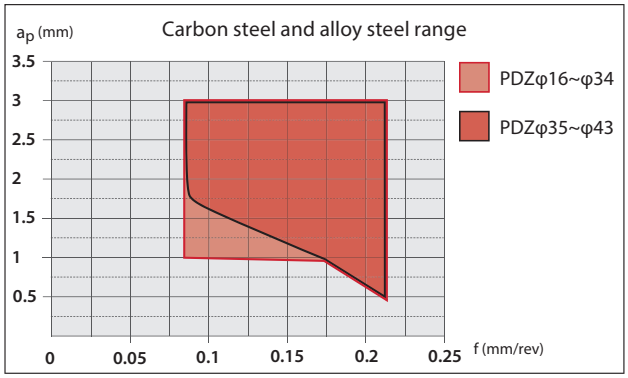
## PDZ

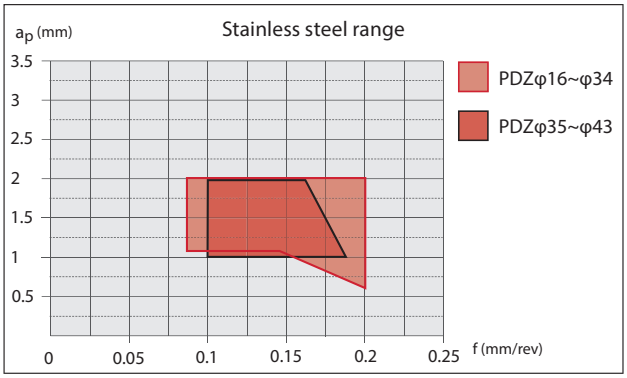
| | Work Material | Tensile Strength/ Hardness | Vc (m/min) | Feed Rate (mm/rev) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø16~ø16,5 | ø17~ø18,5 | ø19~ø20 | ø21~ø24 | ø25~ø28 | ø29~ø33 | ø34~ø43 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (150~250) | 0,06 (0,04~0,1) | 0,06 (0,04~0,1) | 0,07 (0,04~0,1) | 0,08 (0,04~0,12) | 0,08 (0,04~0,12) | 0,1 (0,05~0,15) | 0,1 (0,05~0,18) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100~220) | 0,08 (0,04~0,14) | 0,09 (0,04~0,16) | 0,1 (0,04~0,18) | 0,14 (0,04~0,2) | 0,18 (0,06~0,25) | 0,2 (0,08~0,3) | 0,2 (0,08~0,35) |
| P | Die Steel (SKD11-SKD61) | ~280HB | 120 (80~180) | 0,06 (0,04~0,1) | 0,07 (0,04~0,1) | 0,08 (0,04~0,12) | 0,12 (0,04~0,15) | 0,14 (0,06~0,2) | 0,18 (0,08~0,25) | 0,18 (0,08~0,25) |
| M | Stainless Steel (SUS304-SUS420) | ~250HB | 130 (80~180) | 0,07 (0,04~0,1) | 0,08 (0,04~0,1) | 0,09 (0,04~0,12) | 0,1 (0,04~0,15) | 0,13 (0,06~0,2) | 0,15 (0,08~0,25) | 0,15 (0,08~0,25) |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (150~280) | 0,08 (0,04~0,14) | 0,1 (0,04~0,16) | 0,12 (0,04~0,2) | 0,16 (0,08~0,25) | 0,2 (0,06~0,3) | 0,2 (0,08~0,3) | 0,2 (0,08~0,35) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100~220) | 0,08 (0,04~0,12) | 0,09 (0,04~0,14) | 0,1 (0,04~0,18) | 0,14 (0,04~0,2) | 0,18 (0,06~0,25) | 0,18 (0,08~0,25) | 0,18 (0,08~0,25) |
| N | Alluminium Alloy | ~13%Si | 200 (100~800) | 0,08 (0,04~0,12) | 0,1 (0,04~0,16) | 0,12 (0,04~0,2) | 0,16 (0,04~0,25) | 0,2 (0,06~0,3) | 0,2 (0,08~0,3) | 0,2 (0,08~0,3) |
| S | Heat Resistant Alloy (Wet) (Inconel 718) | – | 50 (15~60) | 0,04 (0,02~0,06) | 0,05 (0,03~0,06) | 0,05 (0,03~0,06) | 0,06 (0,04~0,08) | 0,08 (0,06~0,1) | 0,1 (0,06~0,12) | 0,1 (0,06~0,12) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30~100) | 0,05 (0,04~0,08) | 0,06 (0,04~0,08) | 0,06 (0,04~0,08) | 0,08 (0,04~0,15) | 0,1 (0,06~0,2) | 0,14 (0,08~0,2) | 0,14 (0,08~0,2) |
| H | Pre-hardened Steel NAK80 | 40~43HRC | 100 (60~120) | 0,06 (0,04~0,1) | 0,06 (0,04~0,12) | 0,07 (0,04~0,12) | 0,08 (0,04~0,12) | 0,1 (0,06~0,15) | 0,1 (0,06~0,15) | 0,1 (0,06~0,15) |
| H | Hardened Steel SKD11 | 50~55HRC | 60 (40~80) | 0,05 (0,04~0,08) | 0,05 (0,04~0,08) | 0,06 (0,04~0,08) | 0,06 (0,04~0,08) | 0,08 (0,04~0,1) | 0,08 (0,04~0,1) | 0,08 (0,04~0,1) |

1. The indicated speeds and feeds are for using water-soluble oil with inner supply.
2. Suitable cutting fluid is water-soluble in high density (less than 20 times dilution).
3. Using non-water-soluble oil is not recommended.
4. The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting condition.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

# Turning

### Cutting Conditions of Internal / External Turning




### Also supports small diameter drilling

## ADF

**Carbide Flat Drill**

### Lineup

| | | | |
|---|---|---|---|
| ADF-2D | Ø0,2 | ~ | Ø20 |
| ADFO-3D | Ø3 | ~ | Ø20 |
| ADFLS-2D | Ø3 | ~ | Ø20 |
| ADF-NC | Ø2 | ~ | Ø12 |
| ADFO-NC | Ø3 | ~ | Ø10 |

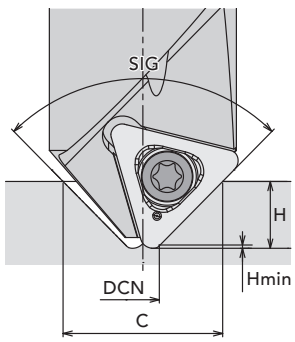
## PLDS

### Centering and Chamfering Cutter

| Work Material | | Tensile Strength / Hardness | Vc (m/min) Cutting Speed | (min$^{-1}$) S | (mm/rev) Feed Rate | |
|---|---|---|---|---|---|---|
| | | | | | Centering | Countersinking (Side Feed) |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 80 (60~120) | 1.500 ~ 3.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 80 (60~120) | 1.500 ~ 3.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| P | Die Steel (SKD11-SKD61) | ~280HB | 80 (60~120) | 1.500 ~ 3.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| M | Stainless Steel (Coolant) (SUS304-SUS420) | ~250HB | 80 (60~120) | 1.500 ~ 2.500 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| K | Cast Iron (FC250) | ~350N/mm$^2$ | 100 (60~140) | 1.500 ~ 3.500 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm$^2$ | 100 (60~140) | 1.500 ~ 3.500 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| N | Aluminium Alloys | ~13%Si | 150 (100~200) | 2.500 ~ 5.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | – | 35 (25~60) | 600 ~ 1.500 | 0,04 (0,03 ~ 0,06) | 0,08 (0,05 ~ 0,12) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 40 (30~100) | 700 ~ 2.500 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 80 (60~100) | 1.500 ~ 3.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |
| H | Steel for Die Casting (DAC-MAGIC, DH31) | 43~48HRC | 60 (50~80) | 1.200 ~ 2.000 | 0,06 (0,03 ~ 0,08) | 0,08 (0,05 ~ 0,12) |

1. The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting condition.
2. Inserts should be attached to the holder tightly in a very neat condition.
3. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
4. For the feed of V slotting, use 80% of the countersinking (side feed) shown in the above table.

## Standard centering depth (H)




SIG = 90°
Hmin = 0,25
DCN = Ø 2,5 (minimum machined hole diameter)

**H= (C-DCN) / 2 + Hmin**

H = Centering depth
C = Countersink diameter

Example:
When SIG=90°C=φ10 (Countersink diameter)
The value of H will be 4 mm instead of 5 mm.

SIG = 120°
Hmin = 0,1
DCN = Ø 2,4 (minimum machined hole diameter)

**H= (C-DCN) / 3,46 + Hmin**

H = Centering depth
C = Countersink diameter

## PMEN

### Chamfering Cutter

| Work Material | | Tensile Strength / Hardness | Vc (m/min) Cutting Speed | Countersinking (Vertical Feed) | | | Countersinking (Side Feed) | Frontal Milling |
|---|---|---|---|---|---|---|---|---|
| | | | | Feed Rate f(mm/rev) | | | | ap:3mm |
| | | | | Ø8 | Ø16~32 | Ø40~60 | fz(mm/t) Feed per Tooth | fz(mm/t) Feed per Tooth |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 80(60~120) | 0,06(0,05~0,08) | 0,1(0,05~0,12) | 0,15(0,12~0,2) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 80(60~120) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Die Steel (SKD11-SKD61) | ~280HB | 80(60~120) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 80(60~100) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Stainless Steel (Wet) (SUS304, SUS420) | ~250HB | 80(60~100) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| K | Cast Iron (FC250) | ~350N/mm² | 200(150~280) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 160(100~220) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| N | Aluminium Alloys | ~13%Si | 350(200~500) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| S | Superalloy (Wet) (Inconel 718) | – | 50(30~60) | 0,06(0,04~0,08) | 0,08(0,05~0,1) | 0,1(0,08~0,15) | 0,08(0,05~0,1) | 0,08(0,05~0,1) |
| | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60(30~80) | 0,06(0,04~0,08) | 0,08(0,05~0,1) | 0,1(0,08~0,15) | 0,08(0,05~0,1) | 0,08(0,05~0,1) |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 80(60~100) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Steel for Die Casting (DAC-MAGIC, DH31) | 43~48HRC | 60(50~80) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |
| | Hardened Steel (SKD11) | 50~55HRC | 50(40~80) | 0,08(0,05~0,1) | 0,12(0,05~0,14) | 0,2(0,12~0,3) | 0,1(0,05~0,12) | 0,1(0,05~0,12) |

The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting condition.

## Recommendations for 49030 series

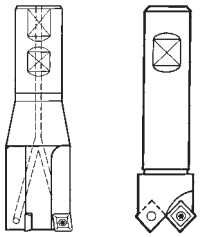
| 49030 | Projection | |
|---|---|---|
| | 6 x d | 3 x d |
| | Steel shank $f_z$ ~ 0,1 | Steel shank $f_z$ ~ 0,1 |
| **Working Material** | **Vc m/min.** | **Vc m/min.** |
| Free Cutting Steels<br>General Purpose Steels<br>Case hardening Steels<br>unalloyed, C < 0,2% | 50 - 60 | 150 - 250 |
| Free Cutting Steels<br>General Purpose Steels<br>Tempering Steels<br>alloyed, C < 0,45% | 50 - 60 | 150 - 250 |
| Tempering Steels<br>Tool Steels<br>alloyed, C < 0,8% | 50 - 60 | 150 - 200 |
| Highly Alloyed Steels<br>Tool Steels for Cold /<br>Hot Forming<br>C > 0,8% | 50 - 60 | 150 - 200 |
| Stainless Steels,<br>martensitic<br>Stainless Castings | 50 - 60 | 150 - 200 |
| Stainless Steels,<br>austenitic | 50 - 60 | 150 - 200 |
| High Temperature<br>Alloys on Ni + Co<br>Basis | 40 - 60 | 40 - 90 |
| Titanium Alloys | 40 - 60 | 40 - 90 |
| Grey Cast Iron | 50 - 60 | 150 - 200 |
| Malleable and Nodular<br>Castings | 50 - 60 | 150 - 200 |
| Aluminium | 50 - 60 | 150 - 200 |
| Copper / Brass<br>Bronze | 50 - 60 | 150 - 200 |

# CUTTING CONDITIONS



## Recommendations

**For cutting speeds Vc m/min. and feeds per tooth fz mm for Milling-, Boring- and Chamfering Tools with indexable carbide and Cermet Inserts**

| Tool: |  | | |
|---|---|---|---|
| Type.: | 49037<br>49038<br>49039 | 49100 | |
| Inserts | MPHT<br>MPHW<br>MPMT* | MCHT<br>MCMT* | MBHT<br>MBHW<br>MBMT* |
| Dimensions | 060202<br>060204* | 09T304<br>09T308* | 120404<br>120408* |
| $f_z$: | 0,03–0,1<br>0,03–0,12* | 0,05–0,15<br>0,05–0,25* | 0,05–0,15<br>0,05–0,25* |

| Working Material | Type | PMK92 | CH1 | KM22 | CT50<br>CT53 | CH1 | CT50 |
|---|---|---|---|---|---|---|---|
| | | Vc m/min. | | | | | |
| Free Cutting Steel General Purpose Steels Case hardening Steels unalloyed, C < 0,2% | HB 150–200<br>< 600 mm² | 180–350 | – | – | 300–500 | – | 300–500 |
| Free Cutting Steel General Purpose Steels Tempering Steels unalloyed, C < 0,45% | HB 175–225<br>< 800 mm² | 160–300 | – | – | 250–400 | – | 250–400 |
| Tempering Steels Tool Steels alloyed, C < 0,8% | HB 200–300<br>< 1000 mm² | 140–220 | – | – | 200–350 | – | 200–350 |
| Highly Alloyed Steels Tool Steels for Cold / Hot Forming C > 0,8%" | HB 200–300<br>< 1000 mm² | 90–150 | – | – | 180–250 | – | 180–250 |
| Stainless Steels, austenitic | HB 140–190<br>< 700 mm² | – | 100–180 | 150–300 | 150–300 | 100–180 | 150–300 |
| Stainless Steels, martensitic Stainless Castings | HB 175–245<br>< 1000 mm² | 90–180 | – | – | 150–240 | – | 150–240 |
| High Temperature Alloys on Ni + Cr Basis | HB 200–400<br>< 1200 mm² | – | 15–60 | 15–70 | 15–70 | 15–60 | 15–70 |
| Titanium Alloys | HB 215–500<br>< 1000 mm² | – | 40–60 | 40–70 | – | 40–60 | 15–70 |
| Grey Cast Iron | HB < 200 | 180–300 | 160–200 | 180–300 | 250–400 | 160–200 | 250–400 |
| Malleable and Nodular Castings | HB > 200 | 170–280 | 150–190 | 170–280 | 250–400 | 150–190 | 250–400 |
| Aluminium | HB < 160 | – | 300–1000 | 300–1000 | – | 300–1000 | 300–1000 |
| Copper / Brass Bronze | HB < 120 | – | 180–200 | 180–270 | – | 190–240 | 200–300 |

* in function of stability of tool and workpiece

# CUTTING CONDITIONS

Drilling | Indexables | Cutting conditions

## P2D & P3D

| | Work Material | Tensile Strength/ Hardness | Vc (m/min) | Feed Rate (mm/rev) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø12~ø14.5 | ø15~ø16.5 | ø17~ø18.5 | ø19~ø20.5 | ø21~ø24.5 | ø25~ø28.5 | ø29~ø33.5 | ø34~ø63 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (150~250) | 0.06 (0.04~0.08) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.07 (0.04~0.1) | 0.08 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.05~0.15) | 0.1 (0.05~0.18) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100~220) | 0.08 (0.04~0.12) | 0.08 (0.04~0.14) | 0.09 (0.04~0.16) | 0.1 (0.04~0.18) | 0.14 (0.04~0.2) | 0.18 (0.06~0.25) | 0.2 (0.08~0.3) | 0.2 (0.08~0.35) |
| P | Die steel (SKD11-SKD61) | ~280HB | 120 (80~180) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.07 (0.04~0.1) | 0.08 (0.04~0.12) | 0.12 (0.04~0.15) | 0.14 (0.06~0.2) | 0.18 (0.08~0.25) | 0.18 (0.08~0.25) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 130 (80~180) | 0.07 (0.04~0.1) | 0.07 (0.04~0.1) | 0.08 (0.04~0.1) | 0.09 (0.04~0.12) | 0.1 (0.04~0.15) | 0.13 (0.06~0.2) | 0.15 (0.08~0.25) | 0.15 (0.08~0.25) |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (150~280) | 0.08 (0.04~0.14) | 0.08 (0.04~0.14) | 0.1 (0.04~0.16) | 0.12 (0.04~0.2) | 0.16 (0.08~0.25) | 0.2 (0.06~0.3) | 0.2 (0.08~0.3) | 0.2 (0.08~0.35) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100~220) | 0.08 (0.04~0.1) | 0.08 (0.04~0.12) | 0.09 (0.04~0.14) | 0.1 (0.04~0.18) | 0.14 (0.04~0.2) | 0.18 (0.06~0.25) | 0.18 (0.08~0.25) | 0.18 (0.08~0.25) |
| N | Alluminium Alloy | ~13%Si | 200 (100~800) | 0.08 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.04~0.16) | 0.12 (0.04~0.2) | 0.16 (0.04~0.25) | 0.2 (0.06~0.3) | 0.2 (0.08~0.3) | 0.2 (0.08~0.3) |
| S | Heat Resistant Aluminium Alloy(Wet) (Inconel 718) | – | 30 (15~50) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.05 (0.03~0.06) | 0.05 (0.03~0.06) | 0.06 (0.04~0.08) | 0.08 (0.06~0.1) | 0.1 (0.06~0.12) | 0.1 (0.06~0.12) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30~100) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.08 (0.04~0.15) | 0.1 (0.06~0.2) | 0.14 (0.08~0.2) | 0.14 (0.08~0.2) |
| H | Pre-hardened Steel NAK80 | 40~43HRC | 100 (60~120) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.06 (0.04~0.12) | 0.07 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.06~0.15) | 0.1 (0.06~0.15) | 0.1 (0.06~0.15) |
| H | Hardened Steel SKD11 | 50~55HRC | 60 (40~80) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) |

## P4D

| | Work Material | Tensile Strength/ Hardness | Vc (m/min) | Feed Rate (mm/rev) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø12~ø14.5 | ø15~ø16.5 | ø17~ø18.5 | ø19~ø20.5 | ø21~ø24.5 | ø25~ø28.5 | ø29~ø33.5 | ø34~ø63 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (150~250) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.07 (0.04~0.1) | 0.08 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.05~0.15) | 0.1 (0.05~0.18) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100~220) | 0.07 (0.04~0.1) | 0.08 (0.04~0.14) | 0.08 (0.04~0.16) | 0.09 (0.04~0.18) | 0.12 (0.04~0.15) | 0.18 (0.06~0.25) | 0.2 (0.08~0.25) | 0.2 (0.08~0.3) |
| P | Die steel (SKD11-SKD61) | ~280HB | 120 (80~180) | 0.06 (0.04~0.08) | 0.06 (0.04~0.1) | 0.07 (0.04~0.1) | 0.08 (0.04~0.12) | 0.1 (0.04~0.13) | 0.14 (0.06~0.2) | 0.18 (0.08~0.25) | 0.18 (0.08~0.25) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 130 (80~180) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.07 (0.04~0.1) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) | 0.13 (0.06~0.2) | 0.15 (0.08~0.2) | 0.15 (0.08~0.2) |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (150~280) | 0.08 (0.04~0.12) | 0.08 (0.04~0.14) | 0.09 (0.04~0.16) | 0.1 (0.04~0.2) | 0.12 (0.04~0.15) | 0.2 (0.06~0.3) | 0.2 (0.08~0.3) | 0.2 (0.08~0.3) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100~220) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) | 0.08 (0.04~0.12) | 0.09 (0.04~0.15) | 0.12 (0.04~0.15) | 0.15 (0.06~0.25) | 0.18 (0.08~0.25) | 0.18 (0.08~0.25) |
| N | Alluminium Alloy | ~13%Si | 200 (100~800) | 0.07 (0.04~0.12) | 0.07 (0.04~0.12) | 0.09 (0.04~0.12) | 0.12 (0.04~0.2) | 0.14 (0.04~0.2) | 0.2 (0.06~0.3) | 0.2 (0.08~0.3) | 0.2 (0.08~0.3) |
| S | Heat Resistant Aluminium Alloy(Wet) (Inconel 718) | – | 30 (15~50) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.05 (0.04~0.08) | 0.07 (0.06~0.1) | 0.08 (0.06~0.12) | 0.08 (0.06~0.12) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30~100) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.08 (0.04~0.1) | 0.1 (0.06~0.2) | 0.14 (0.08~0.2) | 0.14 (0.08~0.2) |
| H | Pre-hardened Steel NAK80 | 40~43HRC | 100 (60~120) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.08 (0.04~0.12) | 0.08 (0.06~0.12) | 0.1 (0.06~0.13) | 0.1 (0.06~0.13) |
| H | Hardened Steel SKD11 | 50~55HRC | 60 (40~80) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) |

*PHP instructions also valid for P2D*

## P5D

| | Work Material | Tensile Strength/ Hardness | Vc (m/min) | Feed Rate (mm/rev) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ø12~ø14.5 | ø15~ø16.5 | ø17~ø18.5 | ø19~ø20.5 | ø21~ø24.5 | ø25~ø28.5 | ø29~ø33.5 | ø34~ø63 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (150~250) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.07 (0.04~0.1) | 0.08 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.05~0.15) | 0.1 (0.05~0.18) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100~220) | 0.06 (0.04~0.09) | 0.06 (0.04~0.09) | 0.08 (0.04~0.12) | 0.08 (0.04~0.14) | 0.12 (0.04~0.15) | 0.15 (0.06~0.2) | 0.18 (0.08~0.2) | 0.18 (0.08~0.25) |
| P | Die steel (SKD11-SKD61) | ~280HB | 120 (80~180) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.07 (0.04~0.1) | 0.1 (0.04~0.13) | 0.12 (0.06~0.15) | 0.15 (0.08~0.18) | 0.16 (0.08~0.22) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 130 (80~180) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.07 (0.04~0.09) | 0.08 (0.04~0.1) | 0.1 (0.06~0.15) | 0.12 (0.06~0.18) | 0.12 (0.06~0.2) |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (150~280) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.08 (0.04~0.12) | 0.08 (0.04~0.13) | 0.12 (0.04~0.15) | 0.15 (0.06~0.2) | 0.18 (0.08~0.2) | 0.18 (0.08~0.25) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100~220) | 0.06 (0.04~0.09) | 0.06 (0.04~0.09) | 0.08 (0.04~0.12) | 0.08 (0.04~0.12) | 0.1 (0.04~0.13) | 0.12 (0.06~0.15) | 0.15 (0.08~0.18) | 0.18 (0.08~0.25) |
| N | Alluminium Alloy | ~13%Si | 200 (100~800) | 0.06 (0.04~0.1) | 0.06 (0.04~0.1) | 0.09 (0.04~0.12) | 0.1 (0.04~0.15) | 0.12 (0.04~0.15) | 0.15 (0.06~0.25) | 0.2 (0.08~0.3) | 0.2 (0.08~0.3) |
| S | Heat Resistant Aluminium Alloy(Wet) (Inconel 718) | – | 30 (15~50) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.04 (0.02~0.06) | 0.07 (0.06~0.08) | 0.07 (0.06~0.08) | 0.07 (0.06~0.08) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30~100) | 0.05 (0.04~0.08) | 0.05 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.1) | 0.08 (0.06~0.15) | 0.1 (0.08~0.15) | 0.1 (0.08~0.15) |
| H | Pre-hardened Steel NAK80 | 40~43HRC | 100 (60~120) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.06 (0.04~0.08) | 0.08 (0.04~0.1) | 0.08 (0.06~0.12) | 0.1 (0.06~0.12) | 0.1 (0.06~0.12) |
| H | Hardened Steel SKD11 | 50~55HRC | 60 (40~80) | 0.05 (0.04~0.07) | 0.05 (0.04~0.07) | 0.05 (0.04~0.07) | 0.06 (0.04~0.07) | 0.06 (0.04~0.08) | 0.07 (0.04~0.1) | 0.08 (0.04~0.1) | 0.08 (0.04~0.1) |

## PZAG

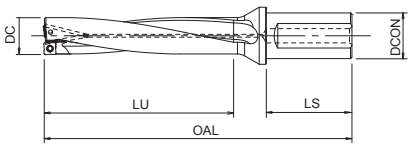
| Work Material | | Tensile Strength/ Hardness | Vc (m/min) | Feed Rate (mm/rev) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | ø14~ø17.5 | ø20~ø23 | ø26~ø48 | ø54~ø72 | ø76~ø82 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 160 (100~200) | 0.14(0.08~0.2) | 0.18(0.1~0.25) | 0.2(0.12~0.3) | 0.4(0.2~0.6) | 0.4(0.2~0.6) |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100~220) | 0.14(0.08~0.2) | 0.18(0.1~0.25) | 0.2(0.12~0.3) | 0.4(0.2~0.6) | 0.4(0.2~0.6) |
| | Die Steel (SKD11-SKD61) | ~280HB | 120 (80~180) | 0.12(0.08~0.15) | 0.14(0.1~0.2) | 0.18(0.12~0.25) | 0.4(0.2~0.5) | 0.4(0.2~0.5) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 130 (80~180) | 0.1(0.08~0.15) | 0.12(0.1~0.2) | 0.16(0.12~0.25) | 0.35(0.2~0.5) | 0.35(0.2~0.5) |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (150~280) | 0.16(0.08~0.25) | 0.2(0.1~0.3) | 0.3(0.15~0.4) | 0.6(0.3~0.8) | 0.6(0.3~0.8) |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100~220) | 0.14(0.08~0.2) | 0.18(0.1~0.25) | 0.2(0.15~0.3) | 0.4(0.3~0.6) | 0.4(0.3~0.6) |
| N | Alluminium Alloy | ~13%Si | 200 (100~800) | 0.16(0.08~0.25) | 0.2(0.1~0.3) | 0.3(0.15~0.4) | 0.6(0.3~0.8) | 0.6(0.3~0.8) |
| S | Heat Resistant Alloy (Wet) (Inconel 718) | – | 50 (30~60) | 0.08(0.05~0.14) | 0.08(0.06~0.14) | 0.12(0.08~0.2) | 0.25(0.16~0.4) | 0.25(0.16~0.4) |
| | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 60 (30~100) | 0.08(0.05~0.14) | 0.1(0.06~0.16) | 0.14(0.08~0.2) | 0.3(0.16~0.5) | 0.3(0.16~0.5) |
| H | Pre-hardened Steel NAK80 | 40~43HRC | 100 (60~120) | 0.08(0.05~0.14) | 0.1(0.06~0.16) | 0.14(0.08~0.2) | 0.3(0.16~0.5) | 0.3(0.16~0.5) |
| | Hardened Steel SKD11 | 50~55HRC | 60 (40~80) | 0.08(0.05~0.14) | 0.08(0.05~0.14) | 0.12(0.08~0.2) | 0.25(0.16~0.4) | 0.25(0.16~0.4) |

# DRILLING INDEXABLE

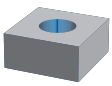
# P2D



**Drilling | Indexable | Body**




- Indexable drill with internal coolant
- Up to 2xD
- 3 different insert grades available
- 77 sizes



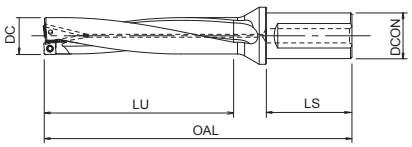
B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803180 | P2D1200FS20M03 | 12 | XCMT03 | 87 | 24 | 50 | 20 |
| 7803181 | P2D1250FS20M03 | 12,5 | XCMT03 | 88 | 25 | 50 | 20 |
| 7803182 | P2D1300FS20M03 | 13 | XCMT03 | 89 | 26 | 50 | 20 |
| 7803183 | P2D1350FS20M03 | 13,5 | XCMT03 | 90 | 27 | 50 | 20 |
| 7803184 | P2D1400FS20M03 | 14 | XCMT03 | 91 | 28 | 50 | 20 |
| 7803185 | P2D1450FS20M03 | 14,5 | XCMT03 | 92 | 29 | 50 | 20 |
| 7803117 | P2D1500FS20M04 | 15 | XCMT04 | 95 | 30 | 50 | 20 |
| 7803118 | P2D1550FS20M04 | 15,5 | XCMT04 | 96 | 31 | 50 | 20 |
| 7803119 | P2D1600FS20M04 | 16 | XCMT04 | 97 | 32 | 50 | 20 |
| 7803120 | P2D1650FS20M04 | 16,5 | XCMT04 | 98 | 33 | 50 | 20 |
| 7803121 | P2D1700FS20M05 | 17 | XCMT05 | 102 | 34 | 50 | 20 |
| 7803122 | P2D1750FS20M05 | 17,5 | XCMT05 | 103 | 35 | 50 | 20 |
| 7803190 | P2D1750FS25M05 | 17,5 | XCMT05 | 109 | 35 | 56 | 25 |
| 7803123 | P2D1800FS25M05 | 18 | XCMT05 | 110 | 36 | 56 | 25 |
| 7803124 | P2D1850FS25M05 | 18,5 | XCMT05 | 111 | 37 | 56 | 25 |
| 7803125 | P2D1900FS25M06 | 19 | XCMT06 | 112 | 38 | 56 | 25 |
| 7803126 | P2D1950FS25M06 | 19,5 | XCMT06 | 113 | 39 | 56 | 25 |
| 7803127 | P2D2000FS25M06 | 20 | XCMT06 | 114 | 40 | 56 | 25 |
| 7803128 | P2D2050FS25M06 | 20,5 | XCMT06 | 115 | 41 | 56 | 25 |
| 7803129 | P2D2100FS25M07 | 21 | XCMT07 | 121 | 42 | 56 | 25 |
| 7803130 | P2D2150FS25M07 | 21,5 | XCMT07 | 122 | 43 | 56 | 25 |
| 7803131 | P2D2200FS25M07 | 22 | XCMT07 | 123 | 44 | 56 | 25 |
| 7803132 | P2D2250FS25M07 | 22,5 | XCMT07 | 124 | 45 | 56 | 25 |
| 7803133 | P2D2300FS25M07 | 23 | XCMT07 | 125 | 46 | 56 | 25 |
| 7803134 | P2D2350FS32M07 | 23,5 | XCMT07 | 130 | 47 | 60 | 32 |
| 7803191 | P2D2350FS25M07 | 23,5 | XCMT07 | 126 | 47 | 56 | 25 |
| 7803135 | P2D2400FS32M07 | 24 | XCMT07 | 131 | 48 | 60 | 32 |
| 7803192 | P2D2400FS25M07 | 24 | XCMT07 | 127 | 48 | 56 | 25 |
| 7803136 | P2D2450FS32M07 | 24,5 | XCMT07 | 132 | 49 | 60 | 32 |
| 7803193 | P2D2450FS25M07 | 24,5 | XCMT07 | 128 | 49 | 56 | 25 |
| 7803137 | P2D2500FS32M08 | 25 | XCMT08 | 133 | 50 | 60 | 32 |
| 7803194 | P2D2500FS25M08 | 25 | XCMT08 | 129 | 50 | 56 | 25 |
| 7803138 | P2D2550FS32M08 | 25,5 | XCMT08 | 134 | 51 | 60 | 32 |
| 7803195 | P2D2550FS25M08 | 25,5 | XCMT08 | 130 | 51 | 56 | 25 |
| 7803139 | P2D2600FS32M08 | 26 | XCMT08 | 135 | 52 | 60 | 32 |
| 7803140 | P2D2650FS32M08 | 26,5 | XCMT08 | 136 | 53 | 60 | 32 |
| 7803141 | P2D2700FS32M08 | 27 | XCMT08 | 137 | 54 | 60 | 32 |
| 7803142 | P2D2800FS32M08 | 28 | XCMT08 | 139 | 56 | 60 | 32 |
| 7803143 | P2D2850FS32M08 | 28,5 | XCMT08 | 140 | 57 | 60 | 32 |
| 7803144 | P2D2900FS32M09 | 29 | XCMT09 | 141 | 58 | 60 | 32 |
| 7803145 | P2D3000FS32M09 | 30 | XCMT09 | 143 | 60 | 60 | 32 |
| 7803146 | P2D3100FS32M09 | 31 | XCMT09 | 145 | 62 | 60 | 32 |
| 7803196 | P2D3100FS40M09 | 31 | XCMT09 | 155 | 62 | 70 | 40 |
| 7803147 | P2D3200FS32M09 | 32 | XCMT09 | 147 | 64 | 60 | 32 |
| 7803197 | P2D3200FS40M09 | 32 | XCMT09 | 157 | 64 | 70 | 40 |
| 7803148 | P2D3300FS40M09 | 33 | XCMT09 | 159 | 66 | 70 | 40 |
| 7803149 | P2D3350FS40M09 | 33,5 | XCMT09 | 160 | 67 | 70 | 40 |
| 7803150 | P2D3400FS40M10 | 34 | XCMT10 | 161 | 68 | 70 | 40 |
| 7803151 | P2D3500FS40M10 | 35 | XCMT10 | 163 | 70 | 70 | 40 |
| 7803152 | P2D3600FS40M10 | 36 | XCMT10 | 165 | 72 | 70 | 40 |
| 7803153 | P2D3700FS40M10 | 37 | XCMT10 | 167 | 74 | 70 | 40 |
| 7803154 | P2D3800FS40M10 | 38 | XCMT10 | 169 | 76 | 70 | 40 |
| 7803155 | P2D3900FS40M12 | 39 | XCMT12 | 178 | 78 | 70 | 40 |
| 7803156 | P2D4000FS40M12 | 40 | XCMT12 | 180 | 80 | 70 | 40 |

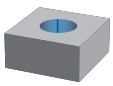
# P2D



**Drilling | Indexable | Body**




- Indexable drill with internal coolant
- Up to 2xD
- 3 different insert grades available
- 77 sizes



B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803157 | P2D4100FS40M12 | 41 | XCMT12 | 182 | 82 | 70 | 40 |
| 7803158 | P2D4200FS40M12 | 42 | XCMT12 | 184 | 84 | 70 | 40 |
| 7803159 | P2D4300FS40M12 | 43 | XCMT12 | 186 | 86 | 70 | 40 |
| 7803160 | P2D4400FS40M12 | 44 | XCMT12 | 188 | 88 | 70 | 40 |
| 7803161 | P2D4500FS40M13 | 45 | XCMT13 | 190 | 90 | 70 | 40 |
| 7803162 | P2D4600FS40M13 | 46 | XCMT13 | 192 | 92 | 70 | 40 |
| 7803163 | P2D4700FS40M13 | 47 | XCMT13 | 194 | 94 | 70 | 40 |
| 7803164 | P2D4800FS40M13 | 48 | XCMT13 | 196 | 96 | 70 | 40 |
| 7803165 | P2D4900FS40M13 | 49 | XCMT13 | 198 | 98 | 70 | 40 |
| 7803166 | P2D5000FS40M14 | 50 | XCMT14 | 200 | 100 | 70 | 40 |
| 7803167 | P2D5100FS40M14 | 51 | XCMT14 | 202 | 102 | 70 | 40 |
| 7803168 | P2D5200FS40M14 | 52 | XCMT14 | 204 | 104 | 70 | 40 |
| 7803169 | P2D5300FS40M14 | 53 | XCMT14 | 206 | 106 | 70 | 40 |
| 7803170 | P2D5400FS40M14 | 54 | XCMT14 | 208 | 108 | 70 | 40 |
| 7803171 | P2D5500FS40M14 | 55 | XCMT14 | 210 | 110 | 70 | 40 |
| 7803172 | P2D5600FS40M14 | 56 | XCMT14 | 212 | 112 | 70 | 40 |
| 7803173 | P2D5700FS40M16 | 57 | XCMT16 | 214 | 114 | 70 | 40 |
| 7803174 | P2D5800FS40M16 | 58 | XCMT16 | 216 | 116 | 70 | 40 |
| 7803175 | P2D5900FS40M16 | 59 | XCMT16 | 218 | 118 | 70 | 40 |
| 7803176 | P2D6000FS40M16 | 60 | XCMT16 | 220 | 120 | 70 | 40 |
| 7803177 | P2D6100FS40M16 | 61 | XCMT16 | 222 | 122 | 70 | 40 |
| 7803178 | P2D6200FS40M16 | 62 | XCMT16 | 224 | 124 | 70 | 40 |
| 7803179 | P2D6300FS40M16 | 63 | XCMT16 | 226 | 126 | 70 | 40 |

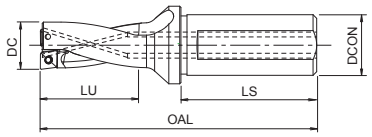
## Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 12 - 14,5 | 7808096 | FS18536P | Clamping screw |
| 15 - 18,5 | 7808139 | FS20543P | Clamping screw |
| 19 - 20,5 | 7808138 | FS22550P | Clamping screw |
| 21 - 24,5 | 7808136 | FS25560P | Clamping screw |
| 25 - 33,5 | 7808135 | FS30570P | Clamping screw |
| 34 - 44 | 7808137 | FS35586P | Clamping screw |
| 45 - 63 | 7808114 | FS45510P | Clamping screw |
| 12 - 18,5 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 19 - 20,5 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 21 - 24,5 | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 33,5 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 34 - 44 | 7808228 | 15IP-D (Torx 15IP) | Wrench |
| 45 - 63 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

# PDZ-2D



**Drilling | Indexable | Body**




- Indexable flat drill with internal coolant
- Up to 2xD
- 33 sizes

B.564 B.517

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803776 | PDZ1600FS20M05-2D | 16 | ZPNT050204EN | 97 | 32 | 50 | 20 |
| 7803777 | PDZ1650FS20M05-2D | 16,5 | ZPNT050204EN | 98 | 33 | 50 | 20 |
| 7803778 | PDZ1700FS20M05-2D | 17 | ZPNT050204EN | 102 | 34 | 50 | 20 |
| 7803779 | PDZ1750FS25M05-2D | 17,5 | ZPNT050204EN | 109 | 35 | 56 | 25 |
| 7803780 | PDZ1800FS25M05-2D | 18 | ZPNT050204EN | 110 | 36 | 56 | 25 |
| 7803781 | PDZ1850FS25M05-2D | 18,5 | ZPNT050204EN | 111 | 37 | 56 | 25 |
| 7803782 | PDZ1900FS25M06-2D | 19 | ZPNT060204EN | 112 | 38 | 56 | 25 |
| 7803783 | PDZ1950FS25M06-2D | 19,5 | ZPNT060204EN | 113 | 39 | 56 | 25 |
| 7803784 | PDZ2000FS25M06-2D | 20 | ZPNT060204EN | 114 | 40 | 56 | 25 |
| 7803785 | PDZ2100FS25M06-2D | 21 | ZPNT060204EN | 121 | 42 | 56 | 25 |
| 7803786 | PDZ2200FS25M06-2D | 22 | ZPNT060204EN | 123 | 44 | 56 | 25 |
| 7803787 | PDZ2300FS25M07-2D | 23 | ZPNT070304EN | 125 | 46 | 56 | 25 |
| 7803788 | PDZ2400FS25M07-2D | 24 | ZPNT070304EN | 127 | 48 | 56 | 25 |
| 7803789 | PDZ2500FS25M07-2D | 25 | ZPNT070304EN | 129 | 50 | 56 | 25 |
| 7803790 | PDZ2500FS32M07-2D | 25 | ZPNT070304EN | 133 | 50 | 60 | 32 |
| 7803791 | PDZ2600FS32M07-2D | 26 | ZPNT070304EN | 135 | 52 | 60 | 32 |
| 7803792 | PDZ2700FS32M08-2D | 27 | ZPNT080304EN | 137 | 54 | 60 | 32 |
| 7803793 | PDZ2800FS32M08-2D | 28 | ZPNT080304EN | 139 | 56 | 60 | 32 |
| 7803794 | PDZ2900FS32M08-2D | 29 | ZPNT080304EN | 141 | 58 | 60 | 32 |
| 7803795 | PDZ3000FS32M08-2D | 30 | ZPNT080304EN | 143 | 60 | 60 | 32 |
| 7803796 | PDZ3100FS32M08-2D | 31 | ZPNT080304EN | 145 | 62 | 60 | 32 |
| 7803797 | PDZ3200FS32M09-2D | 32 | ZPNT090404EN | 147 | 64 | 60 | 32 |
| 7803798 | PDZ3300FS40M09-2D | 33 | ZPNT090404EN | 159 | 66 | 70 | 40 |
| 7803799 | PDZ3400FS40M09-2D | 34 | ZPNT090404EN | 161 | 68 | 70 | 40 |
| 7803800 | PDZ3500FS40M10-2D | 35 | ZPNT100408EN | 163 | 70 | 70 | 40 |
| 7803801 | PDZ3600FS40M10-2D | 36 | ZPNT100408EN | 165 | 72 | 70 | 40 |
| 7803802 | PDZ3700FS40M10-2D | 37 | ZPNT100408EN | 167 | 74 | 70 | 40 |
| 7803803 | PDZ3800FS40M10-2D | 38 | ZPNT100408EN | 169 | 76 | 70 | 40 |
| 7803804 | PDZ3900FS40M13-2D | 39 | ZPNT130508EN | 178 | 78 | 70 | 40 |
| 7803805 | PDZ4000FS40M13-2D | 40 | ZPNT130508EN | 180 | 80 | 70 | 40 |
| 7803806 | PDZ4100FS40M13-2D | 41 | ZPNT130508EN | 182 | 82 | 70 | 40 |
| 7803807 | PDZ4200FS40M13-2D | 42 | ZPNT130508EN | 184 | 84 | 70 | 40 |
| 7803808 | PDZ4300FS40M13-2D | 43 | ZPNT130508EN | 186 | 86 | 70 | 40 |

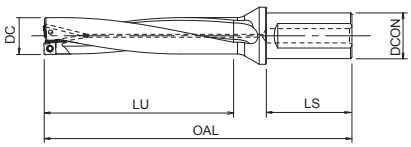
## Accessories and spare parts

| Applicable drill DC | Applicable inserts | EDP | Designation | Specification | Torque |
|---|---|---|---|---|---|
| 16 - 18,5 | ZPNT050204EN | 7808139 | FS20543P | Clamping screw | 0,7 N.m |
| 19 -22 | ZPNT060204EN | 7808138 | FS22550P | Clamping screw | 1,0 N.m |
| 23 - 26 | ZPNT070304EN | 7808136 | FS25560P | Clamping screw | 1,6 N.m |
| 27 - 34 | ZPNT080304EN / ZPNT090404EN | 7808135 | FS30570P | Clamping screw | 2,2 N.m |
| 35 - 38 | ZPNT100408EN | 7808137 | FS35586P | Clamping screw | 3,2 N.m |
| 39 - 43 | ZPNT130508EN | 7808114 | FS45510P | Clamping screw | 5,0 N.m |
| 16 - 18,5 | ZPNT050204EN | 7808223 | 6IP-D (Torx 6IP) | Wrench | - |
| 19 -22 | ZPNT060204EN | 7808224 | 7IP-D (Torx 7IP) | Wrench | - |
| 23 - 26 | ZPNT070304EN | 7808225 | 8IP-D (Torx 8IP) | Wrench | - |
| 27 - 34 | ZPNT080304EN / ZPNT090404EN | 7808226 | 9IP-D (Torx 9IP) | Wrench | - |
| 35 - 38 | ZPNT100408EN | 7808228 | 15IP-D (Torx 15IP) | Wrench | - |
| 39 - 43 | ZPNT130508EN | 7808229 | 20IP-D (Torx 20IP) | Wrench | - |

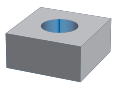
# P3D

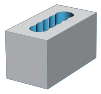


**Drilling | Indexable | Body**




- Indexable drill with internal coolant
- Up to 3xD
- 3 different insert grades available
- 88 sizes





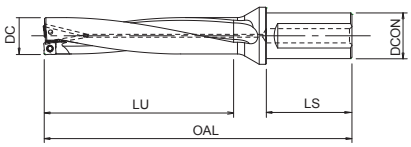
B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803210 | P3D1200FS20M03 | 12 | XCMT03 | 99 | 36 | 50 | 20 |
| 7803211 | P3D1250FS20M03 | 12,5 | XCMT03 | 100,5 | 37,5 | 50 | 20 |
| 7803212 | P3D1270FS20M03 | 12,7 | XCMT03 | 101,1 | 38,1 | 50 | 20 |
| 7803213 | P3D1300FS20M03 | 13 | XCMT03 | 102 | 39 | 50 | 20 |
| 7803214 | P3D1350FS20M03 | 13,5 | XCMT03 | 103,5 | 40,5 | 50 | 20 |
| 7803215 | P3D1400FS20M03 | 14 | XCMT03 | 105 | 42 | 50 | 20 |
| 7803216 | P3D1450FS20M03 | 14,5 | XCMT03 | 106,5 | 43,5 | 50 | 20 |
| 7803217 | P3D1500FS20M04 | 15 | XCMT04 | 110 | 45 | 50 | 20 |
| 7803218 | P3D1550FS20M04 | 15,5 | XCMT04 | 112 | 47 | 50 | 20 |
| 7803219 | P3D1600FS20M04 | 16 | XCMT04 | 113 | 48 | 50 | 20 |
| 7803220 | P3D1650FS20M04 | 16,5 | XCMT04 | 115 | 50 | 50 | 20 |
| 7803221 | P3D1700FS20M05 | 17 | XCMT05 | 119 | 51 | 50 | 20 |
| 7803222 | P3D1750FS20M05 | 17,5 | XCMT05 | 121 | 53 | 50 | 20 |
| 7803290 | P3D1750FS25M05 | 17,5 | XCMT05 | 127 | 53 | 56 | 25 |
| 7803223 | P3D1800FS25M05 | 18 | XCMT05 | 128 | 54 | 56 | 25 |
| 7803224 | P3D1850FS25M05 | 18,5 | XCMT05 | 130 | 56 | 56 | 25 |
| 7803225 | P3D1900FS25M06 | 19 | XCMT06 | 131 | 57 | 56 | 25 |
| 7803226 | P3D1950FS25M06 | 19,5 | XCMT06 | 133 | 59 | 56 | 25 |
| 7803227 | P3D2000FS25M06 | 20 | XCMT06 | 134 | 60 | 56 | 25 |
| 7803228 | P3D2050FS25M06 | 20,5 | XCMT06 | 136 | 62 | 56 | 25 |
| 7803229 | P3D2100FS25M07 | 21 | XCMT07 | 142 | 63 | 56 | 25 |
| 7803230 | P3D2150FS25M07 | 21,5 | XCMT07 | 144 | 65 | 56 | 25 |
| 7803231 | P3D2200FS25M07 | 22 | XCMT07 | 145 | 66 | 56 | 25 |
| 7803232 | P3D2250FS25M07 | 22,5 | XCMT07 | 147 | 68 | 56 | 25 |
| 7803233 | P3D2300FS25M07 | 23 | XCMT07 | 148 | 69 | 56 | 25 |
| 7803234 | P3D2350FS32M07 | 23,5 | XCMT07 | 154 | 71 | 60 | 32 |
| 7803291 | P3D2350FS25M07 | 23,5 | XCMT07 | 150 | 71 | 56 | 25 |
| 7803235 | P3D2400FS32M07 | 24 | XCMT07 | 155 | 72 | 60 | 32 |
| 7803292 | P3D2400FS25M07 | 24 | XCMT07 | 151 | 72 | 56 | 25 |
| 7803236 | P3D2450FS32M07 | 24,5 | XCMT07 | 157 | 74 | 60 | 32 |
| 7803293 | P3D2450FS25M07 | 24,5 | XCMT07 | 153 | 74 | 56 | 25 |
| 7803237 | P3D2500FS32M08 | 25 | XCMT08 | 158 | 75 | 60 | 32 |
| 7803294 | P3D2500FS25M08 | 25 | XCMT08 | 154 | 75 | 56 | 25 |
| 7803238 | P3D2550FS32M08 | 25,5 | XCMT08 | 160 | 77 | 60 | 32 |
| 7803295 | P3D2550FS25M08 | 25,5 | XCMT08 | 156 | 77 | 56 | 25 |
| 7803239 | P3D2600FS32M08 | 26 | XCMT08 | 161 | 78 | 60 | 32 |
| 7803240 | P3D2650FS32M08 | 26,5 | XCMT08 | 163 | 80 | 60 | 32 |
| 7803241 | P3D2700FS32M08 | 27 | XCMT08 | 164 | 81 | 60 | 32 |
| 7803300 | P3D2750FS32M08 | 27,5 | XCMT08 | 166 | 83 | 60 | 32 |
| 7803242 | P3D2800FS32M08 | 28 | XCMT08 | 167 | 84 | 60 | 32 |
| 7803243 | P3D2850FS32M08 | 28,5 | XCMT08 | 169 | 86 | 60 | 32 |
| 7803244 | P3D2900FS32M09 | 29 | XCMT09 | 170 | 87 | 60 | 32 |
| 7803301 | P3D2950FS32M09 | 29,5 | XCMT09 | 172 | 89 | 60 | 32 |
| 7803245 | P3D3000FS32M09 | 30 | XCMT09 | 173 | 90 | 60 | 32 |
| 7803302 | P3D3050FS32M09 | 30,5 | XCMT09 | 175 | 92 | 60 | 32 |
| 7803246 | P3D3100FS32M09 | 31 | XCMT09 | 176 | 93 | 60 | 32 |
| 7803296 | P3D3100FS40M09 | 31 | XCMT09 | 186 | 93 | 70 | 40 |
| 7803303 | P3D3150FS32M09 | 31,5 | XCMT09 | 178 | 95 | 60 | 32 |
| 7803247 | P3D3200FS32M09 | 32 | XCMT09 | 179 | 96 | 60 | 32 |
| 7803297 | P3D3200FS40M09 | 32 | XCMT09 | 189 | 96 | 70 | 40 |
| 7803304 | P3D3250FS40M09 | 32,5 | XCMT09 | 191 | 98 | 70 | 40 |
| 7803248 | P3D3300FS40M09 | 33 | XCMT09 | 192 | 99 | 70 | 40 |
| 7803249 | P3D3350FS40M09 | 33,5 | XCMT09 | 194 | 101 | 70 | 40 |
| 7803250 | P3D3400FS40M10 | 34 | XCMT10 | 195 | 102 | 70 | 40 |

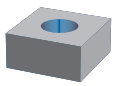
# P3D

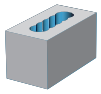
**Drilling | Indexable | Body**

INDEX




- Indexable drill with internal coolant
- Up to 3xD
- 3 different insert grades available
- 88 sizes





B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803305 | P3D3450FS40M10 | 34,5 | XCMT10 | 197 | 104 | 70 | 40 |
| 7803251 | P3D3500FS40M10 | 35 | XCMT10 | 198 | 105 | 70 | 40 |
| 7803306 | P3D3550FS40M10 | 35,5 | XCMT10 | 200 | 107 | 70 | 40 |
| 7803252 | P3D3600FS40M10 | 36 | XCMT10 | 201 | 108 | 70 | 40 |
| 7803253 | P3D3700FS40M10 | 37 | XCMT10 | 204 | 111 | 70 | 40 |
| 7803307 | P3D3750FS40M10 | 37,5 | XCMT10 | 206 | 113 | 70 | 40 |
| 7803254 | P3D3800FS40M10 | 38 | XCMT10 | 207 | 114 | 70 | 40 |
| 7803255 | P3D3900FS40M12 | 39 | XCMT12 | 217 | 117 | 70 | 40 |
| 7803256 | P3D4000FS40M12 | 40 | XCMT12 | 220 | 120 | 70 | 40 |
| 7803308 | P3D4050FS40M12 | 40,5 | XCMT12 | 222 | 122 | 70 | 40 |
| 7803257 | P3D4100FS40M12 | 41 | XCMT12 | 223 | 123 | 70 | 40 |
| 7803258 | P3D4200FS40M12 | 42 | XCMT12 | 226 | 126 | 70 | 40 |
| 7803259 | P3D4300FS40M12 | 43 | XCMT12 | 229 | 129 | 70 | 40 |
| 7803260 | P3D4400FS40M12 | 44 | XCMT12 | 232 | 132 | 70 | 40 |
| 7803261 | P3D4500FS40M13 | 45 | XCMT13 | 235 | 135 | 70 | 40 |
| 7803262 | P3D4600FS40M13 | 46 | XCMT13 | 238 | 138 | 70 | 40 |
| 7803263 | P3D4700FS40M13 | 47 | XCMT13 | 241 | 141 | 70 | 40 |
| 7803264 | P3D4800FS40M13 | 48 | XCMT13 | 244 | 144 | 70 | 40 |
| 7803265 | P3D4900FS40M13 | 49 | XCMT13 | 247 | 147 | 70 | 40 |
| 7803266 | P3D5000FS40M14 | 50 | XCMT14 | 250 | 150 | 70 | 40 |
| 7803309 | P3D5050FS40M14 | 50,5 | XCMT14 | 252 | 152 | 70 | 40 |
| 7803267 | P3D5100FS40M14 | 51 | XCMT14 | 253 | 153 | 70 | 40 |
| 7803268 | P3D5200FS40M14 | 52 | XCMT14 | 256 | 156 | 70 | 40 |
| 7803269 | P3D5300FS40M14 | 53 | XCMT14 | 259 | 159 | 70 | 40 |
| 7803270 | P3D5400FS40M14 | 54 | XCMT14 | 262 | 162 | 70 | 40 |
| 7803271 | P3D5500FS40M14 | 55 | XCMT14 | 265 | 165 | 70 | 40 |
| 7803272 | P3D5600FS40M14 | 56 | XCMT14 | 268 | 168 | 70 | 40 |
| 7803273 | P3D5700FS40M16 | 57 | XCMT16 | 271 | 171 | 70 | 40 |
| 7803274 | P3D5800FS40M16 | 58 | XCMT16 | 274 | 174 | 70 | 40 |
| 7803275 | P3D5900FS40M16 | 59 | XCMT16 | 277 | 177 | 70 | 40 |
| 7803276 | P3D6000FS40M16 | 60 | XCMT16 | 280 | 180 | 70 | 40 |
| 7803277 | P3D6100FS40M16 | 61 | XCMT16 | 283 | 183 | 70 | 40 |
| 7803278 | P3D6200FS40M16 | 62 | XCMT16 | 286 | 186 | 70 | 40 |
| 7803279 | P3D6300FS40M16 | 63 | XCMT16 | 289 | 189 | 70 | 40 |

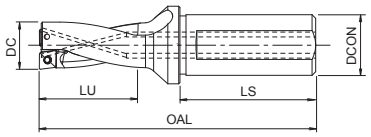
## Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 12 - 14,5 | 7808096 | FS18536P | Clamping screw |
| 15 - 18,5 | 7808139 | FS20543P | Clamping screw |
| 19 - 20,5 | 7808138 | FS22550P | Clamping screw |
| 21 - 24,5 | 7808136 | FS25560P | Clamping screw |
| 25 - 33,5 | 7808135 | FS30570P | Clamping screw |
| 34 - 44 | 7808137 | FS35586P | Clamping screw |
| 45 - 63 | 7808114 | FS45510P | Clamping screw |
| 12 - 18,5 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 19 - 20,5 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 21 - 24,5 | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 33,5 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 34 - 44 | 7808228 | 15IP-D (Torx 15IP) | Wrench |
| 45 - 63 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

# PDZ (3D)



**Drilling | Indexable | Body**




- Indexable flat drill with internal coolant
- Up to 3xD
- 33 sizes

B.564 B.517

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803828 | PDZ1600FS20M05-3D | 16 | ZPNT050204EN | 113 | 48 | 50 | 20 |
| 7803829 | PDZ1650FS20M05-3D | 16,5 | ZPNT050204EN | 115 | 49.5 | 50 | 20 |
| 7803830 | PDZ1700FS20M05-3D | 17 | ZPNT050204EN | 119 | 51 | 50 | 20 |
| 7803831 | PDZ1750FS25M05-3D | 17,5 | ZPNT050204EN | 127 | 52.5 | 56 | 25 |
| 7803832 | PDZ1800FS25M05-3D | 18 | ZPNT050204EN | 128 | 54 | 56 | 25 |
| 7803833 | PDZ1850FS25M05-3D | 18,5 | ZPNT050204EN | 130 | 55.5 | 56 | 25 |
| 7803834 | PDZ1900FS25M06-3D | 19 | ZPNT060204EN | 131 | 57 | 56 | 25 |
| 7803835 | PDZ1950FS25M06-3D | 19,5 | ZPNT060204EN | 133 | 58.5 | 56 | 25 |
| 7803836 | PDZ2000FS25M06-3D | 20 | ZPNT060204EN | 134 | 60 | 56 | 25 |
| 7803837 | PDZ2100FS25M06-3D | 21 | ZPNT060204EN | 142 | 63 | 56 | 25 |
| 7803838 | PDZ2200FS25M06-3D | 22 | ZPNT060204EN | 145 | 66 | 56 | 25 |
| 7803839 | PDZ2300FS25M07-3D | 23 | ZPNT070304EN | 148 | 69 | 56 | 25 |
| 7803840 | PDZ2400FS25M07-3D | 24 | ZPNT070304EN | 151 | 72 | 56 | 25 |
| 7803841 | PDZ2500FS25M07-3D | 25 | ZPNT070304EN | 154 | 75 | 56 | 25 |
| 7803842 | PDZ2500FS32M07-3D | 25 | ZPNT070304EN | 158 | 75 | 60 | 32 |
| 7803843 | PDZ2600FS32M07-3D | 26 | ZPNT070304EN | 161 | 78 | 60 | 32 |
| 7803844 | PDZ2700FS32M08-3D | 27 | ZPNT080304EN | 164 | 81 | 60 | 32 |
| 7803845 | PDZ2800FS32M08-3D | 28 | ZPNT080304EN | 167 | 84 | 60 | 32 |
| 7803846 | PDZ2900FS32M08-3D | 29 | ZPNT080304EN | 170 | 87 | 60 | 32 |
| 7803847 | PDZ3000FS32M08-3D | 30 | ZPNT080304EN | 173 | 90 | 60 | 32 |
| 7803848 | PDZ3100FS32M08-3D | 31 | ZPNT080304EN | 176 | 93 | 60 | 32 |
| 7803849 | PDZ3200FS32M09-3D | 32 | ZPNT090404EN | 179 | 96 | 60 | 32 |
| 7803850 | PDZ3300FS40M09-3D | 33 | ZPNT090404EN | 192 | 99 | 70 | 40 |
| 7803851 | PDZ3400FS40M09-3D | 34 | ZPNT090404EN | 195 | 102 | 70 | 40 |
| 7803852 | PDZ3500FS40M10-3D | 35 | ZPNT100408EN | 198 | 105 | 70 | 40 |
| 7803853 | PDZ3600FS40M10-3D | 36 | ZPNT100408EN | 201 | 108 | 70 | 40 |
| 7803854 | PDZ3700FS40M10-3D | 37 | ZPNT100408EN | 204 | 111 | 70 | 40 |
| 7803855 | PDZ3800FS40M10-3D | 38 | ZPNT100408EN | 207 | 114 | 70 | 40 |
| 7803856 | PDZ3900FS40M13-3D | 39 | ZPNT130508EN | 217 | 117 | 70 | 40 |
| 7803857 | PDZ4000FS40M13-3D | 40 | ZPNT130508EN | 220 | 120 | 70 | 40 |
| 7803858 | PDZ4100FS40M13-3D | 41 | ZPNT130508EN | 223 | 123 | 70 | 40 |
| 7803859 | PDZ4200FS40M13-3D | 42 | ZPNT130508EN | 226 | 126 | 70 | 40 |
| 7803860 | PDZ4300FS40M13-3D | 43 | ZPNT130508EN | 229 | 129 | 70 | 40 |

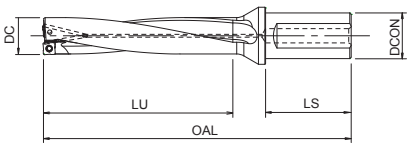
Accessories and spare parts

| Applicable drill DC | Applicable inserts type | EDP | Designation | Specification | Torque |
|---|---|---|---|---|---|
| 16 - 18,5 | ZPNT050204EN | 7808139 | FS20543P | Clamping screw | 0,7 N.m |
| 19 -22 | ZPNT060204EN | 7808138 | FS22550P | Clamping screw | 1,0 N.m |
| 23 - 26 | ZPNT070304EN | 7808136 | FS25560P | Clamping screw | 1,6 N.m |
| 27 - 34 | ZPNT080304EN / ZPNT090404EN | 7808135 | FS30570P | Clamping screw | 2,2 N.m |
| 35 - 38 | ZPNT100408EN | 7808137 | FS35586P | Clamping screw | 3,2 N.m |
| 39 - 43 | ZPNT130508EN | 7808114 | FS45510P | Clamping screw | 5,0 N.m |
| 16 - 18,5 | ZPNT050204EN | 7808223 | 6IP-D (Torx 6IP) | Wrench | - |
| 19 -22 | ZPNT060204EN | 7808224 | 7IP-D (Torx 7IP) | Wrench | - |
| 23 - 26 | ZPNT070304EN | 7808225 | 8IP-D (Torx 8IP) | Wrench | - |
| 27 - 34 | ZPNT080304EN / ZPNT090404EN | 7808226 | 9IP-D (Torx 9IP) | Wrench | - |
| 35 - 38 | ZPNT100408EN | 7808228 | 15IP-D (Torx 15IP) | Wrench | - |
| 39 - 43 | ZPNT130508EN | 7808229 | 20IP-D (Torx 20IP) | Wrench | - |

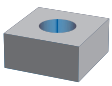
# P4D

**Drilling | Indexable | Body**

INDEX




- Indexable drill with internal coolant
- Up to 4xD
- 3 different insert grades available
- 77 sizes



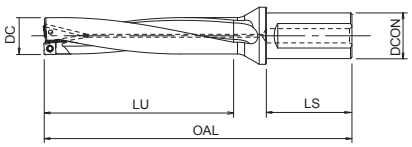
B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803311 | P4D1200FS20M03 | 12 | XCMT03 | 111 | 48 | 50 | 20 |
| 7803312 | P4D1250FS20M03 | 12,5 | XCMT03 | 113 | 50 | 50 | 20 |
| 7803313 | P4D1300FS20M03 | 13 | XCMT03 | 115 | 52 | 50 | 20 |
| 7803314 | P4D1350FS20M03 | 13,5 | XCMT03 | 117 | 54 | 50 | 20 |
| 7803315 | P4D1400FS20M03 | 14 | XCMT03 | 119 | 56 | 50 | 20 |
| 7803316 | P4D1450FS20M03 | 14,5 | XCMT03 | 121 | 58 | 50 | 20 |
| 7803317 | P4D1500FS20M04 | 15 | XCMT04 | 125 | 60 | 50 | 20 |
| 7803318 | P4D1550FS20M04 | 15,5 | XCMT04 | 127 | 62 | 50 | 20 |
| 7803319 | P4D1600FS20M04 | 16 | XCMT04 | 129 | 64 | 50 | 20 |
| 7803320 | P4D1650FS20M04 | 16,5 | XCMT04 | 131 | 66 | 50 | 20 |
| 7803321 | P4D1700FS20M05 | 17 | XCMT05 | 136 | 68 | 50 | 20 |
| 7803322 | P4D1750FS20M05 | 17,5 | XCMT05 | 138 | 70 | 50 | 20 |
| 7803390 | P4D1750FS25M05 | 17,5 | XCMT05 | 144 | 70 | 56 | 25 |
| 7803323 | P4D1800FS25M05 | 18 | XCMT05 | 146 | 72 | 56 | 25 |
| 7803324 | P4D1850FS25M05 | 18,5 | XCMT05 | 148 | 74 | 56 | 25 |
| 7803325 | P4D1900FS25M06 | 19 | XCMT06 | 150 | 76 | 56 | 25 |
| 7803326 | P4D1950FS25M06 | 19,5 | XCMT06 | 152 | 78 | 56 | 25 |
| 7803327 | P4D2000FS25M06 | 20 | XCMT06 | 154 | 80 | 56 | 25 |
| 7803328 | P4D2050FS25M06 | 20,5 | XCMT06 | 156 | 82 | 56 | 25 |
| 7803329 | P4D2100FS25M07 | 21 | XCMT07 | 163 | 84 | 56 | 25 |
| 7803330 | P4D2150FS25M07 | 21,5 | XCMT07 | 165 | 86 | 56 | 25 |
| 7803331 | P4D2200FS25M07 | 22 | XCMT07 | 167 | 88 | 56 | 25 |
| 7803332 | P4D2250FS25M07 | 22,5 | XCMT07 | 169 | 90 | 56 | 25 |
| 7803333 | P4D2300FS25M07 | 23 | XCMT07 | 171 | 92 | 56 | 25 |
| 7803334 | P4D2350FS32M07 | 23,5 | XCMT07 | 177 | 94 | 60 | 32 |
| 7803391 | P4D2350FS25M07 | 23,5 | XCMT07 | 173 | 94 | 56 | 25 |
| 7803335 | P4D2400FS32M07 | 24 | XCMT07 | 179 | 96 | 60 | 32 |
| 7803392 | P4D2400FS25M07 | 24 | XCMT07 | 175 | 96 | 56 | 25 |
| 7803336 | P4D2450FS32M07 | 24,5 | XCMT07 | 181 | 98 | 60 | 32 |
| 7803393 | P4D2450FS25M07 | 24,5 | XCMT07 | 177 | 98 | 56 | 25 |
| 7803337 | P4D2500FS32M08 | 25 | XCMT08 | 183 | 100 | 60 | 32 |
| 7803394 | P4D2500FS25M08 | 25 | XCMT08 | 179 | 100 | 56 | 25 |
| 7803338 | P4D2550FS32M08 | 25,5 | XCMT08 | 185 | 102 | 60 | 32 |
| 7803395 | P4D2550FS25M08 | 25,5 | XCMT08 | 181 | 102 | 56 | 25 |
| 7803339 | P4D2600FS32M08 | 26 | XCMT08 | 187 | 104 | 60 | 32 |
| 7803340 | P4D2650FS32M08 | 26,5 | XCMT08 | 189 | 106 | 60 | 32 |
| 7803341 | P4D2700FS32M08 | 27 | XCMT08 | 191 | 108 | 60 | 32 |
| 7803342 | P4D2800FS32M08 | 28 | XCMT08 | 195 | 112 | 60 | 32 |
| 7803343 | P4D2850FS32M08 | 28,5 | XCMT08 | 197 | 114 | 60 | 32 |
| 7803344 | P4D2900FS32M09 | 29 | XCMT09 | 199 | 116 | 60 | 32 |
| 7803345 | P4D3000FS32M09 | 30 | XCMT09 | 203 | 120 | 60 | 32 |
| 7803346 | P4D3100FS32M09 | 31 | XCMT09 | 207 | 124 | 60 | 32 |
| 7803396 | P4D3100FS40M09 | 31 | XCMT09 | 217 | 124 | 70 | 40 |
| 7803347 | P4D3200FS32M09 | 32 | XCMT09 | 211 | 128 | 60 | 32 |
| 7803397 | P4D3200FS40M09 | 32 | XCMT09 | 221 | 128 | 70 | 40 |
| 7803348 | P4D3300FS40M09 | 33 | XCMT09 | 225 | 132 | 70 | 40 |
| 7803349 | P4D3350FS40M09 | 33,5 | XCMT09 | 227 | 134 | 70 | 40 |
| 7803350 | P4D3400FS40M10 | 34 | XCMT10 | 229 | 136 | 70 | 40 |
| 7803351 | P4D3500FS40M10 | 35 | XCMT10 | 233 | 140 | 70 | 40 |
| 7803352 | P4D3600FS40M10 | 36 | XCMT10 | 237 | 144 | 70 | 40 |
| 7803353 | P4D3700FS40M10 | 37 | XCMT10 | 241 | 148 | 70 | 40 |
| 7803354 | P4D3800FS40M10 | 38 | XCMT10 | 245 | 152 | 70 | 40 |
| 7803355 | P4D3900FS40M12 | 39 | XCMT12 | 256 | 156 | 70 | 40 |
| 7803356 | P4D4000FS40M12 | 40 | XCMT12 | 260 | 160 | 70 | 40 |

# P4D



**Drilling | Indexable | Body**

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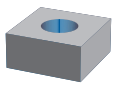
- 77 sizes



B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7803357 | P4D4100FS40M12 | 41 | XCMT12 | 264 | 164 | 70 | 40 |
| 7803358 | P4D4200FS40M12 | 42 | XCMT12 | 268 | 168 | 70 | 40 |
| 7803359 | P4D4300FS40M12 | 43 | XCMT12 | 272 | 172 | 70 | 40 |
| 7803360 | P4D4400FS40M12 | 44 | XCMT12 | 276 | 176 | 70 | 40 |
| 7803361 | P4D4500FS40M13 | 45 | XCMT13 | 280 | 180 | 70 | 40 |
| 7803362 | P4D4600FS40M13 | 46 | XCMT13 | 284 | 184 | 70 | 40 |
| 7803363 | P4D4700FS40M13 | 47 | XCMT13 | 288 | 188 | 70 | 40 |
| 7803364 | P4D4800FS40M13 | 48 | XCMT13 | 292 | 192 | 70 | 40 |
| 7803365 | P4D4900FS40M13 | 49 | XCMT13 | 296 | 196 | 70 | 40 |
| 7803366 | P4D5000FS40M14 | 50 | XCMT14 | 300 | 200 | 70 | 40 |
| 7803367 | P4D5100FS40M14 | 51 | XCMT14 | 304 | 204 | 70 | 40 |
| 7803368 | P4D5200FS40M14 | 52 | XCMT14 | 308 | 208 | 70 | 40 |
| 7803369 | P4D5300FS40M14 | 53 | XCMT14 | 312 | 212 | 70 | 40 |
| 7803370 | P4D5400FS40M14 | 54 | XCMT14 | 316 | 216 | 70 | 40 |
| 7803371 | P4D5500FS40M14 | 55 | XCMT14 | 320 | 220 | 70 | 40 |
| 7803372 | P4D5600FS40M14 | 56 | XCMT14 | 324 | 224 | 70 | 40 |
| 7803373 | P4D5700FS40M16 | 57 | XCMT16 | 328 | 228 | 70 | 40 |
| 7803374 | P4D5800FS40M16 | 58 | XCMT16 | 332 | 232 | 70 | 40 |
| 7803375 | P4D5900FS40M16 | 59 | XCMT16 | 336 | 236 | 70 | 40 |
| 7803376 | P4D6000FS40M16 | 60 | XCMT16 | 340 | 240 | 70 | 40 |
| 7803377 | P4D6100FS40M16 | 61 | XCMT16 | 344 | 244 | 70 | 40 |
| 7803378 | P4D6200FS40M16 | 62 | XCMT16 | 348 | 248 | 70 | 40 |
| 7803379 | P4D6300FS40M16 | 63 | XCMT16 | 352 | 252 | 70 | 40 |

Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 12 - 14,5 | 7808096 | FS18536P | Clamping screw |
| 15 - 18,5 | 7808139 | FS20543P | Clamping screw |
| 19 - 20,5 | 7808138 | FS22550P | Clamping screw |
| 21 - 24,5 | 7808136 | FS25560P | Clamping screw |
| 25 - 33,5 | 7808135 | FS30570P | Clamping screw |
| 34 - 44 | 7808137 | FS35586P | Clamping screw |
| 45 - 63 | 7808114 | FS45510P | Clamping screw |
| 12 - 18,5 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 19 - 20,5 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 21 - 24,5 | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 33,5 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 34 - 44 | 7808228 | 15IP-D (Torx 15IP) | Wrench |
| 45 - 63 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

# P5D

**Drilling | Indexable | Body**

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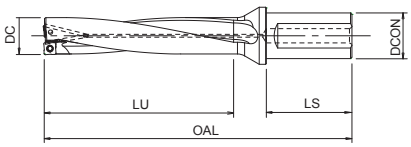
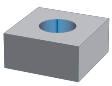



- Indexable drill with internal coolant
- Up to 5xD
- 3 different insert grades available
- 77 sizes



B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7802780 | P5D1200FS20M03 | 12 | XCMT03 | 123 | 60 | 50 | 20 |
| 7802781 | P5D1250FS20M03 | 12,5 | XCMT03 | 125,5 | 62,5 | 50 | 20 |
| 7802782 | P5D1300FS20M03 | 13 | XCMT03 | 128 | 65 | 50 | 20 |
| 7802783 | P5D1350FS20M03 | 13,5 | XCMT03 | 130,5 | 67,5 | 50 | 20 |
| 7802784 | P5D1400FS20M03 | 14 | XCMT03 | 133 | 70 | 50 | 20 |
| 7802785 | P5D1450FS20M03 | 14,5 | XCMT03 | 135,5 | 72,5 | 50 | 20 |
| 7802717 | P5D1500FS20M04 | 15 | XCMT04 | 140 | 75 | 50 | 20 |
| 7802718 | P5D1550FS20M04 | 15,5 | XCMT04 | 143 | 78 | 50 | 20 |
| 7802719 | P5D1600FS20M04 | 16 | XCMT04 | 145 | 80 | 50 | 20 |
| 7802720 | P5D1650FS20M04 | 16,5 | XCMT04 | 148 | 83 | 50 | 20 |
| 7802721 | P5D1700FS20M05 | 17 | XCMT05 | 153 | 85 | 50 | 20 |
| 7802722 | P5D1750FS20M05 | 17,5 | XCMT05 | 156 | 88 | 50 | 20 |
| 7802790 | P5D1750FS25M05 | 17,5 | XCMT05 | 162 | 88 | 56 | 25 |
| 7802723 | P5D1800FS25M05 | 18 | XCMT05 | 164 | 90 | 56 | 25 |
| 7802724 | P5D1850FS25M05 | 18,5 | XCMT05 | 167 | 93 | 56 | 25 |
| 7802725 | P5D1900FS25M06 | 19 | XCMT06 | 169 | 95 | 56 | 25 |
| 7802726 | P5D1950FS25M06 | 19,5 | XCMT06 | 172 | 98 | 56 | 25 |
| 7802727 | P5D2000FS25M06 | 20 | XCMT06 | 174 | 100 | 56 | 25 |
| 7802728 | P5D2050FS25M06 | 20,5 | XCMT06 | 177 | 103 | 56 | 25 |
| 7802729 | P5D2100FS25M07 | 21 | XCMT07 | 184 | 105 | 56 | 25 |
| 7802730 | P5D2150FS25M07 | 21,5 | XCMT07 | 187 | 108 | 56 | 25 |
| 7802731 | P5D2200FS25M07 | 22 | XCMT07 | 189 | 110 | 56 | 25 |
| 7802732 | P5D2250FS25M07 | 22,5 | XCMT07 | 192 | 113 | 56 | 25 |
| 7802733 | P5D2300FS25M07 | 23 | XCMT07 | 194 | 115 | 56 | 25 |
| 7802734 | P5D2350FS32M07 | 23,5 | XCMT07 | 201 | 118 | 60 | 32 |
| 7802791 | P5D2350FS25M07 | 23,5 | XCMT07 | 197 | 118 | 56 | 25 |
| 7802735 | P5D2400FS32M07 | 24 | XCMT07 | 203 | 120 | 60 | 32 |
| 7802792 | P5D2400FS25M07 | 24 | XCMT07 | 199 | 120 | 56 | 25 |
| 7802736 | P5D2450FS32M07 | 24,5 | XCMT07 | 206 | 123 | 60 | 32 |
| 7802793 | P5D2450FS25M07 | 24,5 | XCMT07 | 202 | 123 | 56 | 25 |
| 7802737 | P5D2500FS32M08 | 25 | XCMT08 | 208 | 125 | 60 | 32 |
| 7802794 | P5D2500FS25M08 | 25 | XCMT08 | 204 | 125 | 56 | 25 |
| 7802738 | P5D2550FS32M08 | 25,5 | XCMT08 | 211 | 128 | 60 | 32 |
| 7802795 | P5D2550FS25M08 | 25,5 | XCMT08 | 207 | 128 | 56 | 25 |
| 7802739 | P5D2600FS32M08 | 26 | XCMT08 | 213 | 130 | 60 | 32 |
| 7802740 | P5D2650FS32M08 | 26,5 | XCMT08 | 216 | 133 | 60 | 32 |
| 7802741 | P5D2700FS32M08 | 27 | XCMT08 | 218 | 135 | 60 | 32 |
| 7802742 | P5D2800FS32M08 | 28 | XCMT08 | 223 | 140 | 60 | 32 |
| 7802743 | P5D2850FS32M08 | 28,5 | XCMT08 | 226 | 143 | 60 | 32 |
| 7802744 | P5D2900FS32M09 | 29 | XCMT09 | 228 | 145 | 60 | 32 |
| 7802745 | P5D3000FS32M09 | 30 | XCMT09 | 233 | 150 | 60 | 32 |
| 7802746 | P5D3100FS32M09 | 31 | XCMT09 | 238 | 155 | 60 | 32 |
| 7802796 | P5D3100FS40M09 | 31 | XCMT09 | 248 | 155 | 70 | 40 |
| 7802747 | P5D3200FS32M09 | 32 | XCMT09 | 243 | 160 | 60 | 32 |
| 7802797 | P5D3200FS40M09 | 32 | XCMT09 | 253 | 160 | 70 | 40 |
| 7802748 | P5D3300FS40M09 | 33 | XCMT09 | 258 | 165 | 70 | 40 |
| 7802749 | P5D3350FS40M09 | 33,5 | XCMT09 | 261 | 168 | 70 | 40 |
| 7802750 | P5D3400FS40M10 | 34 | XCMT10 | 263 | 170 | 70 | 40 |
| 7802751 | P5D3500FS40M10 | 35 | XCMT10 | 268 | 175 | 70 | 40 |
| 7802752 | P5D3600FS40M10 | 36 | XCMT10 | 273 | 180 | 70 | 40 |
| 7802753 | P5D3700FS40M10 | 37 | XCMT10 | 278 | 185 | 70 | 40 |
| 7802754 | P5D3800FS40M10 | 38 | XCMT10 | 283 | 190 | 70 | 40 |
| 7802755 | P5D3900FS40M12 | 39 | XCMT12 | 295 | 195 | 70 | 40 |
| 7802756 | P5D4000FS40M12 | 40 | XCMT12 | 300 | 200 | 70 | 40 |

# P5D

**Drilling | Indexable | Body**

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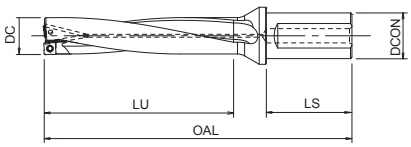


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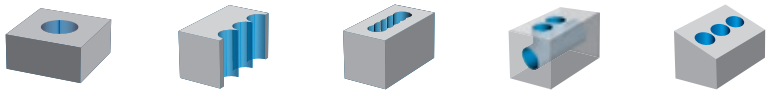


B.558 B.522

| EDP | Designation | DC | Applicable inserts type | OAL | LU | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7802757 | P5D4100FS40M12 | 41 | XCMT12 | 305 | 205 | 70 | 40 |
| 7802758 | P5D4200FS40M12 | 42 | XCMT12 | 310 | 210 | 70 | 40 |
| 7802759 | P5D4300FS40M12 | 43 | XCMT12 | 315 | 215 | 70 | 40 |
| 7802760 | P5D4400FS40M12 | 44 | XCMT12 | 320 | 220 | 70 | 40 |
| 7802761 | P5D4500FS40M13 | 45 | XCMT13 | 325 | 225 | 70 | 40 |
| 7802762 | P5D4600FS40M13 | 46 | XCMT13 | 330 | 230 | 70 | 40 |
| 7802763 | P5D4700FS40M13 | 47 | XCMT13 | 335 | 235 | 70 | 40 |
| 7802764 | P5D4800FS40M13 | 48 | XCMT13 | 340 | 240 | 70 | 40 |
| 7802765 | P5D4900FS40M13 | 49 | XCMT13 | 345 | 245 | 70 | 40 |
| 7802766 | P5D5000FS40M14 | 50 | XCMT14 | 350 | 250 | 70 | 40 |
| 7802767 | P5D5100FS40M14 | 51 | XCMT14 | 355 | 255 | 70 | 40 |
| 7802768 | P5D5200FS40M14 | 52 | XCMT14 | 360 | 260 | 70 | 40 |
| 7802769 | P5D5300FS40M14 | 53 | XCMT14 | 365 | 265 | 70 | 40 |
| 7802770 | P5D5400FS40M14 | 54 | XCMT14 | 370 | 270 | 70 | 40 |
| 7802771 | P5D5500FS40M14 | 55 | XCMT14 | 375 | 275 | 70 | 40 |
| 7802772 | P5D5600FS40M14 | 56 | XCMT14 | 380 | 280 | 70 | 40 |
| 7802773 | P5D5700FS40M16 | 57 | XCMT16 | 385 | 285 | 70 | 40 |
| 7802774 | P5D5800FS40M16 | 58 | XCMT16 | 390 | 290 | 70 | 40 |
| 7802775 | P5D5900FS40M16 | 59 | XCMT16 | 395 | 295 | 70 | 40 |
| 7802776 | P5D6000FS40M16 | 60 | XCMT16 | 400 | 300 | 70 | 40 |
| 7802777 | P5D6100FS40M16 | 61 | XCMT16 | 405 | 305 | 70 | 40 |
| 7802778 | P5D6200FS40M16 | 62 | XCMT16 | 410 | 310 | 70 | 40 |
| 7802779 | P5D6300FS40M16 | 63 | XCMT16 | 415 | 315 | 70 | 40 |

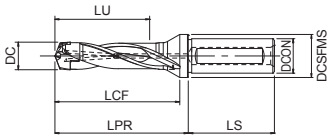
Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 12 - 14,5 | 7808096 | FS18536P | Clamping screw |
| 15 - 18,5 | 7808139 | FS20543P | Clamping screw |
| 19 - 20,5 | 7808138 | FS22550P | Clamping screw |
| 21 - 24,5 | 7808136 | FS25560P | Clamping screw |
| 25 - 33,5 | 7808135 | FS30570P | Clamping screw |
| 34 - 44 | 7808137 | FS35586P | Clamping screw |
| 45 - 63 | 7808114 | FS45510P | Clamping screw |
| 12 - 18,5 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 19 - 20,5 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 21 - 24,5 | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 33,5 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 34 - 44 | 7808228 | 15IP-D (Torx 15IP) | Wrench |
| 45 - 63 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

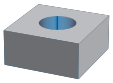
# PXD-3D

INDEX

**Drilling | Indexable | Body**




- Exchangeable head drill with internal coolant
- Up to 3xD
- 3 different solid carbide head types based on work material
- 13 sizes
- Including driver



B.559 B.516

| EDP | Designation | DCN | DCX | seat size | DC | LU | LCF | LPR | LS | DCON | DCSFMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48173001 | PXDZ140-3D-113,5-16 | 14 | 14,49 | PXDH1400 PXDH1440 | 13,5 | 43 | 63,4 | 69,9 | 48 | 16 | 20 |
| 48173002 | PXDZ145-3D-115,5-16 | 14,5 | 14,99 | PXDH1450 PXDH1495 | 14 | 44,5 | 65,5 | 72 | 48 | 16 | 20 |
| 48173003 | PXDZ150-3D-119,5-20 | 15 | 15,99 | PXDH1500 PXDH1590 | 14,5 | 46,5 | 67,1 | 73,6 | 50 | 20 | 25 |
| 48173004 | PXDZ160-3D-123,5-20 | 16 | 16,99 | PXDH1600 PXDH1690 | 15,5 | 49,5 | 71,7 | 78,2 | 50 | 20 | 25 |
| 48173005 | PXDZ170-3D-128,5-20 | 17 | 17,99 | PXDH1700 PXDH1790 | 16,5 | 52,5 | 76,8 | 83,3 | 50 | 20 | 25 |
| 48173006 | PXDZ180-3D-138,5-25 | 18 | 18,99 | PXDH1800 PXDH1890 | 17,5 | 55,5 | 81,4 | 87,9 | 56 | 25 | 32 |
| 48173007 | PXDZ190-3D-142,5-25 | 19 | 19,99 | PXDH1900 PXDH1990 | 18,5 | 58,5 | 85,4 | 91,9 | 56 | 25 | 32 |
| 48173008 | PXDZ200-3D-146,5-25 | 20 | 20,99 | PXDH2000 PXDH2090 | 19,5 | 61,5 | 90,1 | 96,6 | 56 | 25 | 32 |
| 48173009 | PXDZ210-3D-154,5-32 | 21 | 21,99 | PXDH2100 PXDH2190 | 20,5 | 64,5 | 94,7 | 101,2 | 60 | 32 | 42 |
| 48173010 | PXDZ220-3D-158,5-32 | 22 | 22,99 | PXDH2200 PXDH2290 | 21,5 | 67,5 | 98,8 | 105,3 | 60 | 32 | 42 |
| 48173011 | PXDZ230-3D-162,5-32 | 23 | 23,99 | PXDH2300 PXDH2390 | 22,5 | 70,5 | 103,4 | 109,9 | 60 | 32 | 42 |
| 48173012 | PXDZ240-3D-167,5-32 | 24 | 24,99 | PXDH2400 PXDH2490 | 23,5 | 73,5 | 108,4 | 114,9 | 60 | 32 | 42 |
| 48173013 | PXDZ250-3D-170,5-32 | 25 | 25,99 | PXDH2500 PXDH2540 | 24,5 | 76,5 | 112 | 118,5 | 60 | 32 | 42 |

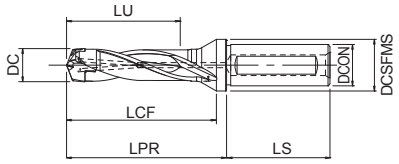
Accessories and spare parts

| Applicable drill DC | EDP | Designation |
|---|---|---|
| 14 - 18,9 | 7808282 | Driver 1,5 thickness |
| 19 - 22,9 | 7808283 | Driver 1,8 thickness |
| 23 - 25,4 | 7808284 | Driver 2 thickness |

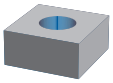
# PXD-5D



**Drilling | Indexable | Body**




- Exchangeable head drill with internal coolant
- Up to 5xD
- 3 different solid carbide head types based on work material
- 13 sizes
- Including driver



B.559 B.516

| EDP | Designation | DCN | DCX | seat size | DC | LU | LCF | LPR | LS | DCON | DCSFMS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 48173014 | PXDZ140-5D-141,5-16 | 14 | 14,49 | PXDH1400 PXDH1440 | 13,5 | 71,2 | 92,9 | 97,9 | 48 | 16 | 20 |
| 48173015 | PXDZ145-5D-144,5-16 | 14,5 | 14,99 | PXDH1450 PXDH1495 | 14 | 73,7 | 96 | 101 | 48 | 16 | 20 |
| 48173016 | PXDZ150-5D-149,5-20 | 15 | 15,99 | PXDH1500 PXDH1590 | 14,5 | 77,5 | 97,1 | 103,6 | 50 | 20 | 25 |
| 48173017 | PXDZ160-5D-155,5-20 | 16 | 16,99 | PXDH1600 PXDH1690 | 15,5 | 82,5 | 103,7 | 110,2 | 50 | 20 | 25 |
| 48173018 | PXDZ170-5D-162,5-20 | 17 | 17,99 | PXDH1700 PXDH1790 | 16,5 | 87,5 | 110,8 | 117,3 | 50 | 20 | 25 |
| 48173019 | PXDZ180-5D-174,5-25 | 18 | 18,99 | PXDH1800 PXDH1890 | 17,5 | 92,5 | 117,4 | 123,9 | 56 | 25 | 32 |
| 48173020 | PXDZ190-5D-180,5-25 | 19 | 19,99 | PXDH1900 PXDH1990 | 18,5 | 97,5 | 123,4 | 129,9 | 56 | 25 | 32 |
| 48173021 | PXDZ200-5D-186,5-25 | 20 | 20,99 | PXDH2000 PXDH2090 | 19,5 | 102,5 | 130,1 | 136,6 | 56 | 25 | 32 |
| 48173022 | PXDZ210-5D-196,5-32 | 21 | 21,99 | PXDH2100 PXDH2190 | 20,5 | 107,5 | 136,7 | 143,2 | 60 | 32 | 42 |
| 48173023 | PXDZ220-5D-202,5-32 | 22 | 22,99 | PXDH2200 PXDH2290 | 21,5 | 112,5 | 142,8 | 149,3 | 60 | 32 | 42 |
| 48173024 | PXDZ230-5D-208,5-32 | 23 | 23,99 | PXDH2300 PXDH2390 | 22,5 | 117,5 | 149,4 | 155,9 | 60 | 32 | 42 |
| 48173025 | PXDZ240-5D-215,5-32 | 24 | 24,99 | PXDH2400 PXDH2490 | 23,5 | 122,5 | 156,4 | 162,9 | 60 | 32 | 42 |
| 48173026 | PXDZ250-5D-220,5-32 | 25 | 25,99 | PXDH2500 PXDH2540 | 24,5 | 127,5 | 162 | 168,5 | 60 | 32 | 42 |

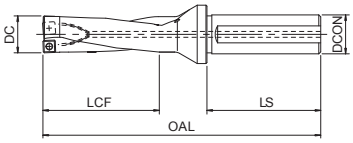
Accessories and spare parts

| Applicable drill DC | EDP | Designation |
|---|---|---|
| 14 - 18,9 | 7808282 | Driver 1,5 thickness |
| 19 - 22,9 | 7808283 | Driver 1,8 thickness |
| 23 - 25,4 | 7808284 | Driver 2 thickness |

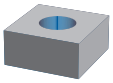
# PHP



**Drilling | Indexable | Body**




- Indexable drill with internal coolant
- Up to 3xD
- 2 different insert grades available
- 40 sizes



B.562 B.516

| EDP | Designation | DC | Applicable inserts type | OAL | LCF | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7800100 | PHP140FS20M04-3D | 14 | SCMT04 | 116 | 42 | 50 | 20 |
| 7800101 | PHP145FS20M04-3D | 14,5 | SCMT04 | 119 | 45 | 50 | 20 |
| 7800102 | PHP150FS20M04-3D | 15 | SCMT04 | 119 | 45 | 50 | 20 |
| 7800103 | PHP155FS20M04-3D | 15,5 | SCMT04 | 122 | 48 | 50 | 20 |
| 7800104 | PHP160FS20M04-3D | 16 | SCMT04 | 122 | 48 | 50 | 20 |
| 7800105 | PHP165FS20M05-3D | 16,5 | SCMT05 | 125 | 51 | 50 | 20 |
| 7800106 | PHP170FS20M05-3D | 17 | SCMT05 | 125 | 51 | 50 | 20 |
| 7800107 | PHP175FS25M05-3D | 17,5 | SCMT05 | 134 | 54 | 56 | 25 |
| 7800108 | PHP180FS25M05-3D | 18 | SCMT05 | 134 | 54 | 56 | 25 |
| 7800109 | PHP185FS25M06-3D | 18,5 | SCMT06 | 137 | 57 | 56 | 25 |
| 7800110 | PHP190FS25M06-3D | 19 | SCMT06 | 137 | 57 | 56 | 25 |
| 7800111 | PHP195FS25M06-3D | 19,5 | SCMT06 | 140 | 60 | 56 | 25 |
| 7800112 | PHP200FS25M06-3D | 20 | SCMT06 | 140 | 60 | 56 | 25 |
| 7800113 | PHP205FS25M06-3D | 20,5 | SCMT06 | 143 | 63 | 56 | 25 |
| 7800114 | PHP210FS25M07-3D | 21 | SCMT07 | 143 | 63 | 56 | 25 |
| 7800115 | PHP215FS25M07-3D | 21,5 | SCMT07 | 146 | 66 | 56 | 25 |
| 7800116 | PHP220FS25M07-3D | 22 | SCMT07 | 146 | 66 | 56 | 25 |
| 7800117 | PHP225FS25M07-3D | 22,5 | SCMT07 | 149 | 69 | 56 | 25 |
| 7800118 | PHP230FS25M07-3D | 23 | SCMT07 | 149 | 69 | 56 | 25 |
| 7800119 | PHP235FS32M07-3D | 23,5 | SCMT07 | 156 | 72 | 60 | 32 |
| 7800120 | PHP240FS32M07-3D | 24 | SCMT07 | 156 | 72 | 60 | 32 |

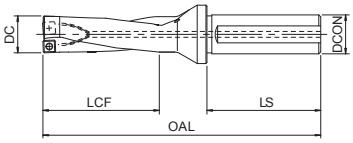
Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 14 - 16 | 7808100 | FS18538 (Torx 6) | Clamping screw |
| 16,5 - 18 | 7808102 | FS20540 (Torx 6) | Clamping screw |
| 18,5 - 20,5 | 7808104 | FS22550 (Torx 7) | Clamping screw |
| 21 - 24 | 7808108 | FS25560 (Torx 8) | Clamping screw |
| 14 - 18 | 7808203 | T6-D (Torx 6) | Wrench |
| 18,5 - 20,5 | 7808204 | T7-D (Torx 7) | Wrench |
| 21 - 24 | 7808205 | T8-D (Torx 8) | Wrench |

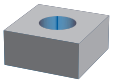
# PHP



**Drilling | Indexable | Body**




- Indexable drill with internal coolant
- Up to 3xD
- 2 different insert grades available
- 40 sizes



B.562 B.516

| EDP | Designation | DC | Applicable inserts type | OAL | LCF | LS | DCON |
|---|---|---|---|---|---|---|---|
| 7800121 | PHP245FS32M08-3D | 24,5 | SCMT08 | 159 | 75 | 60 | 32 |
| 7800122 | PHP250FS32M08-3D | 25 | SCMT08 | 159 | 75 | 60 | 32 |
| 7800123 | PHP255FS32M08-3D | 25,5 | SCMT08 | 162 | 78 | 60 | 32 |
| 7800124 | PHP260FS32M08-3D | 26 | SCMT08 | 162 | 78 | 60 | 32 |
| 7800125 | PHP265FS32M08-3D | 26,5 | SCMT08 | 165 | 81 | 60 | 32 |
| 7800126 | PHP270FS32M08-3D | 27 | SCMT08 | 165 | 81 | 60 | 32 |
| 7800127 | PHP280FS32M08-3D | 28 | SCMT08 | 168 | 84 | 60 | 32 |
| 7800128 | PHP290FS32M10-3D | 29 | SCMT10 | 171 | 87 | 60 | 32 |
| 7800130 | PHP300FS32M10-3D | 30 | SCMT10 | 179 | 90 | 60 | 32 |
| 7800131 | PHP310FS32M10-3D | 31 | SCMT10 | 182 | 93 | 60 | 32 |
| 7800132 | PHP320FS32M10-3D | 32 | SCMT10 | 185 | 96 | 60 | 32 |
| 7800133 | PHP330FS40M10-3D | 33 | SCMT10 | 196 | 99 | 68 | 40 |
| 7800134 | PHP340FS40M10-3D | 34 | SCMT10 | 199 | 102 | 68 | 40 |
| 7800135 | PHP350FS40M12-3D | 35 | SCMT12 | 202 | 105 | 68 | 40 |
| 7800136 | PHP360FS40M12-3D | 36 | SCMT12 | 205 | 108 | 68 | 40 |
| 7800137 | PHP370FS40M12-3D | 37 | SCMT12 | 218 | 111 | 68 | 40 |
| 7800138 | PHP380FS40M12-3D | 38 | SCMT12 | 221 | 114 | 68 | 40 |
| 7800139 | PHP390FS40M12-3D | 39 | SCMT12 | 224 | 117 | 68 | 40 |
| 7800140 | PHP400FS40M12-3D | 40 | SCMT12 | 227 | 120 | 68 | 40 |

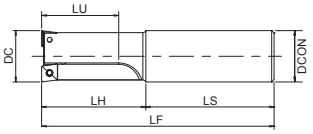
Accessories and spare parts

| Applicable drill DC | EDP | Designation | Specification |
|---|---|---|---|
| 24,5 - 28 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 29 - 34 | 7808111 | FS35572 (Torx 15) | Clamping screw |
| 35 - 40 | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 24,5 - 28 | 7808205 | T8-D (Torx 8) | Wrench |
| 29 - 34 | 7808208 | T15-D (Torx 15) | Wrench |
| 35 - 40 | 7808209 | T20-D (Torx 20) | Wrench |

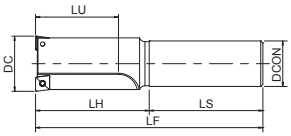
# PZAG SS

**Drilling | Counterboring**

Type 1




Type 2




- Counterboring cutter straight shank.
- 2 corners inserts
- Cylindrical type
- 14 - 48 mm

B.563 B.523

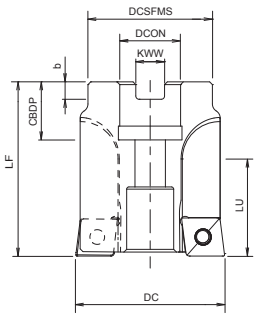
| EDP | Designation | ZEFP | DC | Applicable inserts type | LF | LU | LH | LS | DCON | ae | PHD | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7832100 | PZAG04R014SS20-2 | 2 | 14 | ZPNT04 | 100 | 21 | 30 | 70 | 20 | 4 | 6 | 1 |
| 7832101 | PZAG06R0175SS20-2 | 2 | 17,5 | ZPNT06 | 105 | 26 | 35 | 70 | 20 | 6 | 5,5 | 1 |
| 7832102 | PZAG06R020SS20-2 | 2 | 20 | ZPNT06 | 110 | 30 | 40 | 70 | 20 | 6 | 8 | 1 |
| 7832103 | PZAG06R023SS25-2 | 2 | 23 | ZPNT06 | 125 | 34,5 | 50 | 75 | 25 | 6 | 11 | 1 |
| 7832104 | PZAG09R026SS25-2 | 2 | 26 | ZPNT09 | 130 | 39 | 55 | 75 | 25 | 9 | 8 | 1 |
| 7832105 | PZAG09R029SS32-2 | 2 | 29 | ZPNT09 | 140 | 43,5 | 60 | 80 | 32 | 9 | 11 | 1 |
| 7832106 | PZAG09R032SS32-2 | 2 | 32 | ZPNT09 | 145 | 48 | 65 | 80 | 32 | 9 | 14 | 1 |
| 7832107 | PZAG09R035SS32-2 | 2 | 35 | ZPNT09 | 150 | 52,5 | 70 | 80 | 32 | 9 | 17 | 2 |
| 7832108 | PZAG09R039SS32-2 | 2 | 39 | ZPNT09 | 160 | 58,5 | 80 | 80 | 32 | 9 | 21 | 2 |
| 7832109 | PZAG09R043SS32-2 | 2 | 43 | ZPNT09 | 170 | 64,5 | 90 | 80 | 32 | 9 | 25 | 2 |
| 7832110 | PZAG09R048SS32-2 | 2 | 48 | ZPNT09 | 180 | 72 | 100 | 80 | 32 | 9 | 30 | 2 |

## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 14 | 7808096 | FS18536P | Clamping screw |
| 17,5 - 23 | 7808138 | FS22550P | Clamping screw |
| 26 - 48 | 7808135 | FS30570P | Clamping screw |
| 54 - 82 | 7808114 | FS45510P | Clamping screw |
| 14 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 17,5 - 23 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 26 - 48 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 54 - 82 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

# PZAG BORE

**Drilling | Counterboring**




- Counterboring cutter
- Excellent chip breaking properties
- Bore type
- 54 - 82 mm

B.563 B.523

| EDP | Designation | ZEFP | DC | Applicable inserts type | LF | LU | DCON | DCSFMS | KWW | b | CBDP | ae | PHD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7832111 | PZAG13R054M22-4 | 4 | 54 | ZPNT130 | 63 | 35 | 22 | 45 | 10,4 | 6,3 | 21 | 12,5 | 29 |
| 7832112 | PZAG13R058M22-4 | 4 | 58 | ZPNT130 | 63 | 38 | 22 | 45 | 10,4 | 6,3 | 21 | 12,5 | 33 |
| 7832113 | PZAG13R062M22-4 | 4 | 62 | ZPNT130 | 63 | 41 | 22 | 45 | 10,4 | 6,3 | 21 | 12,5 | 37 |
| 7832114 | PZAG13R067M22-4 | 4 | 67 | ZPNT130 | 63 | 44 | 22 | 45 | 10,4 | 6,3 | 21 | 12,5 | 42 |
| 7832115 | PZAG13R072M22-4 | 4 | 72 | ZPNT130 | 63 | 47 | 22 | 45 | 10,4 | 6,3 | 21 | 12,5 | 47 |
| 7832116 | PZAG17R076M22-4 | 4 | 76 | ZPNT170 | 63 | 50 | 22 | 45 | 10,4 | 6,3 | 21 | 16 | 44 |
| 7832117 | PZAG17R082M22-4 | 4 | 82 | ZPNT170 | 63 | 54 | 22 | 45 | 10,4 | 6,3 | 21 | 16 | 50 |

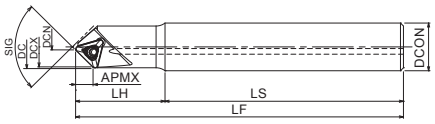
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 14 | 7808096 | FS18536P | Clamping screw |
| 17,5 - 23 | 7808138 | FS22550P | Clamping screw |
| 26 - 48 | 7808135 | FS30570P | Clamping screw |
| 54 - 82 | 7808114 | FS45510P | Clamping screw |
| 14 | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 17,5 - 23 | 7808224 | 7IP-D (Torx 7IP) | Wrench |
| 26 - 48 | 7808226 | 9IP-D (Torx 9IP) | Wrench |
| 54 - 82 | 7808229 | 20IP-D (Torx 20IP) | Wrench |

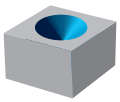
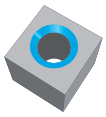
# PLDS SS

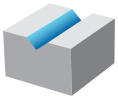


**Centering and chamfering | Indexable**




- Indexable multi purpose centering and chamfering tool
- 3 corners inserts
- Cylindrical type, with internal coolant



B.565 B.518

| EDP | Designation | SIG | ZEFP | DCN | DCX | DC | Applicable inserts type | LF | LH | LS | DCON | APMX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803401 | PLDS11R002SS16-90 | 90 | 1 | 2,5 | 13,5 | 14,4 | TPKT110308ER-DM | 110 | 30 | 80 | 16 | 5,8 |
| 7803402 | PLDS11R002SS16-L90 | 90 | 1 | 2,5 | 13,5 | 14,4 | TPKT110308ER-DM | 200 | 30 | 170 | 16 | 5,8 |
| 7803403 | PLDS11R002SS16-120 | 120 | 1 | 2,4 | 16 | 17,3 | TPKT110308ER-DM | 110 | 30 | 80 | 16 | 4 |
| 7803404 | PLDS11R002SS16-L120 | 120 | 1 | 2,4 | 16 | 17,3 | TPKT110308ER-DM | 200 | 30 | 170 | 16 | 4 |

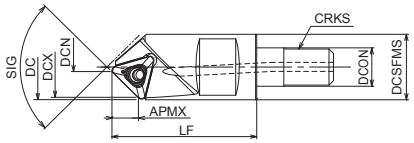
Accessories and spare parts

| EDP | Designation | Specification | Torque |
|---|---|---|---|
| 7808138 | FS22550P | Clamping screw | 1,0 N.m |
| 7808224 | 7IP-D (Torx 7IP) | Wrench | - |

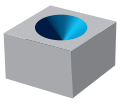
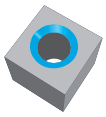
# PLDS SF

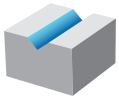


**Centering and chamfering | Indexable**




- Indexable multi purpose centering and chamfering tool
- 3 corners inserts
- Screw fit type



B.565 B.518

| EDP | Designation | SIG | ZEFP | DCN | DCX | DC | Applicable inserts type | LF | DCON | DCSFMS | APMX | CRKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803405 | PLDS11R002SF8-90 | 90 | 1 | 2,5 | 13,5 | 14,4 | TPKT110308ER-DM | 32 | 8,5 | 14,5 | 5,8 | 8 |
| 7803406 | PLDS11R002SF8-120 | 120 | 1 | 2,4 | 16 | 17,3 | TPKT110308ER-DM | 32 | 8,5 | 14,5 | 4 | 8 |

Accessories and spare parts

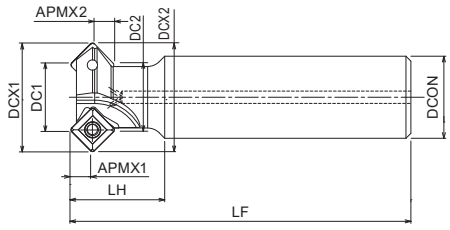
| EDP | Designation | Specification | Torque |
|---|---|---|---|
| 7808138 | FS22550P | Clamping screw | 1,0 N.m |
| 7808224 | 7IP-D (Torx 7IP) | Wrench | - |

# PMEN SS

**Chamfering | Indexables**

INDEX

**NEW**




with Coolant Hole

- Chamfering Cutter
- Body compatible with chamfer angles (KAPR1) 45°,30° and 60°
- With coolant hole
- 8,5 - 35,6 mm

B.566 B.519

| EDP | Designation | KAPR1 | KAPR2 | DC1 | DCX1 | DC2 | DCX2 | APMX1 | APMX2 | ZEFP | DCON | LF | LH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803750 | PMEN09R008SS20-30-45 | 45° | 45° | 8,5 | 19,5 | 16 | 19,5 | 5,7 | 1,7 | 1 | 20 | 90 | 30 |
| | | 30° | 60° | 5,4 | 18,8 | 16 | 19,4 | 4 | 3 | 1 | 20 | 90 | 30 |
| 7803751 | PMEN09R016SS20-30-45 | 45° | 45° | 16,5 | 27,5 | 16,5 | 27,5 | 5,7 | 5,5 | 2 | 20 | 90 | 30 |
| | | 30° | 60° | 13,4 | 26,8 | 19,8 | 27,4 | 4 | 6,8 | 2 | 20 | 90 | 30 |
| 7803752 | PMEN09R020SS20-30-45 | 45° | 45° | 20,5 | 31,5 | 20,5 | 31,5 | 5,7 | 5,5 | 2 | 20 | 120 | 40 |
| | | 30° | 60° | 17,4 | 30,8 | 23,8 | 31,4 | 4 | 6,8 | 2 | 20 | 120 | 40 |
| 7803753 | PMEN09R025SS25-30-45 | 45° | 45° | 25,5 | 36,5 | 25,5 | 36,5 | 5,7 | 5,5 | 2 | 25 | 120 | 40 |
| | | 30° | 60° | 22,4 | 35,8 | 28,8 | 36,4 | 4 | 6,8 | 2 | 25 | 120 | 40 |
| 7803754 | PMEN09R032SS32-30-45 | 45° | 45° | 32,5 | 43,5 | 32,5 | 43,5 | 5,7 | 5,5 | 3 | 32 | 120 | 40 |
| | | 30° | 60° | 29,4 | 42,8 | 35,8 | 43,4 | 4 | 6,8 | 3 | 32 | 120 | 40 |
| 7803763 | PMEN09R008SS20-45-60 | 45° | 45° | 8,5 | 19,5 | 16 | 19,5 | 5,7 | 1,7 | 1 | 20 | 90 | 30 |
| | | 60° | 30° | 11,5 | 19,4 | 16 | 18,8 | 7 | 1 | 1 | 20 | 90 | 30 |
| 7803764 | PMEN09R016SS20-45-60 | 45° | 45° | 16,5 | 27,5 | 16,5 | 27,5 | 5,7 | 5,5 | 2 | 20 | 90 | 30 |
| | | 60° | 30° | 19,6 | 27,4 | 16,6 | 26,9 | 7 | 3 | 2 | 20 | 90 | 30 |
| 7803765 | PMEN09R020SS20-45-60 | 45° | 45° | 20,5 | 31,5 | 20,5 | 31,5 | 5,7 | 5,5 | 2 | 20 | 120 | 40 |
| | | 60° | 30° | 23,6 | 31,4 | 20,6 | 30,9 | 7 | 3 | 2 | 20 | 120 | 40 |
| 7803766 | PMEN09R025SS25-45-60 | 45° | 45° | 25,5 | 36,5 | 25,5 | 36,5 | 5,7 | 5,5 | 2 | 25 | 120 | 40 |
| | | 60° | 30° | 28,6 | 36,4 | 25,6 | 35,9 | 7 | 3 | 2 | 25 | 120 | 40 |
| 7803767 | PMEN09R032SS32-45-60 | 45° | 45° | 32,5 | 43,5 | 32,5 | 43,5 | 5,7 | 5,5 | 3 | 32 | 120 | 40 |
| | | 60° | 30° | 35,6 | 43,4 | 32,6 | 42,9 | 7 | 3 | 3 | 32 | 120 | 40 |

## Accessories and spare parts

| Clamping screw | Designation | Recommended Tightening Torque | Wrench | Designation | Power screw | Designation | Applicable body |
|---|---|---|---|---|---|---|---|
| 7808135 | FS30570P (Torx 9IP) | 2,2 N·m | 7808226 | 9IP-D (Torx 9IP) | 7808150 | PS0830 (M8×30) | PMEN09R040M16… |

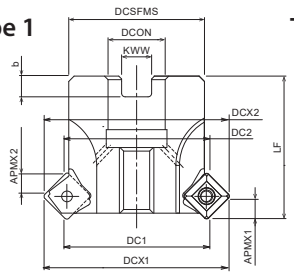
The wrenches are sold separately from the cutters.

# PMEN BORE

**Chamfering | Indexables**

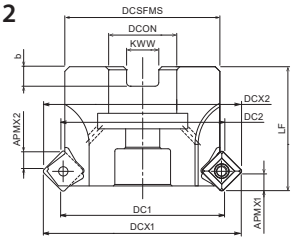
**NEW**

**Type 1**




with Coolant Hole
Power Screw Type

**Type 2**




with Coolant Hole

- Chamfering Cutter
- Body compatible with chamfer angles (KAPR1) 45°,30° and 60°
- With coolant hole
- 40,5 - 63,6 mm

B.566 B.519

| EDP | Designation | KAPR1 | KAPR2 | DC1 | DCX1 | DC2 | DCX2 | APMX1 | APMX2 | ZEFP | LF | DCSFMS | DCON | Key Slot | | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | KWW | b | |
| 7803760 | PMEN09R040M16-30-45 | 45° | 45° | 40,5 | 51,5 | 40,5 | 51,5 | 5,7 | 5,5 | 4 | 40 | 38 | 16 | 8,4 | 5,6 | 1 |
| | | 30° | 60° | 37,4 | 50,8 | 43,8 | 51,4 | 4 | 6,8 | 4 | 40 | 38 | 16 | 8,4 | 5,6 | 1 |
| 7803761 | PMEN09R050M22-30-45 | 45° | 45° | 50,5 | 61,5 | 50,5 | 61,5 | 5,7 | 5,5 | 4 | 40 | 45 | 22 | 10,4 | 6,3 | 2 |
| | | 30° | 60° | 47,4 | 60,8 | 53,8 | 61,4 | 4 | 6,8 | 4 | 40 | 45 | 22 | 10,4 | 6,3 | 2 |
| 7803762 | PMEN09R060M22-30-45 | 45° | 45° | 60,5 | 71,5 | 60,5 | 71,5 | 5,7 | 5,5 | 5 | 40 | 50 | 22 | 10,4 | 6,3 | 2 |
| | | 30° | 60° | 57,4 | 70,8 | 63,8 | 71,4 | 4 | 6,8 | 5 | 40 | 50 | 22 | 10,4 | 6,3 | 2 |
| 7803773 | PMEN09R040M16-45-60 | 45° | 45° | 40,5 | 51,5 | 40,5 | 51,5 | 5,7 | 5,5 | 4 | 40 | 38 | 16 | 8,4 | 5,6 | 1 |
| | | 60° | 30° | 43,6 | 51,4 | 40,6 | 50,9 | 7 | 3 | 4 | 40 | 38 | 16 | 8,4 | 5,6 | 1 |
| 7803774 | PMEN09R050M22-45-60 | 45° | 45° | 50,5 | 61,5 | 50,5 | 61,5 | 5,7 | 5,5 | 4 | 40 | 45 | 22 | 10,4 | 6,3 | 2 |
| | | 60° | 30° | 53,6 | 61,4 | 50,6 | 60,9 | 7 | 3 | 4 | 40 | 45 | 22 | 10,4 | 6,3 | 2 |
| 7803775 | PMEN09R060M22-45-60 | 45° | 45° | 60,5 | 71,5 | 60,5 | 71,5 | 5,7 | 5,5 | 5 | 40 | 50 | 22 | 10,4 | 6,3 | 2 |
| | | 60° | 30° | 63,6 | 71,4 | 60,6 | 70,9 | 7 | 3 | 5 | 40 | 50 | 22 | 10,4 | 6,3 | 2 |

## Accessories and spare parts

| Clamping screw | Designation | Recommended Tightening Torque | Wrench | Designation | Power screw | Designation | Applicable body |
|---|---|---|---|---|---|---|---|
| 7808135 | FS30570P (Torx 9IP) | 2,2 N·m | 7808226 | 9IP-D (Torx 9IP) | 7808150 | PS0830 (M8×30) | PMEN09R040M16… |

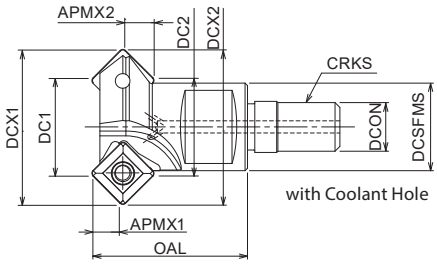
The wrenches are sold separately from the cutters.

# PMEN SF

**Chamfering | Indexables**

INDEX

**NEW**




- Chamfering Cutter
- Body compatible with chamfer angles (KAPR1) 45°,30° and 60°
- With coolant hole
- 8,5 - 35,6 mm

B.566 B.519

| EDP | Designation | KAPR1 | KAPR2 | DC1 | DCX1 | DC2 | DCX2 | APMX1 | APMX2 | ZEFP | DCON | CRKS | Spanner size | OAL | DCSFMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803755 | PMEN09R008SF8-30-45 | 45° | 45° | 8,5 | 19,5 | 16 | 19,5 | 5,7 | 1,7 | 1 | 8,5 | M8 | 10 | 32 | 14,5 |
| | | 30° | 60° | 5,4 | 18,8 | 16 | 19,4 | 4 | 3 | 1 | 8,5 | M8 | 10 | 32 | 14,5 |
| 7803756 | PMEN09R016SF8-30-45 | 45° | 45° | 16,5 | 27,5 | 16,5 | 27,5 | 5,7 | 5,5 | 2 | 8,5 | M8 | 10 | 32 | 14,5 |
| | | 30° | 60° | 13,4 | 26,8 | 19,8 | 27,4 | 4 | 6,8 | 2 | 8,5 | M8 | 10 | 32 | 14,5 |
| 7803757 | PMEN09R020SF10-30-45 | 45° | 45° | 20,5 | 31,5 | 20,5 | 31,5 | 5,7 | 5,5 | 2 | 10,5 | M10 | 14 | 32 | 18 |
| | | 30° | 60° | 17,4 | 30,8 | 23,8 | 31,4 | 4 | 6,8 | 2 | 10,5 | M10 | 14 | 32 | 18 |
| 7803758 | PMEN09R025SF12-30-45 | 45° | 45° | 25,5 | 36,5 | 25,5 | 36,5 | 5,7 | 5,5 | 2 | 12,5 | M12 | 17 | 35 | 23 |
| | | 30° | 60° | 22,4 | 35,8 | 28,8 | 36,4 | 4 | 6,8 | 2 | 12,5 | M12 | 17 | 35 | 23 |
| 7803759 | PMEN09R032SF16-30-45 | 45° | 45° | 32,5 | 43,5 | 32,5 | 43,5 | 5,7 | 5,5 | 3 | 17 | M16 | 22 | 40 | 28 |
| | | 30° | 60° | 29,4 | 42,8 | 35,8 | 43,4 | 4 | 6,8 | 3 | 17 | M16 | 22 | 40 | 28 |
| 7803768 | PMEN09R008SF8-45-60 | 45° | 45° | 8,5 | 19,5 | 16 | 19,5 | 5,7 | 1,7 | 1 | 8,5 | M8 | 10 | 32 | 14,5 |
| | | 60° | 30° | 11,5 | 19,4 | 16 | 18,8 | 7 | 1 | 1 | 8,5 | M8 | 10 | 32 | 14,5 |
| 7803769 | PMEN09R016SF8-45-60 | 45° | 45° | 16,5 | 27,5 | 16,5 | 27,5 | 5,7 | 5,5 | 2 | 8,5 | M8 | 10 | 32 | 14,5 |
| | | 60° | 30° | 19,6 | 27,4 | 16,6 | 26,9 | 7 | 3 | 2 | 8,5 | M8 | 10 | 32 | 14,5 |
| 7803770 | PMEN09R020SF10-45-60 | 45° | 45° | 20,5 | 31,5 | 20,5 | 31,5 | 5,7 | 5,5 | 2 | 10,5 | M10 | 14 | 32 | 18 |
| | | 60° | 30° | 23,6 | 31,4 | 20,6 | 30,9 | 7 | 3 | 2 | 10,5 | M10 | 14 | 32 | 18 |
| 7803771 | PMEN09R025SF12-45-60 | 45° | 45° | 25,5 | 36,5 | 25,5 | 36,5 | 5,7 | 5,5 | 2 | 12,5 | M12 | 17 | 35 | 23 |
| | | 60° | 30° | 28,6 | 36,4 | 25,6 | 35,9 | 7 | 3 | 2 | 12,5 | M12 | 17 | 35 | 23 |
| 7803772 | PMEN09R032SF16-45-60 | 45° | 45° | 32,5 | 43,5 | 32,5 | 43,5 | 5,7 | 5,5 | 3 | 17 | M16 | 22 | 40 | 28 |
| | | 60° | 30° | 35,6 | 43,4 | 32,6 | 42,9 | 7 | 3 | 3 | 17 | M16 | 22 | 40 | 28 |

## Accessories and spare parts

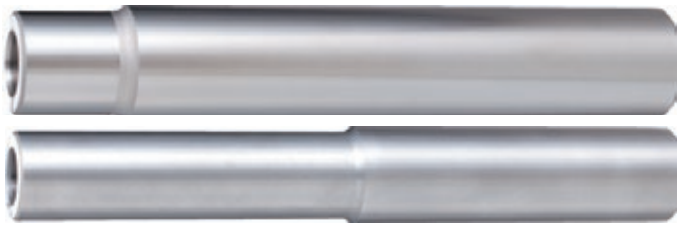
| Clamping screw | Designation | Recommended Tightening Torque | Wrench | Designation | Power screw | Designation | Applicable body |
|---|---|---|---|---|---|---|---|
| 7808135 | FS30570P (Torx 9IP) | 2,2 N·m | 7808226 | 9IP-D (Torx 9IP) | 7808150 | PS0830 (M8×30) | PMEN09R040M16… |

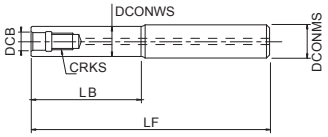
The wrenches are sold separately from the cutters.

# OP-SFA



**Drilling | Indexable**





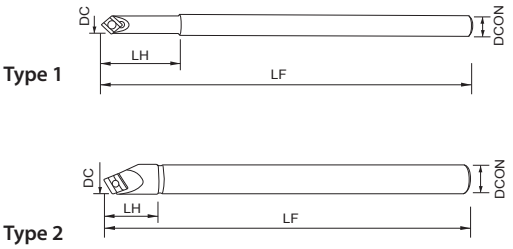

- Arbor for Screw fit type

| EDP | Designation | LF | LB | DCONMS | DCONWS | DCB | CRKS | Specification |
|---|---|---|---|---|---|---|---|---|
| 7801900 | SF-M08SS16-15 | 95 | 15 | 16 | 14,5 | 8,5 | 8 | Steel |
| 7801910 | SF-M08SS16-55CS | 115 | 55 | 16 | 14,5 | 8,5 | 8 | Carbide |
| 7801911 | SF-M08SS16-85CS | 145 | 85 | 16 | 14,5 | 8,5 | 8 | Carbide |

# HY-PRO CARB



**Drilling | Spotting and Chamfering**




- Indexable multi purpose centering and chamfering tool

B.509

| EDP | SIG | DC | LF | LH | DCON | Type |
|---|---|---|---|---|---|---|
| 738015 | 90 | 13,5 | 110 | 28 | 16 | 1 |
| 738055 | 90 | 13,5 | 200 | 28 | 16 | 1 |
| 738025 | 118 | 16,15 | 110 | 28 | 16 | 2 |
| 738065 | 118 | 16,15 | 200 | 28 | 16 | 2 |

## Inserts

| EDP | Designation | Material | RE | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 73811000 | NK1010 | Carbide | 0,6 | | | | | ◉ | | | ◉ | | | | |
| 73812000 | NK2020 | Carbide | 0,6 | | ◉ | | | | | | | | | | |

## Accessories and spare parts

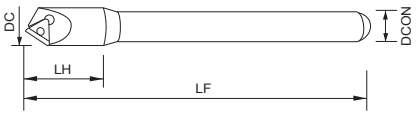
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 13,5 - 16,15 | 73801600 | K-3 | Wrench |
| 13,5 - 16,15 | 73801100 | L-6 | Clamping screw |

# HY-PRO CARB

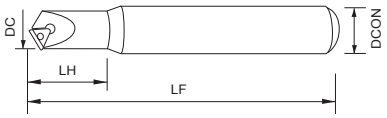


**Drilling | Spotting and Chamfering**

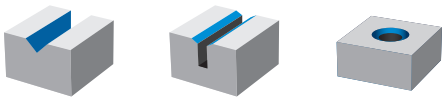
Type 3




Type 4




- Indexable multi purpose centering and chamfering tool



B.509

| EDP | Designation | SIG | DC | LF | LH | DCON | Type |
|---|---|---|---|---|---|---|---|
| 738095 | SFM16SS32190CS | 90 | 22,5 | 130 | 30 | 20 | 3 |
| 738097 | SFM16SS32190CS | 90 | 22,5 | 200 | 50 | 25 | 3 |
| 738096 | SFM16SS32190CS | 120 | 26,6 | 130 | 35 | 25 | 4 |
| 738098 | SFM16SS32190CS | 120 | 26,6 | 200 | 50 | 32 | 4 |

## Inserts

| EDP | Designation | Material | RE | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 73819000 | NK2020 | Carbide | 0,6 | | ◉ | | ◎ | | | | | | | | |
| 73819100 | NK1010 | Carbide | 0,6 | | | | | ◉ | | | ◉ | | | | |

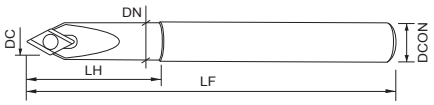
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 22,5 - 26,6 | 73801600 | K-3 | Wrench |
| 22,5 - 26,6 | 73801200 | L-10 | Clamping screw |

# HY-PRO CARB



**Drilling | Spotting and Chamfering**




- Indexable multi purpose centering and chamfering tool

B.509

| EDP | SIG | DC | LF | LH | DN | DCON |
|---|---|---|---|---|---|---|
| 738086 | 60 | 12 | 110 | 25 | 15 | 16 |

Inserts

| EDP | Designation | Material | RE | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 73818006 | ZC16N | Carbide | 0,4 | | | | | ◉ | | | ◉ | | | | |

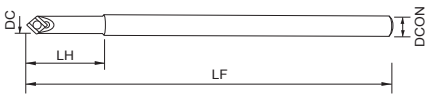
Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 12 | 73801700 | N-6 | Wrench |
| 12 | 73801300 | L-15 | Clamping screw |

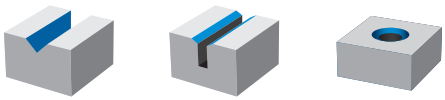
# HY-PRO CARB



**Drilling | Spotting and Chamfering**




- Indexable multi purpose centering and chamfering tool



B.509

| EDP | SIG | DC | LF | LH | DCON |
|---|---|---|---|---|---|
| 738031 | 90 | 9 | 105 | 33 | 10 |
| 738036 | 90 | 9 | 165 | 33 | 10 |

Inserts

| EDP | Designation | Material | RE | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 73813005 | NK5050 | Carbide/TiN | 0,2 | | | | | ◉ | | | ◉ | | | | |

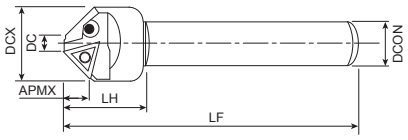
Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 9 | 73801500 | N-5 | Wrench |
| 9 | 73801400 | L-13 | Clamping screw |

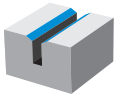
# HY-PRO CARB

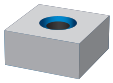


**Drilling | Spotting and Chamfering**




- Indexable multi purpose centering and chamfering tool





B.509

| EDP | SIG | DCX | DC | LF | LH | APMX | DCON |
|---|---|---|---|---|---|---|---|
| 738075 | 90 | 29,4 | 8 | 130 | 30 | 10,7 | 20 |

## Inserts

| EDP | Designation | Material | RE | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 73817000 | NK2001 | Cermet | - | ◎ | | ◎ | | | ◉ | | | | | | |

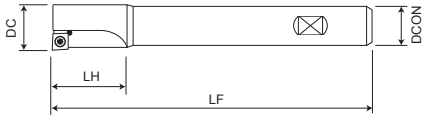
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 29,4 | 73801600 | K-3 | Wrench |
| 29,4 | 73801100 | L-6 | Clamping screw |

# HY-PRO CARB 49030



**Drilling | Boring**




- With steel shank, Weldon flat, DIN 1835B
- For boring pre-drilled and precast holes

B.520

| EDP | DC | a (min) | LF | LH | DCON | ZEFP |
|---|---|---|---|---|---|---|
| 490300980 | 9,8 | 9,3 | 85 | 20 | 8 | 1 |
| 490301080 | 10,8 | 10,3 | 95 | 20 | 10 | 1 |
| 490301180 | 11,8 | 11,3 | 100 | 25 | 10 | 1 |
| 490301280 | 12,8 | 12,3 | 105 | 30 | 10 | 1 |
| 490301380 | 13,8 | 13,3 | 110 | 35 | 10 | 1 |
| 490301480 | 14,8 | 14,3 | 120 | 30 | 12 | 1 |
| 490301580 | 15,8 | 15,3 | 125 | 35 | 12 | 1 |
| 490301680 | 16,8 | 15,8 | 133 | 30 | 16 | 1 |
| 490301780 | 17,8 | 16,8 | 138 | 35 | 16 | 1 |
| 490301880 | 18,8 | 17,8 | 143 | 40 | 16 | 1 |
| 490301980 | 19,8 | 18,8 | 148 | 45 | 16 | 1 |
| 490302080 | 20,8 | 19,8 | 153 | 50 | 16 | 1 |
| 490302180 | 21,8 | 20,8 | 158 | 55 | 16 | 1 |

Inserts

| EDP | Designation | Material | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 413200013 | MPHT 060202,N12 | Carbide | PMK92 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 413200014 | MPHT 060202,N13 | Carbide | CH1 | | | ○ | ○ | | | | ● | | | | |
| 413200015 | MPHT 060202,N14 | Carbide | PMK92 | ● | ● | ● | ● | | | | | | | | |
| 413200016 | MPHW 060202,N15 | Cermet | CT50 | ○ | ● | | | ● | ○ | | | | | | |
| 413200017 | MPHW 060202,N15 | Cermet | CT53 | ○ | ● | | | ○ | ● | | | | | | |

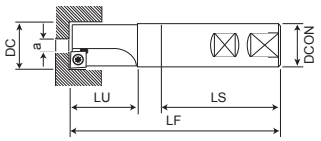
Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 9,8 - 21,8 | 7808205 | T8-D (Torx 8) | Wrench |
| 9,8 - 21,8 | 423300002 | M2,5x4,5 | Clamping screw |

# HY-PRO CARB 49037

INDEX

**Drilling | Counterboring mono**




- To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc.
- Straight shank with Weldon flat, DIN 1835B

B.520

| EDP | DC | a (min) | LF | LU | LS | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 490370800 | 8 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490370900 | 9 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490371000 | 10 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490371100 | 11 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490371200 | 12 | 4 | 80 | 26 | 45 | 12 | 1 |
| 490371300 | 13 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490371400 | 14 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490371500 | 15 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490371600 | 16 | 5 | 90 | 31 | 48 | 16 | 1 |
| 490371700 | 17 | 6 | 90 | 31 | 48 | 16 | 1 |
| 490371800 | 18 | 8 | 90 | 31 | 48 | 16 | 1 |
| 490371900 | 19 | 8 | 90 | 31 | 48 | 16 | 1 |
| 490372000 | 20 | 5 | 100 | 36 | 50 | 20 | 1 |

## Inserts

| EDP | Applicable cutter DC | Designation | Material | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 413200013 | 8 - 19 | MPHT 060202,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200014 | 8 - 19 | MPHT 060202,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200015 | 8 - 19 | MPHT 060202,N14 | Carbide | PMK92 | ● | ● | ● | ● | | | | | | | | |
| 413200016 | 8 - 19 | MPHW 060202,N15 | Cermet | CT50 | ◎ | ● | | | ● | ◎ | | | | | | |
| 413200017 | 8 - 19 | MPHW 060202,N15 | Cermet | CT53 | ◎ | ● | | | ◎ | ● | | | | | | |
| 413200020 | 8 - 19 | MPMT 060204,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200018 | 8 - 19 | MPMT 060204,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200019 | 8 - 19 | MPMT 060204,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200007 | 20 | MCHT 09T304,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200008 | 20 | MCHT 09T304,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200009 | 20 | MCHT 09T304,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200012 | 20 | MCMT 09T308,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200010 | 20 | MCMT 09T308,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200011 | 20 | MCMT 09T308,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |

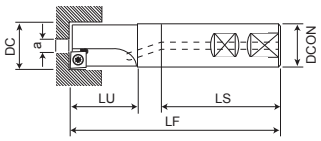
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 8 - 19 | 7808205 | T8-D (Torx 8) | Wrench |
| 20 | 7808208 | T15-D (Torx 15) | Wrench |
| 8 - 19 | 423300002 | M2,5x4,5 | Clamping screw |
| 20 | 423300003 | M4x7,5 | Clamping screw |

# HY-PRO CARB 49038

INDEX

**Drilling | Counterboring mono**




- To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc.
- Straight shank with Weldon flat, DIN 1835B
- With internal coolant supply

B.520

| EDP | DC | a (min) | LF | LU | LS | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 490381000 | 10 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490381100 | 11 | 4 | 80 | 23 | 45 | 12 | 1 |
| 490381200 | 12 | 4 | 80 | 26 | 45 | 12 | 1 |
| 490381300 | 13 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490381400 | 14 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490381500 | 15 | 5 | 80 | 26 | 45 | 12 | 1 |
| 490381600 | 16 | 5 | 90 | 31 | 48 | 16 | 1 |
| 490381700 | 17 | 6 | 90 | 31 | 48 | 16 | 1 |
| 490381800 | 18 | 8 | 90 | 31 | 48 | 16 | 1 |
| 490381900 | 19 | 8 | 90 | 31 | 48 | 16 | 1 |
| 490382000 | 20 | 5 | 100 | 36 | 50 | 20 | 1 |
| 490382100 | 21 | 5 | 100 | 36 | 50 | 20 | 1 |
| 490382200 | 22 | 6 | 100 | 36 | 50 | 20 | 1 |
| 490382300 | 23 | 6 | 100 | 36 | 50 | 20 | 1 |
| 490382400 | 24 | 8 | 100 | 36 | 50 | 20 | 1 |
| 490382500 | 25 | 8 | 120 | 43 | 56 | 25 | 1 |
| 490382600 | 26 | 10 | 120 | 43 | 56 | 25 | 1 |
| 490382700 | 27 | 10 | 120 | 43 | 56 | 25 | 1 |
| 490382800 | 28 | 12 | 120 | 43 | 56 | 25 | 1 |
| 490382900 | 29 | 12 | 120 | 43 | 56 | 25 | 1 |
| 490383000 | 30 | 14 | 120 | 43 | 56 | 25 | 1 |

Inserts

| EDP | Applicable cutter DC | Designation | Material | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 413200013 | 10 - 19 | MPHT 060202,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200014 | 10 - 19 | MPHT 060202,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200015 | 10 - 19 | MPHT 060202,N14 | Carbide | PMK92 | ● | ● | ● | ● | | | | | | | | |
| 413200016 | 10 - 19 | MPHW 060202,N15 | Cermet | CT50 | ◎ | ● | | | ● | ◎ | | | | | | |
| 413200017 | 10 - 19 | MPHW 060202,N15 | Cermet | CT53 | ◎ | ● | | | ◎ | ● | | | | | | |
| 413200020 | 10 - 19 | MPMT 060204,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200018 | 10 - 19 | MPMT 060204,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200019 | 10 - 19 | MPMT 060204,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200007 | 20 - 30 | MCHT 09T304,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200008 | 20 - 30 | MCHT 09T304,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200009 | 20 - 30 | MCHT 09T304,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200012 | 20 - 30 | MCMT 09T308,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200010 | 20 - 30 | MCMT 09T308,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200011 | 20 - 30 | MCMT 09T308,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |

Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 10 - 19 | 7808205 | T8-D (Torx 8) | Wrench |
| 20 - 30 | 7808208 | T15-D (Torx 15) | Wrench |
| 10 - 19 | 423300002 | M2,5x4,5 | Clamping screw |
| 20 - 30 | 423300003 | M4x7,5 | Clamping screw |

# HY-PRO CARB 49039

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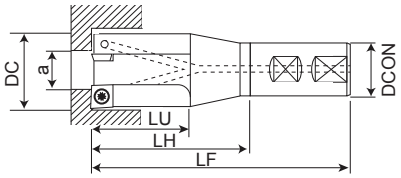
**Drilling | Counterboring multi**




- To produce counterbores for cap screws, hex screwheads, ejectors, spot facing, gasket seats etc.
- Straight shank with Weldon flat, DIN 1835B
- With internal coolant supply

B.520

| EDP | DC | a (min) | LF | LU | LH | DCON | ZEFP |
|---|---|---|---|---|---|---|---|
| 490391500 | 15 | 4 | 100 | 30 | 40 | 20 | 2 |
| 490391800 | 18 | 6 | 100 | 30 | 40 | 20 | 2 |
| 490392000 | 20 | 8 | 100 | 30 | 40 | 20 | 2 |
| 490392200 | 22 | 10 | 100 | 30 | 40 | 20 | 2 |
| 490392400 | 24 | 6 | 136 | 50 | 68 | 25 | 2 |
| 490392600 | 26 | 8 | 136 | 50 | 68 | 25 | 2 |
| 490392800 | 28 | 10 | 136 | 50 | 68 | 25 | 2 |
| 490393000 | 30 | 12 | 136 | 50 | 66 | 32 | 3 |
| 490393300 | 33 | 15 | 136 | 50 | 66 | 32 | 3 |
| 490393600 | 36 | 18 | 136 | 50 | 66 | 32 | 3 |
| 490394000 | 40 | 16 | 136 | 50 | 66 | 32 | 3 |

Inserts

| EDP | Applicable cutter DC | Designation | Material | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 413200013 | 15 - 22 | MPHT 060202,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200014 | 15 - 22 | MPHT 060202,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200015 | 15 - 22 | MPHT 060202,N14 | Carbide | PMK92 | ● | ● | ● | ● | | | | | | | | |
| 413200016 | 15 - 22 | MPHW 060202,N15 | Cermet | CT50 | ◎ | ● | | | ● | ◎ | | | | | | |
| 413200017 | 15 - 22 | MPHW 060202,N15 | Cermet | CT53 | ◎ | ● | | | ◎ | ● | | | | | | |
| 413200020 | 15 - 22 | MPMT 060204,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200018 | 15 - 22 | MPMT 060204,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200019 | 15 - 22 | MPMT 060204,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200007 | 24 - 36 | MCHT 09T304,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200008 | 24 - 36 | MCHT 09T304,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200009 | 24 - 36 | MCHT 09T304,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200012 | 24 - 36 | MCMT 09T308,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200010 | 24 - 36 | MCMT 09T308,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200011 | 24 - 36 | MCMT 09T308,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200001 | 40 | MBHT 120404,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200002 | 40 | MBHT 120404,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200003 | 40 | MBHT 120404,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200006 | 40 | MBMT 120408,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200004 | 40 | MBMT 120408,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200005 | 40 | MBMT 120408,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |

Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 15 - 22 | 7808205 | T8-D (Torx 8) | Wrench |
| 24 - 40 | 7808208 | T15-D (Torx 15) | Wrench |
| 15 - 22 | 423300002 | M2,5x4,5 | Clamping screw |
| 24 - 36 | 423300003 | M4x7,5 | Clamping screw |
| 40 | 423300004 | M4x9,5 | Clamping screw |

# HY-PRO CARB 49100

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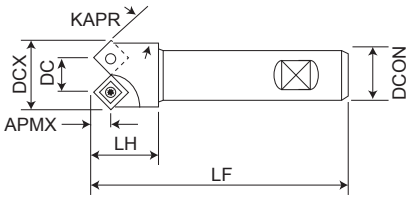
**Drilling | Chamfering and face milling**




- For chamfering, countersinking, facing, etc.
- Straight shank with Weldon flat, DIN 1835B

B.520

| EDP | DCX | KAPR | DC | LF | LH | APMX | DCON | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 491001345 | 13 | 45 | 6 | 80 | 16 | 4 | 10 | 1 |
| 491001915 | 19 | 15 | 16 | 90 | 19 | 6 | 16 | 2 |
| 491001930 | 19 | 30 | 13 | 90 | 18 | 5,5 | 16 | 2 |
| 491001945 | 19 | 45 | 11 | 90 | 18 | 4 | 16 | 2 |
| 491002645 | 26 | 45 | 15 | 100 | 26 | 6 | 20 | 2 |
| 491003260 | 32 | 60 | 17,5 | 100 | 30 | 4 | 20 | 2 |
| 491003275 | 32 | 75 | 15,5 | 100 | 30 | 2 | 20 | 2 |
| 491004015 | 40 | 15 | 34 | 120 | 36 | 10 | 25 | 2 |
| 491004030 | 40 | 30 | 28 | 120 | 38 | 10,5 | 25 | 2 |
| 491004045 | 40 | 45 | 25 | 120 | 38 | 8 | 25 | 2 |

## Inserts

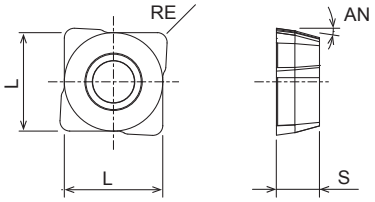
| EDP | Applicable cutter DC | Designation | Material | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | dry | 💧 | dry | 💧 | GG | GGG | dry | 💧 | dry | 💧 | dry | 💧 |
| 413200013 | 13 - 19 | MPHT 060202,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200014 | 13 - 19 | MPHT 060202,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200015 | 13 - 19 | MPHT 060202,N14 | Carbide | PMK92 | ● | ● | ● | ● | | | | | | | | |
| 413200016 | 13 - 19 | MPHW 060202,N15 | Cermet | CT50 | ◎ | ● | | | ● | ◎ | | | | | | |
| 413200017 | 13 - 19 | MPHW 060202,N15 | Cermet | CT53 | ◎ | ● | | | ◎ | ● | | | | | | |
| 413200020 | 13 - 19 | MPMT 060204,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200018 | 13 - 19 | MPMT 060204,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200019 | 13 - 19 | MPMT 060204,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200007 | 26 - 32 | MCHT 09T304,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200008 | 26 - 32 | MCHT 09T304,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200009 | 26 - 32 | MCHT 09T304,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200012 | 26 - 32 | MCMT 09T308,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200010 | 26 - 32 | MCMT 09T308,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200011 | 26 - 32 | MCMT 09T308,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |
| 413200001 | 40 | MBHT 120404,N12 | Carbide | PMK92 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 413200002 | 40 | MBHT 120404,N13 | Carbide | CH1 | | | ◎ | ◎ | | | | ● | | | | |
| 413200003 | 40 | MBHT 120404,N14 | Carbide | PMK92 | | | ● | ● | | | | | | | | |
| 413200006 | 40 | MBMT 120408,N12 | Carbide | PMK92 | ● | ● | | | | | | | | | | |
| 413200004 | 40 | MBMT 120408,N12 | Carbide | CH1 | | | | | ● | ◎ | | | | | | |
| 413200005 | 40 | MBMT 120408,N12 | Carbide | KM22 | | | | | ◎ | ● | | | | | | |

## Accessories and spare parts

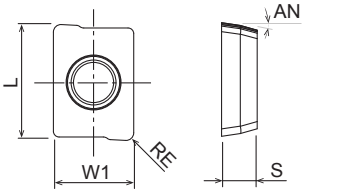
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 13 -19 | 7808205 | T8-D (Torx 8) | Wrench |
| 26 - 40 | 7808208 | T15-D (Torx 15) | Wrench |
| 13 - 19 | 423300002 | M2,5x4,5 | Clamping screw |
| 26 - 32 | 423300003 | M4x7,5 | Clamping screw |
| 40 | 423300004 | M4x9,5 | Clamping screw |

- Applicable insert for PD drill

Type 1

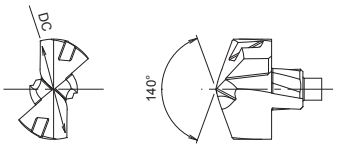



Type 2




B.526

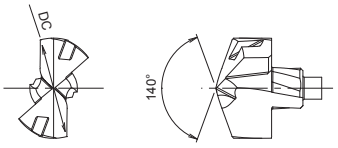
| EDP | Designation | W1 | L | S | AN | RE | Grade | P | | M | | K | | N | | S | | H | | Applicable body DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | | |
| 7823098 | XCMT031904ER-DM | 6,1 | 4,5 | 1,9 | 8 | 0,4 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 12-14,5 |
| 7823064 | XCMT042204ER-DM | - | 5 | 2,2 | 8 | 0,4 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 15-16,5 |
| 7823065 | XCMT052404ER-DM | - | 5,83 | 2,4 | 8 | 0,4 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 17-18,5 |
| 7823066 | XCMT062706ER-DM | - | 6,46 | 2,7 | 8 | 0,6 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 19-20,5 |
| 7823067 | XCMT073106ER-DM | - | 7,11 | 3,1 | 8 | 0,6 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 21-24,5 |
| 7823068 | XCMT083508ER-DM | - | 8,36 | 3,5 | 8 | 0,8 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 25-28,5 |
| 7823069 | XCMT094008ER-DM | - | 9,62 | 4 | 8 | 0,8 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 29-33,5 |
| 7823097 | XCMT104608ER-DM | - | 10,89 | 4,6 | 8 | 0,8 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 34-38 |
| 7823071 | XCMT125010ER-DM | - | 12,57 | 5 | 8 | 1 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 39-44 |
| 7823072 | XCMT135212ER-DM | - | 14,05 | 5,2 | 8 | 1,2 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 45-49 |
| 7823073 | XCMT145612ER-DM | - | 15,58 | 5,6 | 8 | 1,2 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 50-56 |
| 7823075 | XCMT165912ER-DM | - | 17,28 | 5,9 | 8 | 1,2 | XP9020 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 57-63 |
| 7823163 | XCMT031904ER-DR | 6,1 | 4,5 | 1,9 | 8 | 0,4 | XP1010 | | ◎ | | | ● | ● | | | | | | | 12-14,5 |
| 7823164 | XCMT042204ER-DR | - | 5 | 2,2 | 8 | 0,4 | XP1010 | | ◎ | | | ● | ● | | | | | | | 15-16,5 |
| 7823165 | XCMT052404ER-DR | - | 5,83 | 2,4 | 8 | 0,4 | XP1010 | | ◎ | | | ● | ● | | | | | | | 17-18,5 |
| 7823166 | XCMT062706ER-DR | - | 6,46 | 2,7 | 8 | 0,6 | XP1010 | | ◎ | | | ● | ● | | | | | | | 19-20,5 |
| 7823167 | XCMT073106ER-DR | - | 7,11 | 3,1 | 8 | 0,6 | XP1010 | | ◎ | | | ● | ● | | | | | | | 21-24,5 |
| 7823168 | XCMT083508ER-DR | - | 8,36 | 3,5 | 8 | 0,8 | XP1010 | | ◎ | | | ● | ● | | | | | | | 25-28,5 |
| 7823169 | XCMT094008ER-DR | - | 9,62 | 4 | 8 | 0,8 | XP1010 | | ◎ | | | ● | ● | | | | | | | 29-33,5 |
| 7823197 | XCMT104608ER-DR | - | 10,89 | 4,6 | 8 | 0,8 | XP1010 | | ◎ | | | ● | ● | | | | | | | 34-38 |
| 7823171 | XCMT125010ER-DR | - | 12,57 | 5 | 8 | 1 | XP1010 | | ◎ | | | ● | ● | | | | | | | 39-44 |
| 7823172 | XCMT135212ER-DR | - | 14,05 | 5,2 | 8 | 1,2 | XP1010 | | ◎ | | | ● | ● | | | | | | | 45-49 |
| 7823173 | XCMT145612ER-DR | - | 15,58 | 5,6 | 8 | 1,2 | XP1010 | | ◎ | | | ● | ● | | | | | | | 50-56 |
| 7823175 | XCMT165912ER-DR | - | 17,28 | 5,9 | 8 | 1,2 | XP1010 | | ◎ | | | ● | ● | | | | | | | 57-63 |
| 7823263 | XCMT031904ER-DN | 6,1 | 4,5 | 1,9 | 8 | 0,4 | CK110 | | | | | | | | ● | | | | | 12-14,5 |
| 7823264 | XCMT042204ER-DN | - | 5 | 2,2 | 8 | 0,4 | CK110 | | | | | | | | ● | | | | | 15-16,5 |
| 7823265 | XCMT052404ER-DN | - | 5,83 | 2,4 | 8 | 0,4 | CK110 | | | | | | | | ● | | | | | 17-18,5 |
| 7823266 | XCMT062706ER-DN | - | 6,46 | 2,7 | 8 | 0,6 | CK110 | | | | | | | | ● | | | | | 19-20,5 |
| 7823267 | XCMT073106ER-DN | - | 7,11 | 3,1 | 8 | 0,6 | CK110 | | | | | | | | ● | | | | | 21-24,5 |
| 7823268 | XCMT083508ER-DN | - | 8,36 | 3,5 | 8 | 0,8 | CK110 | | | | | | | | ● | | | | | 25-28,5 |
| 7823269 | XCMT094008ER-DN | - | 9,62 | 4 | 8 | 0,8 | CK110 | | | | | | | | ● | | | | | 29-33,5 |
| 7823297 | XCMT104608ER-DN | - | 10,89 | 4,6 | 8 | 0,8 | CK110 | | | | | | | | ● | | | | | 34-38 |
| 7823271 | XCMT125010ER-DN | - | 12,57 | 5 | 8 | 1 | CK110 | | | | | | | | ● | | | | | 39-44 |
| 7823272 | XCMT135212ER-DN | - | 14,05 | 5,2 | 8 | 1,2 | CK110 | | | | | | | | ● | | | | | 45-49 |
| 7823273 | XCMT145612ER-DN | - | 15,58 | 5,6 | 8 | 1,2 | CK110 | | | | | | | | ● | | | | | 50-56 |
| 7823275 | XCMT165912ER-DN | - | 17,28 | 5,9 | 8 | 1,2 | CK110 | | | | | | | | ● | | | | | 57-63 |




- Applicable head for steel

B.536

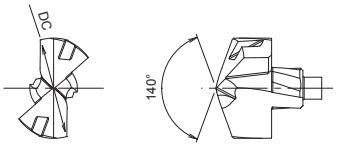
| EDP | Designation | DC | Grade | P | | Applicable body DC |
|---|---|---|---|---|---|---|
| | | | | dry | | |
| 7831140 | PXDH1400-PC | 14 | XP3425 | | ◉ | PXDZ140 |
| 7831145 | PXDH1450-PC | 14,5 | XP3425 | | ◉ | PXDZ145 |
| 7831351 | PXDH1495-PC | 14,95 | XP3425 | | ◉ | PXDZ145 |
| 7831150 | PXDH1500-PC | 15 | XP3425 | | ◉ | PXDZ150 |
| 7831352 | PXDH1525-PC | 15,25 | XP3425 | | ◉ | PXDZ150 |
| 7831155 | PXDH1550-PC | 15,5 | XP3425 | | ◉ | PXDZ150 |
| 7831160 | PXDH1600-PC | 16 | XP3425 | | ◉ | PXDZ160 |
| 7831165 | PXDH1650-PC | 16,5 | XP3425 | | ◉ | PXDZ160 |
| 7831167 | PXDH1670-PC | 16,7 | XP3425 | | ◉ | PXDZ160 |
| 7831170 | PXDH1700-PC | 17 | XP3425 | | ◉ | PXDZ170 |
| 7831353 | PXDH1725-PC | 17,25 | XP3425 | | ◉ | PXDZ170 |
| 7831175 | PXDH1750-PC | 17,5 | XP3425 | | ◉ | PXDZ170 |
| 7831180 | PXDH1800-PC | 18 | XP3425 | | ◉ | PXDZ180 |
| 7831185 | PXDH1850-PC | 18,5 | XP3425 | | ◉ | PXDZ180 |
| 7831187 | PXDH1870-PC | 18,7 | XP3425 | | ◉ | PXDZ180 |
| 7831190 | PXDH1900-PC | 19 | XP3425 | | ◉ | PXDZ190 |
| 7831354 | PXDH1925-PC | 19,25 | XP3425 | | ◉ | PXDZ190 |
| 7831195 | PXDH1950-PC | 19,5 | XP3425 | | ◉ | PXDZ190 |
| 7831200 | PXDH2000-PC | 20 | XP3425 | | ◉ | PXDZ200 |
| 7831205 | PXDH2050-PC | 20,5 | XP3425 | | ◉ | PXDZ200 |
| 7831207 | PXDH2070-PC | 20,7 | XP3425 | | ◉ | PXDZ200 |
| 7831210 | PXDH2100-PC | 21 | XP3425 | | ◉ | PXDZ210 |
| 7831355 | PXDH2125-PC | 21,25 | XP3425 | | ◉ | PXDZ210 |
| 7831215 | PXDH2150-PC | 21,5 | XP3425 | | ◉ | PXDZ210 |
| 7831220 | PXDH2200-PC | 22 | XP3425 | | ◉ | PXDZ220 |
| 7831224 | PXDH2240-PC | 22,4 | XP3425 | | ◉ | PXDZ220 |
| 7831225 | PXDH2250-PC | 22,5 | XP3425 | | ◉ | PXDZ220 |
| 7831230 | PXDH2300-PC | 23 | XP3425 | | ◉ | PXDZ230 |
| 7831356 | PXDH2325-PC | 23,25 | XP3425 | | ◉ | PXDZ230 |
| 7831235 | PXDH2350-PC | 23,5 | XP3425 | | ◉ | PXDZ230 |
| 7831240 | PXDH2400-PC | 24 | XP3425 | | ◉ | PXDZ240 |
| 7831245 | PXDH2450-PC | 24,5 | XP3425 | | ◉ | PXDZ240 |
| 7831250 | PXDH2500-PC | 25 | XP3425 | | ◉ | PXDZ250 |
| 7831254 | PXDH2540-PC | 25,4 | XP3425 | | ◉ | PXDZ250 |




- Applicable head for cast iron

B.536

| EDP | Designation | DC | Grade | K | | Applicable body DC |
|---|---|---|---|---|---|---|
| | | | | dry | | |
| 7831440 | PXDH1400-KC | 14 | XP1425 | | ◉ | PXDZ140 |
| 7831445 | PXDH1450-KC | 14,5 | XP1425 | | ◉ | PXDZ145 |
| 7831450 | PXDH1500-KC | 15 | XP1425 | | ◉ | PXDZ150 |
| 7831455 | PXDH1550-KC | 15,5 | XP1425 | | ◉ | PXDZ150 |
| 7831460 | PXDH1600-KC | 16 | XP1425 | | ◉ | PXDZ160 |
| 7831465 | PXDH1650-KC | 16,5 | XP1425 | | ◉ | PXDZ160 |
| 7831467 | PXDH1670-KC | 16,7 | XP1425 | | ◉ | PXDZ160 |
| 7831470 | PXDH1700-KC | 17 | XP1425 | | ◉ | PXDZ170 |
| 7831475 | PXDH1750-KC | 17,5 | XP1425 | | ◉ | PXDZ170 |
| 7831480 | PXDH1800-KC | 18 | XP1425 | | ◉ | PXDZ180 |
| 7831485 | PXDH1850-KC | 18,5 | XP1425 | | ◉ | PXDZ180 |
| 7831487 | PXDH1870-KC | 18,7 | XP1425 | | ◉ | PXDZ180 |
| 7831490 | PXDH1900-KC | 19 | XP1425 | | ◉ | PXDZ190 |
| 7831495 | PXDH1950-KC | 19,5 | XP1425 | | ◉ | PXDZ190 |
| 7831500 | PXDH2000-KC | 20 | XP1425 | | ◉ | PXDZ200 |
| 7831505 | PXDH2050-KC | 20,5 | XP1425 | | ◉ | PXDZ200 |
| 7831507 | PXDH2070-KC | 20,7 | XP1425 | | ◉ | PXDZ200 |
| 7831510 | PXDH2100-KC | 21 | XP1425 | | ◉ | PXDZ210 |
| 7831515 | PXDH2150-KC | 21,5 | XP1425 | | ◉ | PXDZ210 |
| 7831520 | PXDH2200-KC | 22 | XP1425 | | ◉ | PXDZ220 |
| 7831524 | PXDH2240-KC | 22,4 | XP1425 | | ◉ | PXDZ200 |
| 7831525 | PXDH2250-KC | 22,5 | XP1425 | | ◉ | PXDZ220 |
| 7831530 | PXDH2300-KC | 23 | XP1425 | | ◉ | PXDZ230 |
| 7831535 | PXDH2350-KC | 23,5 | XP1425 | | ◉ | PXDZ230 |
| 7831540 | PXDH2400-KC | 24 | XP1425 | | ◉ | PXDZ240 |
| 7831545 | PXDH2450-KC | 24,5 | XP1425 | | ◉ | PXDZ240 |
| 7831550 | PXDH2500-KC | 25 | XP1425 | | ◉ | PXDZ250 |
| 7831554 | PXDH2540-KC | 25,4 | XP1425 | | ◉ | PXDZ250 |



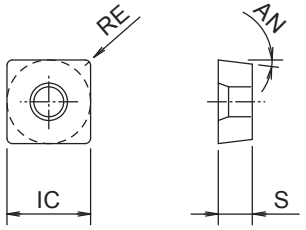

- Applicable head for non ferrous metals

B.536

| EDP | Designation | DC | Grade | N | | Applicable body DC |
|---|---|---|---|---|---|---|
| | | | | dry | | |
| 7831740 | PXDH1400-NC | 14 | CF225 | | ◉ | PXDZ140 |
| 7831745 | PXDH1450-NC | 14,5 | CF225 | | ◉ | PXDZ145 |
| 7831750 | PXDH1500-NC | 15 | CF225 | | ◉ | PXDZ150 |
| 7831755 | PXDH1550-NC | 15,5 | CF225 | | ◉ | PXDZ150 |
| 7831760 | PXDH1600-NC | 16 | CF225 | | ◉ | PXDZ160 |
| 7831765 | PXDH1650-NC | 16,5 | CF225 | | ◉ | PXDZ160 |
| 7831767 | PXDH1670-NC | 16,7 | CF225 | | ◉ | PXDZ160 |
| 7831770 | PXDH1700-NC | 17 | CF225 | | ◉ | PXDZ170 |
| 7831775 | PXDH1750-NC | 17,5 | CF225 | | ◉ | PXDZ170 |
| 7831780 | PXDH1800-NC | 18 | CF225 | | ◉ | PXDZ180 |
| 7831785 | PXDH1850-NC | 18,5 | CF225 | | ◉ | PXDZ180 |
| 7831787 | PXDH1870-NC | 18,7 | CF225 | | ◉ | PXDZ180 |
| 7831790 | PXDH1900-NC | 19 | CF225 | | ◉ | PXDZ190 |
| 7831795 | PXDH1950-NC | 19,5 | CF225 | | ◉ | PXDZ190 |
| 7831800 | PXDH2000-NC | 20 | CF225 | | ◉ | PXDZ200 |
| 7831805 | PXDH2050-NC | 20,5 | CF225 | | ◉ | PXDZ200 |
| 7831807 | PXDH2070-NC | 20,7 | CF225 | | ◉ | PXDZ200 |
| 7831810 | PXDH2100-NC | 21 | CF225 | | ◉ | PXDZ210 |
| 7831815 | PXDH2150-NC | 21,5 | CF225 | | ◉ | PXDZ210 |
| 7831820 | PXDH2200-NC | 22 | CF225 | | ◉ | PXDZ220 |
| 7831824 | PXDH2240-NC | 22,4 | CF225 | | ◉ | PXDZ220 |
| 7831825 | PXDH2250-NC | 22,5 | CF225 | | ◉ | PXDZ220 |
| 7831830 | PXDH2300-NC | 23 | CF225 | | ◉ | PXDZ230 |
| 7831835 | PXDH2350-NC | 23,5 | CF225 | | ◉ | PXDZ230 |
| 7831840 | PXDH2400-NC | 24 | CF225 | | ◉ | PXDZ240 |
| 7831845 | PXDH2450-NC | 24,5 | CF225 | | ◉ | PXDZ240 |
| 7831850 | PXDH2500-NC | 25 | CF225 | | ◉ | PXDZ250 |
| 7831854 | PXDH2540-NC | 25,4 | CF225 | | ◉ | PXDZ250 |

# PHP

## Drilling | Indexable | Inserts and heads



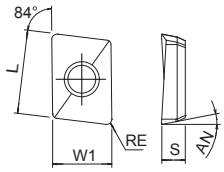

- Applicable insert for PHP drill

B.538

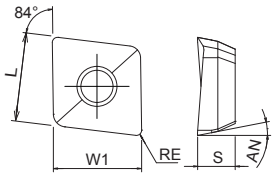
| EDP | Designation | IC | S | AN | RE | Grade | P | | M | | K | | N | | S | | H | | Applicable body DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | | |
| 7818001 | SCMT042204-DM | 4,8 | 2,2 | 7 | 0,4 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 14-16 |
| 7818002 | SCMT052404-DM | 5,4 | 2,4 | 7 | 0,4 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 16,5-18 |
| 7818003 | SCMT062806-DM | 6,2 | 2,8 | 7 | 0,6 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 18,5-20,5 |
| 7818004 | SCMT073206-DM | 7,2 | 3,2 | 7 | 0,6 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 21-24 |
| 7818005 | SCMT083608-DM | 8,6 | 3,6 | 7 | 0,8 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 24,5-28 |
| 7818006 | SCMT104208-DM | 10 | 4,2 | 7 | 0,8 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 29-34 |
| 7818007 | SCMT125008-DM | 12,3 | 5 | 7 | 0,8 | XP9040 | | ● | | ● | | | | ● | | ○ | | | 35-40 |
| 7817001 | SCMT042204-DM | 4,8 | 2,2 | 7 | 0,4 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 14-16 |
| 7817002 | SCMT052404-DM | 5,4 | 2,4 | 7 | 0,4 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 16,5-18 |
| 7817003 | SCMT062806-DM | 6,2 | 2,8 | 7 | 0,6 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 18,5-20,5 |
| 7817004 | SCMT073206-DM | 7,2 | 3,2 | 7 | 0,6 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 21-24 |
| 7817005 | SCMT083608-DM | 8,6 | 3,6 | 7 | 0,8 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 24,5-28 |
| 7817006 | SCMT104208-DM | 10 | 4,2 | 7 | 0,8 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 29-34 |
| 7817007 | SCMT125008-DM | 12,3 | 5 | 7 | 0,8 | XP9025 | | ○ | | ○ | | ● | | ○ | | | | | 35-40 |

- Counterboring cutter
- 2 corners inserts

Type 1




Type 2

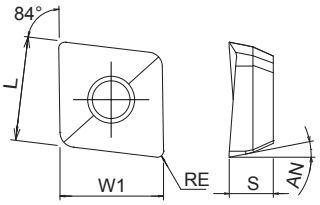



B.540

| EDP | Designation | W1 | L | S | AN | RE | Type | Grade | P | | M | | K | | N | | S | | H | | Applicable body DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | | |
| 7814101 | ZPNT040104ER | 6,35 | 4,45 | 1,76 | 11 | 0,4 | 1 | XP8030 | | ● | | ● | ○ | ○ | | ○ | | ○ | | ○ | 14 |
| 7814103 | ZPNT060204EN | 6,95 | 6,95 | 2,93 | 11 | 0,4 | 2 | XP8030 | | ● | | ● | ○ | ○ | | ○ | | ○ | | ○ | 17,5-23 |
| 7814106 | ZPNT090404EN | 9,94 | 9,94 | 4,65 | 11 | 0,4 | 2 | XP8030 | | ● | | ● | ○ | ○ | | ○ | | ○ | | ○ | 26-48 |
| 7814109 | ZPNT130504EN | 13,92 | 13,92 | 5,46 | 11 | 0,4 | 2 | XP8030 | | ● | | ● | ○ | ○ | | ○ | | ○ | | ○ | 54-72 |
| 7814111 | ZPNT170608EN | 17,85 | 17,85 | 6,31 | 11 | 0,8 | 2 | XP8030 | | ● | | ● | ○ | ○ | | ○ | | ○ | | ○ | 76-82 |
| 7815101 | ZPNT040104ER | 6,35 | 4,45 | 1,76 | 11 | 0,4 | 1 | XC8035 | ○ | ○ | | ○ | ● | ● | | | | | | | 14 |
| 7815103 | ZPNT060204EN | 6,95 | 6,95 | 2,93 | 11 | 0,4 | 2 | XC8035 | ○ | ○ | | ○ | ● | ● | | | | | | | 17,5-23 |
| 7815106 | ZPNT090404EN | 9,94 | 9,94 | 4,65 | 11 | 0,4 | 2 | XC8035 | ○ | ○ | | ○ | ● | ● | | | | | | | 26-48 |
| 7815109 | ZPNT130504EN | 13,92 | 13,92 | 5,46 | 11 | 0,4 | 2 | XC8035 | ○ | ○ | | ○ | ● | ● | | | | | | | 54-72 |
| 7815111 | ZPNT170608EN | 17,85 | 17,85 | 6,31 | 11 | 0,8 | 2 | XC8035 | ○ | ○ | | ○ | ● | ● | | | | | | | 76-82 |

# PDZ

**Drilling | Indexable | Inserts and heads**



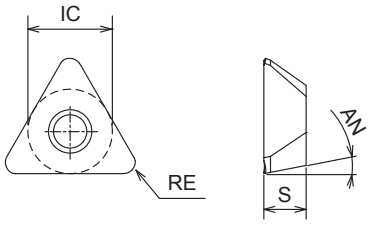

- Counterboring cutter
- 2 corners inserts

B.528

| EDP | Designation | W1 | L | S | AN | RE | Specification | Grade | P | | M | | K | | N | | S | | H | | Applicable body DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | | |
| 7814102 | ZPNT050204EN | 5,9 | 5,9 | 2,25 | 11 | 0,4 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 16-18,5 |
| 7814103 | ZPNT060204EN | 6,95 | 6,95 | 2,93 | 11 | 0,4 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 19-22 |
| 7814104 | ZPNT070304EN | 7,84 | 7,84 | 3,87 | 11 | 0,4 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 23-26 |
| 7814105 | ZPNT080304EN | 8,85 | 8,85 | 3,92 | 11 | 0,4 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 27-31 |
| 7814106 | ZPNT090404EN | 9,94 | 9,94 | 4,65 | 11 | 0,4 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 32-34 |
| 7814108 | ZPNT100408EN | 10,95 | 10,95 | 4,65 | 11 | 0,8 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 35-38 |
| 7814110 | ZPNT130508EN | 13,92 | 13,92 | 5,46 | 11 | 0,8 | Center cutting | XP8030 | | ● | | ● | ◎ | ◎ | | ◎ | | ◎ | | ◎ | 39-43 |
| 7815102 | ZPNT050204EN | 5,9 | 5,9 | 2,25 | 11 | 0,4 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 16-18,5 |
| 7815103 | ZPNT060204EN | 6,95 | 6,95 | 2,93 | 11 | 0,4 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 19-22 |
| 7815104 | ZPNT070304EN | 7,84 | 7,84 | 3,87 | 11 | 0,4 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 23-26 |
| 7815105 | ZPNT080304EN | 8,85 | 8,85 | 3,92 | 11 | 0,4 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 27-31 |
| 7815106 | ZPNT090404EN | 9,94 | 9,94 | 4,65 | 11 | 0,4 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 32-34 |
| 7815108 | ZPNT100408EN | 10,95 | 10,95 | 4,65 | 11 | 0,8 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 35-38 |
| 7815110 | ZPNT130508EN | 13,92 | 13,92 | 5,46 | 11 | 0,8 | Peripheral | XC8035 | ◎ | ◎ | | ◎ | ● | ● | | | | | | | | 39-43 |

# PLDS

**Drilling | Indexable | Inserts and heads**




- Applicable insert for PLDS drill

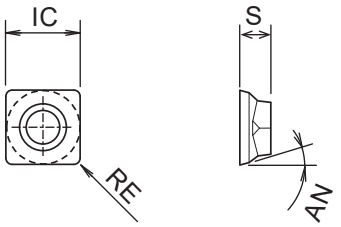
B.542

| EDP | Designation | IC | S | AN | RE | Grade | P | | M | | K | | N | | S | | H | | Applicable body DC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | | |
| 7814205 | TPKT110308ER-DM | 6,35 | 3,18 | 11 | 0,8 | XP9020 | | ● | | ○ | ● | ● | | ○ | | ○ | | ○ | 14,4-17,3 |
| 7813205 | TPKT110308ER-DM | 6,35 | 3,18 | 11 | 0,8 | XP2040 | ○ | ○ | ○ | ● | | | | ○ | | ● | | ● | 14,4-17,3 |

# PMEN

## Chamfering | Indexables

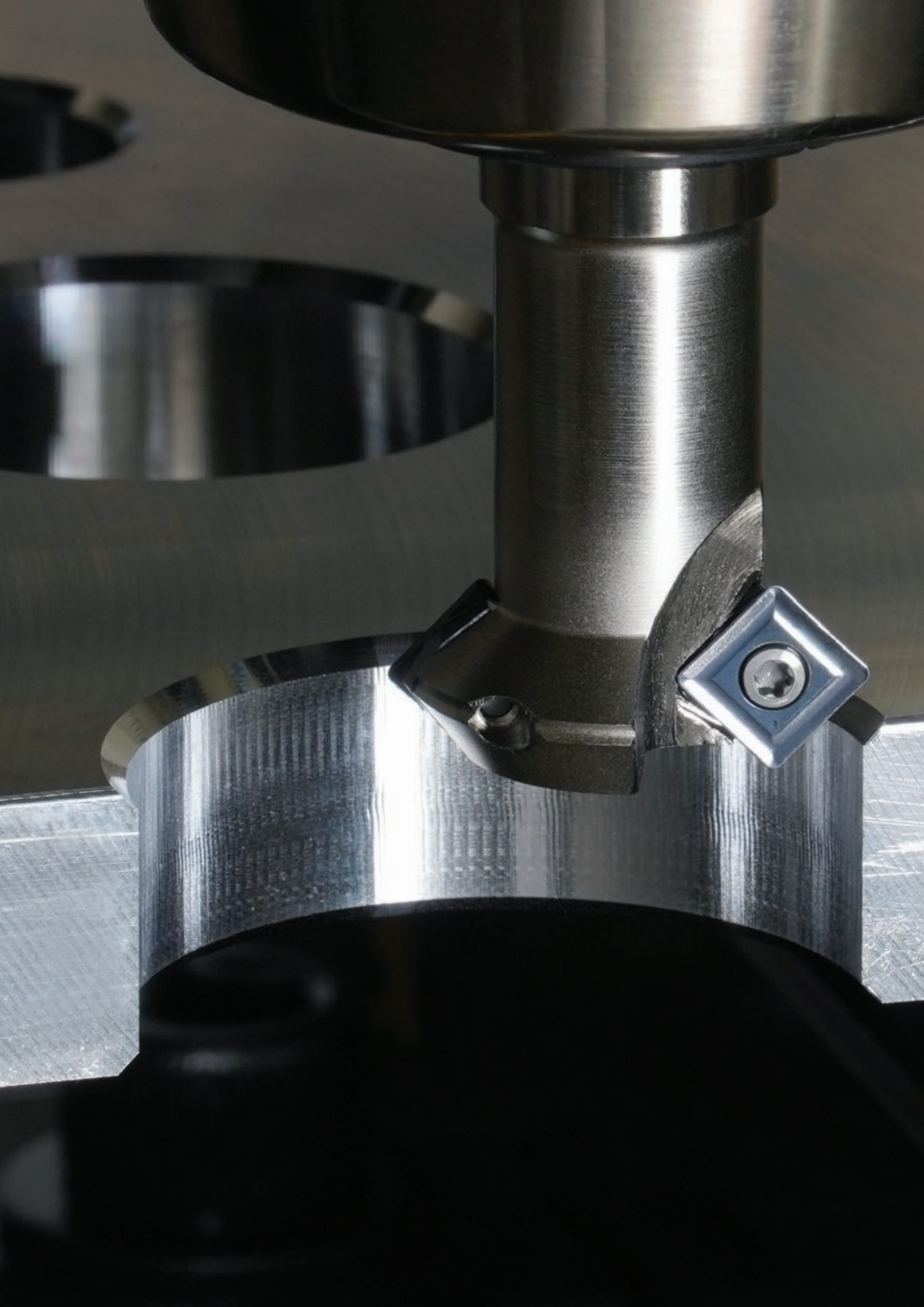
## INSERTS NEW



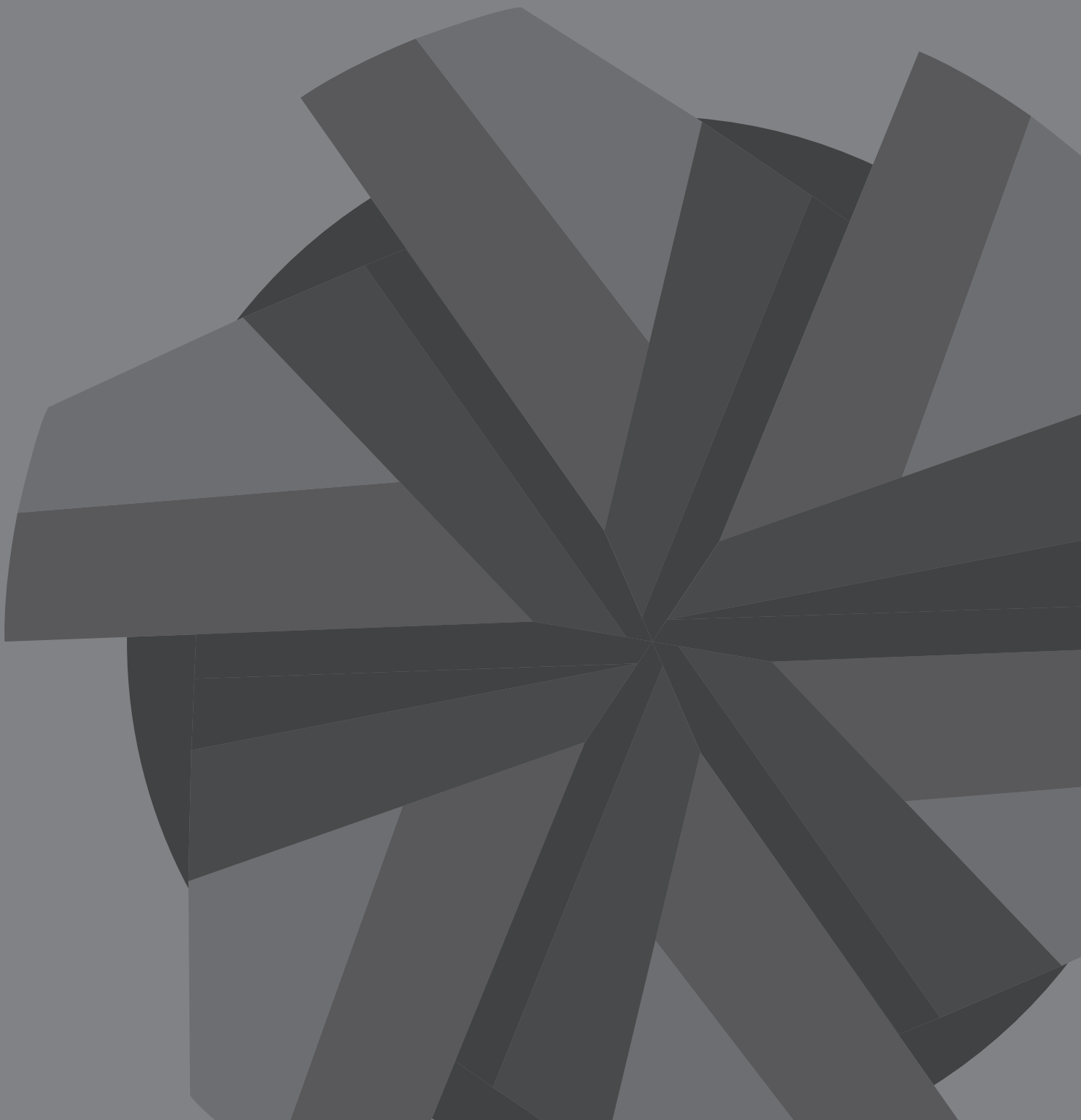

- Inserts for Chamfering Cutter

B.544

| EDP | Designation | Z | IC | S | AN | RE | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7811072 | SOMT090308EN-NM | 4 | 9,52 | 3,18 | 14° | 0,8 | CK010 | | | | | | | ◉ | | | | | |
| 7817072 | SOMT090308EN-GM | 4 | 9,52 | 3,18 | 14° | 0,8 | XP3015 | ◉ | | | | ◉ | ◉ | | | | | | |
| 7813072 | SOMT090308EN-GM | 4 | 9,52 | 3,18 | 14° | 0,8 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |



# MILLING



# ICONS LEGEND



## Material

CARBIDE — Carbide

CBN — CBN

XPM — High grade powder metallurgy HSS (XPM) (Co10+V5)

CPM — Powder Metallurgy HSS (PM-T15) (Co5 + V5)

HSS-Co — HSS Cobalt (Co8)

CERAMIC — Ceramic

HONEYCOMB — Honeycomb

CFRP — CFRP

## Coating / surface treatment

FX — Multilayer coating TiAlN

WX — Multilayer composite TiAlN

CrN — Chromium nitride

DIA — Diamond

DLC — DLC coating

WDI — Multilayer coating WDI

TiAlN — Multilayer coating TiAlN

V — Multilayer coating TiCN

DG — DG coating

WXS — Multilayer coating WXS

WXL — Multilayer coating WXL

DUARISE — Duarise coating

DLC-IGUSS — DLC IGUSS coating

DUROREY — DURORAY coating

AlCrN — AlCrN coating

## Helix angle

30° — Helix angle

± 0° — Taper angle per side

45° — 45° degrees cutter

## Shank

Long pencil neck

Pencil neck

Short neck

Long neck

Extra long neck

Slim shank

SHRINK FIT — Suitable for Shrink fit system

HB — Weldon

Straight shank

## Tolerance

Milling diameter tolerance

R ± 0.01 — Radius tolerance

## Coolant

Internal coolant

Coolant

## A-Brand

A-Brand product

# ICONS LEGEND



## Cutting specification

Centre cutting

Sharp corner

Right angle

220° cutting edge

High feed corner radius

High feed

Square

Corner radius

Ball nose

Radius cutter

Roughing

## Recommendation

Steel
Full recommendation

Stainless steel
Full recommendation

Cast iron
Full recommendation

Steel
Suitable

Stainless steel
Suitable

Cast iron
Suitable

Non-ferrous materials
Full recommendation

Super alloys
Full recommendation

Hardened material
Full recommendation

Non-ferrous materials
Suitable

Super alloys
Suitable

Hardened material
Suitable

## Page reference

Cutting conditions page reference

Body page reference

Arbor/holder page reference

Inserts page reference

Holder page reference

## Application

Side milling

Side milling

Side milling

Slotting

Slotting

Slotting

Contouring

Profile milling

Profile milling

Plunging

High feed corner radius

High feed long neck corner radius

Long neck slotting

Long neck profile milling

Deep pocket

Deep wall milling

Deep slotting

## Product group

Solid end mills

Indexable milling

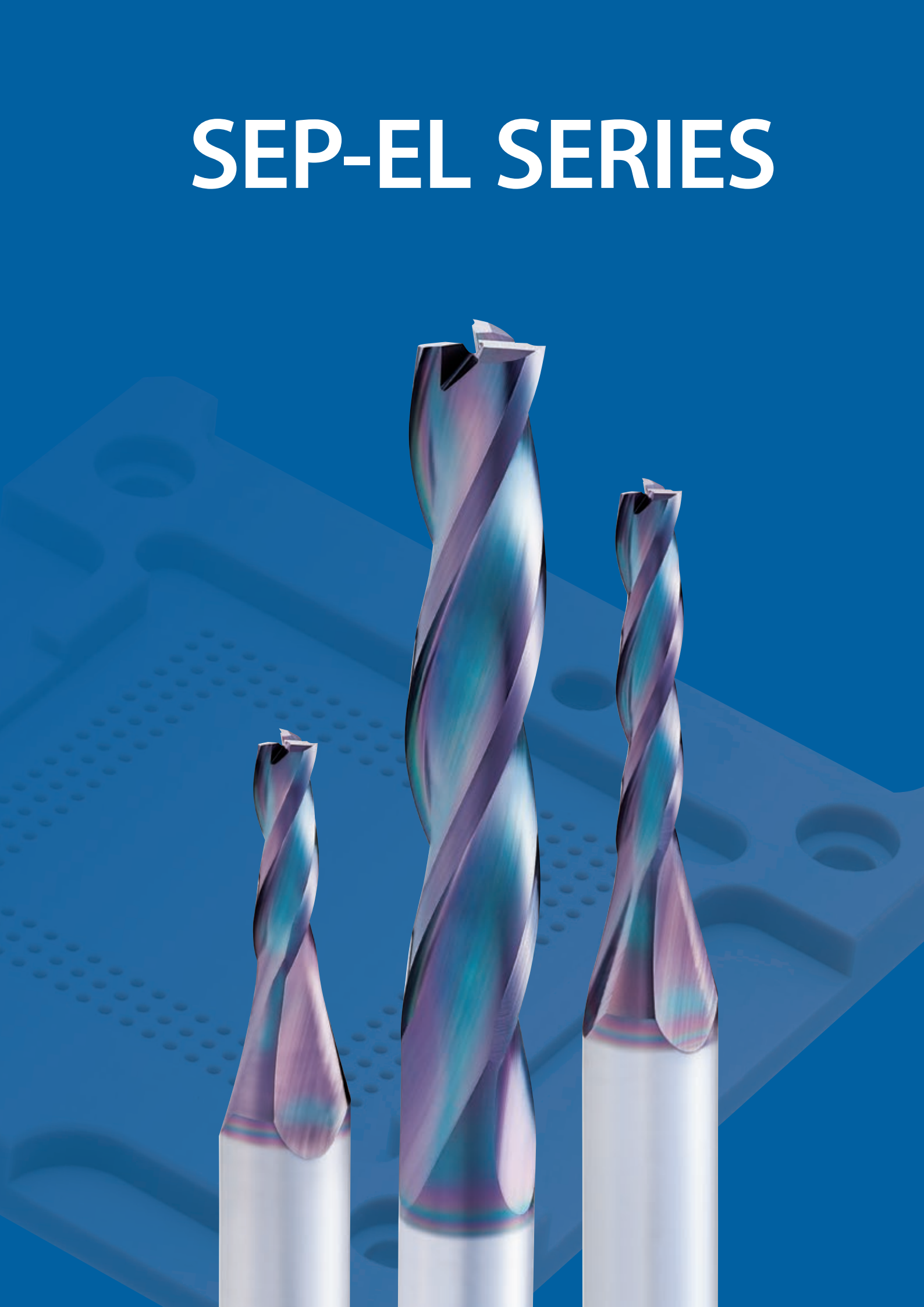
# MATERIAL OVERVIEW

## Milling | Overview DIN ISO 513

| Work Material | | | DIN |
|---|---|---|---|
| P | ~45 HRC | Steel | **1.0501** (C35) |
| | ~55 HRC | | **1.0535** (C55)<br>**1.0553** (S355J0) |
| H | ~60 HRC | Hardened steel | |
| | ~65 HRC | | |
| M | ~35 HRC | Stainless steel | **1.4301** (X5CrNi18-10) |
| K | ~350 HB | Cast iron | **0.6025** (EN-GJL-250/GG25) |
| N | | Aluminium | **3.0205** (Al99) |
| S | | Titanium | **3.7164** (Ti6Al4V) |

| | |
|---|---|
| **CFRP** | CFRP |
| **Honeycomb** | Honeycomb |
| **Graphite** | Graphite |

# SEP-EL SERIES



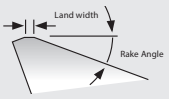
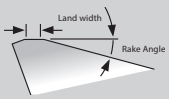
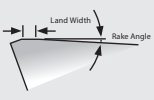
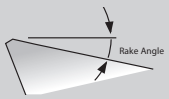
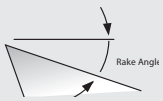
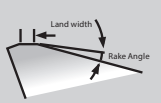
# GRADE & CHIPBREAKER SELECTION

Indexables | Milling

## Grades for milling

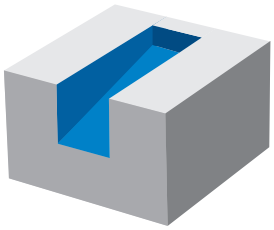
| Material | Grades | Coolant/ dry | Coating | Hardness (HRA) | Surface main component | Surface coating thickness | Features |
|---|---|---|---|---|---|---|---|
| P | XC3020 | Dry | CVD | 90,5 | $TiCN+Al_2O_3$ | 10 µm | For steel and cast iron<br>High strength and tough material, wear resistant coating |
| | XC3025 | Dry | CVD | 90,8 | $TiCN+TiN+Al_2O_3$ | 4 µm | For steel, stainless steel and cast iron<br>High strength material, excellent wear resistant coating |
| | XP3025 | Dry | PVD | 90,5 | TiAlN | 5 µm | For steel and cast iron<br>High strength and tough material, wear resistant coating |
| | XC3030 | Dry | CVD | 89,5 | $TiCN+Al_2O_3$ | 10 µm | For steel and cast iron<br>High strength and tough material, wear resistant coating |
| | XP3035 | Dry | PVD | 89,5 | TiAlN-TiN | 5 µm | For machining steel, stainless steel and cast irons. A grade for general-purpose milling. Made of a tough, high-strength carbide. Treated with chipping-resistant and wear-resistant coating. |
| | XP3225 | Dry | PVD | 91,5 | Cr | 3 µm | For machining steel, stainless steel and cast iron. High-strength and tough material, wear-resistant coating |
| | XP3310 | Dry | PVD | 92,5 | SiC Silicon-based heat-resistant coating | 3 µm | For steel and cast iron. A tough carbide base grade and excellent general purpose coating |
| | XP3320 | Dry | PVD | 91,5 | SiC Silicon-based heat-resistant coating | 3 µm | For machining steel, stainless steel and cast irons. A tough carbide grade with a heat-resistant and wear-resistant coating |
| | XP3930 | Dry | PVD | 90,8 | TiAlN | 3 µm | For machining steel, cast irons and stainless steel<br>Excellent balance, can accommodate a range of workpiece materials |
| M | XP2025 | Coolant | PVD | 91,0 | TiAlN | 5 µm | For stainless steel and steel<br>Composed of a tough carbide material with a wear resistant coating |
| | XP2040 | Coolant | PVD | 89,6 | TiAlN | 5 µm | For machining stainless steel and steel. Grade for general-purpose milling.<br>A tough, high-strength carbide grade with an anti-chipping and wear-resistant coating |
| K | XC1015 | Dry | CVD | 91,5 | $TiCN-Al_2O_3$ | 10 µm | For machining cast irons. Grade for milling cast-iron. Tough, high-strength carbide grade with an anti-chipping and wear-resistant coating |
| | XP1020 | Dry | PVD | 91,4 | TiAlN | 5 µm | For cast iron. High rigidity of cutting edge is acquired by optimal land width and rake angle. |
| N | CK010 | - | - | 92,0 | - | - | For machining non-ferrous materials<br>A non-coated carbide grade with both anti-chipping and wear resistant features |
| | XC4505 | Dry | CVD | 93,0 | DIA | 12 µm | High strength coating of fine diamond |
| S | XC5035 | Coolant | CVD | 89.3 | $TiN-Ti(CN)-Al_2O_3-Ti(BN)$ | 6µm | Grade for machining heat-resistant steel. Tough, carbide grade with an oxidation-resistant and high-lubricity coating |
| | XC5040 | Coolant | CVD | 89.3 | $TiN-TiB_2$ | 4µm | Grade for machining heat-resistant steel. For wet machining. Tough, carbide grade with an oxidation-resistant and high-lubricity coating |
| H | XP6015 | Dry | PVD | 92.2 | TiAlN | 4µm | A grade designed for milling high hardness steel, made of tough, high strength carbide material with a wear resistant coating |
| | XP6305 | Dry | PVD | 93.0 | SiC Silicon-based heat-resistant coating | 3µm | For machining high hardness materials<br>High temperature hardness levels and excellent thermal conductivity for machining high hardness materials |

## Chipbreakers for milling

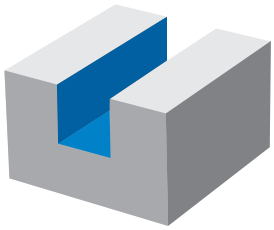
| Chipbreaker | Material | Cutting edge | Rake angle | Features |
|---|---|---|---|---|
| GL | P M |  | 25° | For milling stainless-steel<br>Chipbreaker with a large rake angle and a small flat land to reduce cutting force. |
| GM | P M K |  | 15°<br>(35° PAS) | For machining various materials (steel, stainless steel, cast iron)<br>Chipbreaker with a superior balance of rake angle and flat land. |
| GR | P M K H |  | 7°<br>(35° PAS) | For machining various materials from steel to cast iron:<br>a highly rigid breaker with large rake angle and flat land to provide a sharp cutting edge and enable efficient milling. |
| SM | S |  | 15° | For machining difficult materials<br>Chipbreaker with a sharp cutting edge to reduce cutting force and provide smooth chip evacuation. |
| NM | N |  | 30° | For machining non-ferrous materials<br>Chipbreaker with a sharp cutting edge and a large rake angle to suppress welding, improve the milling surface and prevent burrs. |
| HR | H |  | 3° | For milling high hardened steel :<br>a breaker with sharpness and rigidity on the cutting edge. |

# MULTI PURPOSE

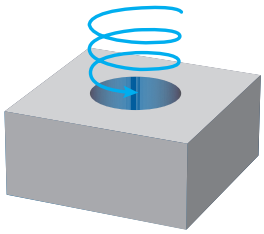
Side milling



Ramping



Slotting



Helical milling

A DUARISE CARBIDE

## AE-VM Series

First choice in quality and performance

Carbide end mill with DUARISE coating

Wide variety in applications and work materials

4 flutes, variable helix and unequal spacing

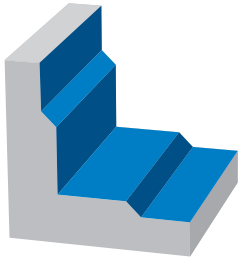
C.616

## THE OSG ADVANTAGE

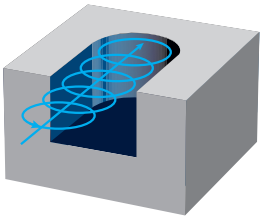
- Variable helix
- Unequal spacing
- Coating

# SIDE MILLING / TROCHOIDAL MILLING

Side milling



Side milling



Trochoidal milling

A DUARISE CARBIDE

## AE-VML

First choice in quality and performance

Carbide end mill with DUARISE coating

Also with chipbreaker

C.624

WXL CARBIDE

## WXL Series

Carbide end mill with WXL coating

For steels, stainless, copper

4 flutes, up to 4xD applications, square

C.683

A DUROREY CARBIDE

## AE-H Series

First choice in quality and performance

Carbide end mill with DUROREY coating

For hardened materials up to 70 HRC

Multi flute, high speed machining

C.628

## THE OSG ADVANTAGE

- Flute geometry
- Suitable coatings

# MOLD AND DIE INDUSTRY

Copper

52 HRC

A DLC-IGUSS CARBIDE

## AE-N Series

First choice in quality and performance

Carbide end mill with DLC coating

For non-ferrous materials

2-flute long neck ball type for high precision finishing

**370 sizes**

C.748

WXL CARBIDE

## WXL Series

Carbide end mill with WXL coating

For hardened steels up to **52 HRC**

2 flutes, long neck, square or ball nose
(not shown)

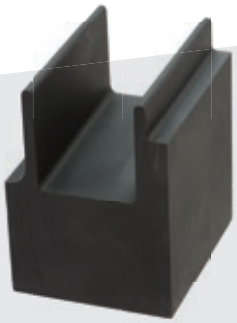
**1.173 sizes**

C.685

## THE OSG ADVANTAGE

• Semi roughing - high feed productivity
• F=4000 mm/min

62 HRC



Graphite

A DUROREY CARBIDE

## AE-H Series

First choice in quality and performance

Carbide end mill with DUROREY coating

For hardened materials up to 70 HRC

2 flutes, long neck type for high precision finishing

**1.487 sizes**

C.633

DG CARBIDE

## DG Series

Carbide end mill with diamond coating

For **graphite** milling

2 flutes, ball nose, long neck for deep reach

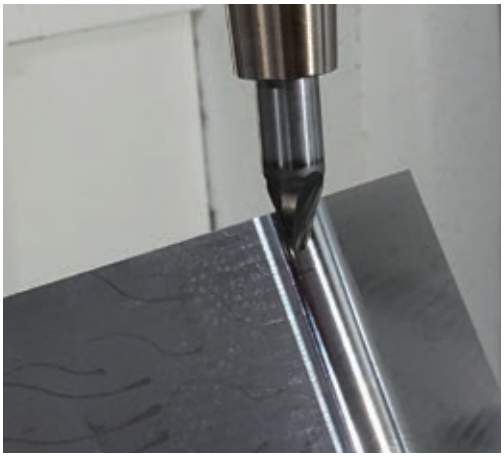
C.721

Product map

## THE OSG ADVANTAGE

- Flute geometry
- Suitable coatings

# HIGH EFFICIENCY FINISHING



WXL CARBIDE

## VU Series

Carbide end mill with WXL coating

For general steel and hardened material

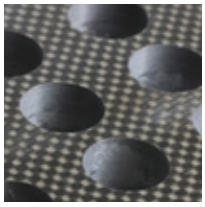
High-efficiency multi-flute specification

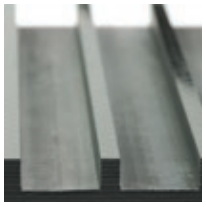
C.710

## THE OSG ADVANTAGE

- Flute geometry
- Suitable coating

# COMPOSITE MATERIAL





CFRP

Honeycomb

DIA CARBIDE

## DIA Series

Carbide end mill with diamond coating

For CFRP milling

Multi flute, fine nick geometry
(specification from shown example, DIA-HBC)

4 flutes, left-hand / right-hand flute to suppress delamination
(specification from shown example, DIA-HBC)

C.723

CARBIDE

## HBC60

Carbide end mill, bright finish

For honeycomb composite materials

2 flutes, left-hand / right-hand flute

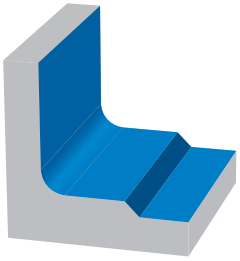
C.727

Product map

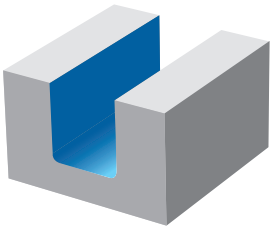
## THE OSG ADVANTAGE

- No delamination
- Surface finish
- DIA coating - sharp

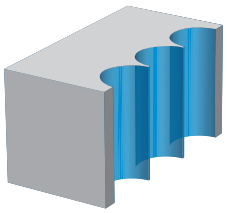
# PLASTICS



Side milling



Slotting



Plunging

DLC-IGUSS CARBIDE

## SEP-EL

DLC coated carbide end mill for super engineering plastics

2-3 flutes, sharp corner edge

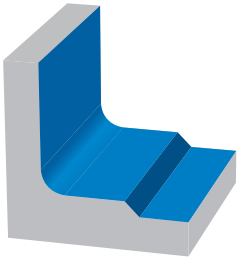
3&5XD Cutting length

C.747

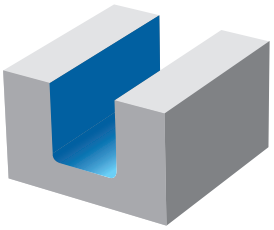
## THE OSG ADVANTAGE

- Flute geometry
- Suitable coating

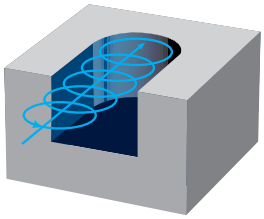
# TITANIUM



Side milling



Slotting



Trochoidal milling

FX CARBIDE

## UVX-Ti Series

First choice in quality and performance

Carbide end mill with FX coating

For Titanium alloys

4 or 5 flutes, variable helix and unequal spacing, corner radius

C.728

## THE OSG ADVANTAGE

- Anti vibration
- Special flute geometry
- Extra long cutting edge

# ALUMINIUM

M.R.R. (metal removal rate)

A DLC CARBIDE

## AE-N Series

First choice in quality and performance

Carbide end mill with DLC coating

For non-ferrous materials

3 flutes

C.738

DLC CARBIDE

## AERO Series

Carbide end mill with DLC coating

For ultra high volume milling of aluminium alloys

3 or 2 flutes, corner radius

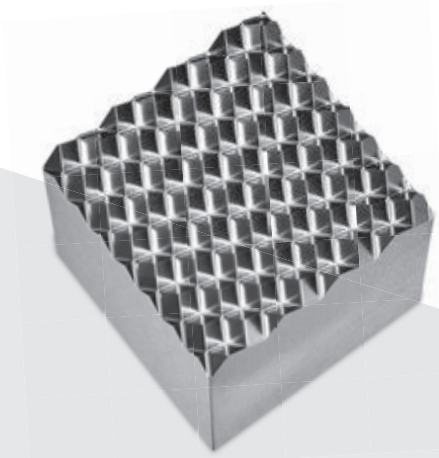
Also long neck available

C.756

## THE OSG ADVANTAGE

• Aggressive flute design to achieve maximum MRR (metal removal rate)
• Optimised for AL milling

# HIGH HARDNESS MATERIALS



CARBIDE

## CBN-FB2

2-flute CBN ball end mill

Superior Ball R precision

For hardened materials up to 70 HRC

C.718

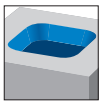


## THE OSG ADVANTAGE

• Micro relief suppresses shape deformation caused by wear
• Superior ball R precision
• High-accuracy shank optimized shank length

# SELECTION CHART

## Milling | Selection chart | By application & material

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | O | O | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | PET | PEI | PEEK |
| | A | AE-VMS NEW SIZES | C.616 | DURARISE | 4 | 1 ~ 25 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | | |
| | A | AE-VMS RA NEW SIZES | C.618 | DURARISE | 4 | 1 ~ 6 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | | |
| | A | AE-VMSS | C.619 | DURARISE | 4 | 1 ~ 12 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | | |
| | A | AE-VMSS RA | C.621 | DURARISE | 4 | 1 ~ 6 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | | |
| | A | AE-VMSX NEW | C.623 | DURAREY | 4 | 3 ~ 12 | ◉ | ◉ | | ◎ | ◉ | ◉ | | ◉ | | | |
| | | NEO-PHS | C.764 | FX | 4 | 3 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | | ◉ | | | |
| | | UP-PHS | C.761 | FX | 4 | 3 ~ 12 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | | |
| | | UVX-Ti-4FL | C.728 | FX | 4 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | | UVX-Ti-4FL SAFE-LOCK® | C.729 | FX | 4 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | | UVX-Ti-5FL | C.730 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | | UVX-Ti-5FL-HB | C.731 | FX | 5 | 12 ~ 20 | | | | | ◎ | | | ◉ | | | |
| | | UVX-Ti-5FL SAFE-LOCK® | C.732 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | | UVXL-Ti-5FL | C.733 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | | UVXL-Ti-5FL SAFE-LOCK® | C.734 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | | |
| | A | AE-TS-N | C.738 | DLC | 3 | 1 ~ 25 | | | | | | | ◉ | | | | |
| | A | AE-TS-N SP | C.739 | DLC | 3 | 1 ~ 12 | | | | | | | ◉ | | | | |
|  | A | AE-VTS-N | C.744 | DLC-IGUSS | 3 | 1 ~ 12 | | | | | | | ◉ | | | | |
| | A | AE-VTS-N SP | C.745 | DLC-IGUSS | 3 | 1 ~ 12 | | | | | | | ◉ | | | | |
| | | AERO-ETS | C.756 | DLC | 3 | 12 ~ 25 | | | | | | | ◉ | | | | |
| | A | AE-VTSS | C.713 | DURARISE | 3 | 3 ~ 12 | ◎ | | ◎ | | ◉ | ◉ | ◎ | ◎ | | | |
| | | WX-G-ETSS | C.714 | WX | 3 | 3 ~ 16 | ◉ | ◉ | ◎ | | ◉ | | | ◉ | | | |
| | | CA-ETS | C.770 | - | 3 | 3 ~ 20 | | | | | | | ◉ | | | | |
| | | EPN-AL-3FS | C.800 | - | 3 | 3 ~ 20 | | | | | | | ◉ | | | | |
| | | EPN-AL-3FL | C.799 | - | 3 | 3 ~ 20 | | | | | | | ◉ | | | | |
| | | EPA-AL-3FS | C.798 | ALC | 3 | 3 ~ 20 | | | | | | | ◉ | | | | |
| | | EPA-AL-3FL | C.797 | ALC | 3 | 3 ~ 20 | | | | | | | ◉ | | | | |
| | | HYP-HI-(W)EMS | C.802 | TiAlN | 4 | 4 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | | |
| | | HYP-HP-WRESF | C.804 | TiAlN | 4/5/6 | 6 ~ 25 | ◉ | ◉ | | | ◎ | ◎ | | | | | |
| | | EPL-HP-4FL | C.771 | EgiAs | 4 | 3-20 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◉ | | | |
| | | EPL-HP-5FL | C.773 | EgiAs | 5 | 6-20 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◉ | | | |
| | | EPL-HI-(W)EMS | C.777 | TiAlN | 4 | 4 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | | |
| | | EPL-ETS | C.781 | TiAlN | 3 | 4 ~ 16 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | | |
| | | EPL-WRESF | C.780 | TiAlN | 3/4 | 4 ~ 25 | ◉ | ◉ | | | ◎ | ◎ | ◎ | | | | |
| | | SEP-EL NEW | C.747 | DLC-IGUSS | 2/3 | 0,5 ~ 6 | | | | | | | ◎ | | ◉ | ◉ | ◉ |

# SELECTION CHART

Milling | Selection chart | By application & material

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | A | AE-VMS NEW SIZES | C.616 | DURARISE | 4 | 1 ~ 25 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | | NEO-CR-PHS | C.765 | FX | 4 | 3 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | | ◉ | | |
| | | UVX-Ti-4FL | C.728 | FX | 4 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVX-Ti-4FL SAFE-LOCK® | C.729 | FX | 4 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVX-Ti-5FL | C.730 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVX-Ti-5FL-HB | C.731 | FX | 5 | 12 ~ 20 | | | | | ◎ | | | ◉ | | |
| | | UVX-Ti-5FL SAFE-LOCK® | C.732 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVXL-Ti-5FL | C.733 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVXL-Ti-5FL SAFE-LOCK® | C.734 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | A | AE-TS-N | C.738 | DLC | 3 | 1 ~ 25 | | | | | | | ◉ | | | |
| | A | AE-VTS-N | C.744 | DLC-IGUSS | 3 | 1 ~ 12 | | | | | | | ◉ | | | |
| | | AERO-(O)-ETS | C.758 | DLC | 3 | 12 ~ 25 | | | | | | | ◉ | | | |
| | | DLC-AIR-EDS | C.754 | DLC | 2 | 12 ~ 25 | | | | | | | ◉ | | | |
| | | HYP-CR-HI-WEMS | C.801 | TiAlN | 4 | 4 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | |
| | | HYP-CR-HD-WEMS | C.803 | TiAlN | 4 | 6 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | |
| | | EPL-HI-CR-(W)EMS | C.778 | TiAlN | 4 | 4 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | |
| | | EPL-HP-4FL | C.771 | EgiAs | 4 | 3-20 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◉ | | |
| | | EPL-HP-5FL | C.773 | EgiAs | 5 | 6-20 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◉ | | |

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | | WXL-1,5D-DE | C.673 | WXL | 2 | 0,1 ~ 12 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◎ | | |
| | | WXL-2D-DE | C.675 | WXL | 2 | 0,1 ~ 30 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◎ | | |
| | | WXL-3D-DE | C.679 | WXL | 2 | 0,1 ~ 20 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◎ | | |
| | | WXL-4D-DE | C.681 | WXL | 2 | 0,2 ~ 12 | ◉ | ◉ | | | ◉ | ◉ | ◎ | ◎ | | |
| | | CA-RG-EDS | C.769 | - | 2 | 1 ~ 20 | | | | | | | ◉ | | | |
| | | HYP-F1 | C.807 | - | 1 | 3 ~ 12 | | | | | | | ◉ | | | |

# SELECTION CHART

Milling | Selection chart | By application & material

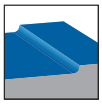
| Application | A-Brand | Product name | Page | | Z | Range | P ~45 HRC | P ~55 HRC | H ~60 HRC | H ~65 HRC | M ~35 HRC | K ~350 HB | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | AE-VML | C.624 | DURARISE | 4/5 | 6 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | A | AE-VML CHIPBREAKER | C.626 | DURARISE | 4/5 | 6 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | A | AE-MS-H | C.629 | DURAREY | 4/6 | 1 ~ 20 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | A | AE-MSS-H | C.628 | DURAREY | 4/6 | 3 ~ 12 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | A | AE-ML-H | C.630 | DURAREY | 4/6 | 3 ~ 20 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | | WXL-EMS | C.683 | WXL | 4 | 1 ~ 30 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | | WXS-EMS | C.660 | WXS | 4/6 | 1 ~ 20 | ◉ | ◉ | ◉ | ◉ | ◎ | ◉ | | ◎ | | |
| | | NEO-EMS | C.763 | FX | 6 | 6 ~ 20 | ◉ | ◉ | | | ◉ | ◉ | | ◉ | | |
| | A | AE-TL-N | C.740 | DLC | 3 | 3 ~ 25 | | | | | | | ◉ | | | |
| | A | AE-TL-N SP | C.741 | DLC | 3 | 3 ~ 12 | | | | | | | ◉ | | | |
| | A | AE-TL-N CHIPBREAKER NEW | C.742 | DLC | 3 | 6 ~ 20 | | | | | | | ◉ | | | |
| | | AERO-ETL | C.759 | DLC | 3 | 12 ~ 20 | | | | | | | ◉ | | | |
| | | EPL-TI-7FL NEW | C.774 | AlCrN | 7 | 10 ~ 20 | ◉ | | | | ◉ | ◎ | | ◉ | | |

| Application | A-Brand | Product name | Page | | Z | Range | P ~45 HRC | P ~55 HRC | H ~60 HRC | H ~65 HRC | M ~35 HRC | K ~350 HB | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WXL-CR-EDS-6 | C.690 | WXL | 2 | 0,6 ~ 2,5 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◉ | | |
| | | | | | | | | | | | | | | | | |

| Application | A-Brand | Product name | Page | | Z | Range | P ~45 HRC | P ~55 HRC | H ~60 HRC | H ~65 HRC | M ~35 HRC | K ~350 HB | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | AE-VML | C.624 | DURARISE | 4/5 | 6 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | A | AE-MS-H | C.629 | DURAREY | 4/6 | 1 ~ 20 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | | NEO-CR-EMS | C.762 | FX | 6 | 6 ~ 20 | ◉ | ◉ | ◎ | | ◉ | ◉ | | ◉ | | |
| | | UVXL-Ti-5FL | C.733 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | UVXL-Ti-5FL SAFE-LOCK® | C.734 | FX | 5 | 12 ~ 25 | | | | | ◎ | | | ◉ | | |
| | | AERO-ETL | C.759 | DLC | 3 | 12 ~ 20 | | | | | | | ◉ | | | |
| | | AERO-EXTL | C.760 | DLC | 3 | 20 | | | | | | | ◉ | | | |
| | | CM-RMS | C.736 | - | 4/6 | 6 ~ 12 | | | | | | | | ◉ | | |
| | | FX-CR-MG-EMS | C.766 | FX | 4 | 4 ~ 12 | ◉ | ◎ | ◎ | | ◎ | ◉ | ◎ | ◎ | | |
| | | EPL-TI-7FL NEW | C.774 | AlCrN | 7 | 10 ~ 20 | ◉ | | | | ◉ | ◎ | | ◉ | | |

# SELECTION CHART

Milling | Selection chart | By application & material

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
|  | A | AE-(HS)-CRE-H NEW | C.639 | DUROREY | 4/5 | 1 ~ 13 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | | WXS-(HS)-CRE | C.655 | WXS | 4/5 | 2 ~ 12 | ◉ | ◉ | ◉ | ◉ | | ◉ | | ◎ | | |
| | | SX-(HS)-CRE NEW | C.656 | EgiAs | 4/5 | 2 ~ 12 | ◉ | ◉ | | | ◉ | | | ◉ | | |
| | | WX-(HS)-CRE | C.716 | WX | 4/3 | 2 ~ 13 | ◉ | ◉ | ◉ | ◎ | ◉ | ◉ | | | | |
| | | HFC-Ti | C.735 | - | 6/8 | 16 ~ 25 | | | | | | | | ◉ | | |
| | | CM-CRE | C.737 | DUROREY | 5/7 | 16 ~ 25 | | | | | | | | ◉ | | |
| | | AM-CRE | C.705 | DUROREY | 6/8 | 6 ~ 20 | ◎ | ◉ | ◉ | ◉ | ◉ | | | ◉ | | |
| | A | AE-HFE-H | C.641 | | 4/5 | 1 ~ 12 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | A | AM-HFC | C.706 | DUROREY | 6 | 4 ~ 12 | ◎ | ◉ | ◉ | ◉ | ◉ | | | ◉ | | |

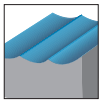
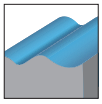
| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | A | AE-CPR4-H | C.642 | DUROREY | 4 | 0,2 ~ 6 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | A | AE-CPR2-H | C.649 | DUROREY | 2 | 0,2 ~ 3 | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ | | ◎ | | |
| | | PHX-LN-CRE | C.708 | WXS | 4 | 0,8 ~ 3 | ◉ | ◉ | ◎ | | ◎ | ◎ | ◎ | ◎ | | |
| | | WXS-CPR | C.667 | WXS | 2/4 | 0,2 ~ 4 | ◉ | ◉ | ◉ | ◉ | ◎ | | | | | |
| | A | AE-CPR-N | C.750 | DLC-IGUSS | 2/3 | 0,2 ~ 6 | | | | | | | ◉ | | | |
| | | DG-CPR | C.722 | DG | 2/4 | 0,5 ~ 12 | | | | | | | | | | ◉ |
| | | EPL-CPR | C.793 | TiAlN | 2 | 2 ~ 8 | ◉ | ◉ | ◉ | ◎ | ◎ | ◎ | | ◎ | | |
| | | EPS-CPR | C.788 | TiAlN | 2/4 | 1 ~ 4 | ◎ | ◎ | ◉ | ◉ | ◎ | | | | | |
| | | EPL-CPR-DIA | C.796 | DIA | 2 | 4 ~ 8 | | | | | | | | | | ◉ |

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | | WXL-LN-EDS | C.685 | WXL | 2 | 0,1 ~ 12 | ◉ | ◉ | ◎ | | ◎ | ◉ | ◎ | ◎ | | |
| | | WXL-LN-EMS-6 | C.684 | WXL | 4 | 1 ~ 6 | ◉ | ◉ | ◎ | | ◎ | ◉ | ◎ | ◎ | | |

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | A | AE-VMFE | C.627 | DUARISE | 4/5 | 6 ~ 22 | ◉ | ◉ | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | A | AE-VTFE-N | C.746 | DLC-IGUSS | 3 | 6 ~ 22 | | | | | | | ◉ | | | |
| | | AERO-LN-EDS | C.755 | DLC | 2 | 16 ~ 25 | | | | | | | ◉ | | | |
| | | AERO-LN-ETS | C.757 | DLC | 3 | 16 ~ 25 | | | | | | | ◉ | | | |
| | | FXS-PKE | C.767 | FX | 4 | 3 ~ 12 | ◉ | ◉ | ◎ | | ◉ | ◉ | | ◉ | | |

# SELECTION CHART

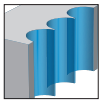
Milling | Selection chart | By application & material

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
|  | A | AE-BD-H | C.632 | DUROREY | 2 | R0,5 ~ R6 | ● | ● | ● | ● | ◎ | ◎ | | ◎ | | |
| | A | AE-BM-H | C.631 | DUROREY | 4 | R1~ R6 | ● | ● | ● | ● | ◎ | ◎ | | ◎ | | |
| | | WXL-EBD | C.692 | WXL | 2 | R0,05 ~ R10 | ● | ● | ◎ | | ● | ● | ◎ | ◎ | | |
| | | WXL-HS-EBD | C.691 | WXL | 2 | R0,1~ R6 | ● | ● | ◎ | | ● | ● | ◎ | ◎ | | |
| | | AM-EBT | C.707 | DUROREY | 3 | R1 ~ R10 | ◎ | ● | ● | ● | ● | | | ● | | |
| | | DG-EBD | C.720 | DG | 2 | R2 ~ R6 | ◎ | ● | ● | ● | | | | | | ● |
| | | FXS-HS-EBM | C.768 | FX | 4 | R3 ~ R10 | ● | ● | ● | ◎ | | | | | | |
|  | | FXS-EQD | C.717 | FX | 2 | R0,5 ~ R5 | ● | ● | ◎ | | ● | ● | | ◎ | | |
| | | CBN-FB2 NEW | C.718 | - | | R0,1 ~ R1,5 | ◎ | ● | ● | ● | | | | | | |
| | | HYP-SB-EBD | C.805 | TiAlN | 2 | R1,5 ~ R6 | ● | ◎ | ◎ | | ● | ● | ◎ | ◎ | | |
| | | EPL-SB-EBD | C.782 | TiAlN | 2 | R0,5 ~ R10 | ● | ◎ | ◎ | | ● | ● | ◎ | ◎ | | |
| | | EPL-SB-LN-EBD | C.783 | TiAlN | 2 | R0,5 ~ R10 | ● | ◎ | ◎ | | ◎ | ● | ◎ | ◎ | | |
| | | EPL-SB-EBM | C.784 | TiAlN | 4 | R2 ~ R6 | ● | ◎ | ◎ | | ◎ | ● | ◎ | ◎ | | |

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| | A | AE-LNBD-H NEW SIZE | C.633 | DUROREY | 2 | R0,05 ~ R3 | ● | ● | ● | ● | ◎ | ◎ | | ◎ | | |
| | | WXS-LN-EBD | C.662 | WXS | 2 | R0,05 ~ R3 | ◎ | ● | ● | ● | ◎ | ◎ | ◎ | ◎ | | |
| | | WXL-LN-EBD | C.694 | WXL | 2 | R0,05 ~ R3 | ● | ● | ◎ | | ● | ● | ◎ | ◎ | | |
| | | WXL-PC-EBD | C.701 | WXL | 2 | R0,2 ~ R6 | ● | ● | ◎ | | ● | ● | ◎ | ◎ | | |
| | | PHX-LN-DBT | C.709 | WXS | 3 | R0,3 ~ R3 | ● | ● | ◎ | | ◎ | ◎ | ◎ | ◎ | | |
| | A | AE-LNBD-N | C.748 | DLC-IGUSS | 2 | R0,05 ~ R3 | | | | | | | ● | | | |
| | | DG-LN-EBD | C.721 | DG | 2 | R0,2 ~ R2 | | | | | | | | | | ● |
| | | EPL-LN-EBD | C.789 | TiAlN | 2 | R0,15 ~ R3 | ● | ◎ | ◎ | | ● | ● | ◎ | ◎ | | |
| | | EPL-PC-EBD | C.791 | TiAlN | 2 | R0,5 ~ R4 | ● | ◎ | ◎ | | ● | ● | ◎ | ◎ | | |
| | | EPS-LN-EBD | C.785 | TiAlN | 2 | R0,1 ~R3 | ◎ | ◎ | ● | ● | ◎ | ◎ | ◎ | ◎ | | |
| | | EPL-PC-EBD-DIA | C.792 | DIA | 2 | R0,5 ~ R4 | | | | | | | | | | ● |

# SELECTION CHART

Milling | Selection chart | By application & material

| Application | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | GRAPHITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
|  | A | AE-VTSS | C.713 | DUARISE | 3 | 3 ~ 12 | ◎ | | ◎ | | ◉ | ◉ | ◎ | ◎ | | |
| | | WX-G-ETSS | C.714 | WX | 3 | 3 ~ 16 | ◉ | ◉ | | | ◉ | | | ◉ | | |
| | | HYP-ZDS | C.806 | TiAlN | 2 | 4 ~ 10 | ◉ | ◎ | | | ◉ | ◉ | ◎ | ◎ | | |

| Material | A-Brand | Product name | Page | | Z | Range | P | | H | | M | K | N | S | CFRP | HONEYCOMB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ~45 HRC | ~55 HRC | ~60 HRC | ~65 HRC | ~35 HRC | ~350 HB | | | | |
| CFRP<br>HONEYCOMB | | DIA-BNC | C.723 | DIA | 8/10/ 12/14 | 6 ~ 12 | | | | | | | | | ◉ | |
| | | DIA-HBC | C.724 | DIA | 4 | 6 ~ 12 | | | | | | | | | ◉ | |
| | | DIA-MFC | C.725 | DIA | 8/ 10/12 | 6 ~ 10 | | | | | | | | | ◉ | |
| | | DIA-REC | C.726 | DIA | 4/6 | 6 ~ 10 | | | | | | | | | ◉ | |
| | | HBC60 | C.727 | - | 2 | 6 ~ 12 | | | | | | | | | | ◉ |

# SELECTION CHART



## Face milling cutters

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PAS BORE | C.836 | 45° | 45° face milling with double side 8 corner inserts |
| | PAO BORE | C.837 | 45° | 45° face milling with double side 16 corner inserts |
| | PFAL BORE | C.838 | - | Finishing cutter for aluminium with PCD blades |
| | PFDC | C.839 | 90° | Economical 4-corner insert with 90° cutting angle |

## Shoulder cutters

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PSTW SS | C.840 | 90° | 90° shoulder milling with double side 6 corner inserts |
| | PSTW BORE | C.841 | 90° | 90° shoulder milling with double side 6 corner inserts |
| | PSE WS/PSE SS | C.842 | 90° | 90° shoulder milling with 2 corner insert with bottom notch |
| | PSE BORE | C.844 | 90° | 90° shoulder milling with 2 corner insert with bottom notch |
| | PSE SCREW FIT | C.845 | 90° | 90° shoulder milling with 2 corner insert with bottom notch |
| | PSEL SS | C.846 | 90° | 90° shoulder milling with long length of cut |
| | PSEL BORE | C.847 | 90° | 90° shoulder milling with long length of cut |
| | PSF SS | C.848 | - | Shoulder milling with 4 corner inserts |
| | PSF BORE | C.849 | - | Shoulder milling with 4 corner inserts |

# SELECTION CHART



| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 4 - 8 | 50 -125 mm | ◉ | ◉ | ◉ | ◉ | ◎ | ◎ |
| | 5 - 25 | 50 -200 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |
| | 5 - 20 | 50 -160 mm | | | | ◉ | | |
| | 4-5 | 80 -125 mm | | | | ◉ | | |

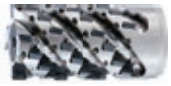
| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 2 - 5 | 25 - 40 mm | | | | | | |
| | 3 - 9 | 40 - 125 mm | ◉ | ◉ | ◉ | | ◉ | ◎ |
| | 2 - 5 | 10 - 63 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 4 - 10 | 40 - 100 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2 - 6 | 10 - 40 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2 - 4 | 25 - 50 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 3 - 4 | 50 - 80 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 3 - 5 | 25 - 40 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |
| | 6 - 9 | 50 - 80 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |

# SELECTION CHART



## Shoulder cutters

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PSFL SS | C.850 | 90° | 90° shoulder milling with long length of cut |
|  | PSFL BORE | C.851 | 90° | 90° shoulder milling with long length of cut |
| | PMD SS | C.852 | 90° | Multi function cutter, milling and drilling |
| | PMD SF | C.853 | 90° | Multi function cutter, milling and drilling |

## Radius Cutter

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PHC SS | C.854 | HIGH FEED | High feed cutter for long over hang<br>4xD ~ |
| | PHC BORE | C.855 | HIGH FEED | High feed cutter |
| | PHC SCREW FIT | C.856 | HIGH FEED | High feed cutter |
| | PRC SS | C.857 | | Radius cutter with round inserts<br>~ 4xD |
| | PRC BORE | C.858 | | Radius cutter with round inserts |
| | PRC SCREW FIT | C.859 | | Radius cutter with round inserts |
| | PDR SS | C.860 | HIGH FEED CORNER RADIUS | Corner radius cutter for deep depth of cut |
| | PDR BORE | C.861 | HIGH FEED CORNER RADIUS | Corner radius cutter for deep depth of cut |

# SELECTION CHART

Milling | Selection chart | By application & material

| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 10 - 18 | 32 - 40 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |
| | 28 - 72 | 50 - 100 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |
| | 1 | 16 - 32 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |
| | 1 | 16 - 32 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◎ |

| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 2 - 5 | 16 - 40 mm | ◉ | ◉ | ◉ | | ◉ | ◎ |
| | 4 - 8 | 40 - 100 mm | ◉ | ◉ | ◉ | | ◉ | ◎ |
| | 2 - 5 | 16 - 40 mm | ◉ | ◉ | ◉ | | ◉ | ◎ |
| | 2 - 4 | 20 - 63 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 4 - 10 | 50 - 100 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2 - 4 | 20 - 40 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2 - 3 | 40 - 50 mm | ◉ | | ◉ | | | |
| | 3 - 6 | 63 - 125 mm | ◉ | | ◉ | | | |

# SELECTION CHART



## Profile finishing

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PFB | C.862 | | Finishing ball nose cutter |
| | PFB SCREW FIT | C.863 | | Finishing ball nose cutter |
| | PFR | C.864 | | Finishing corner radius cutter |
| | PFR SCREW FIT | C.865 | | Finishing corner radius cutter |

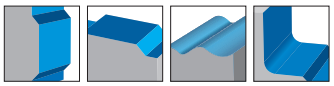
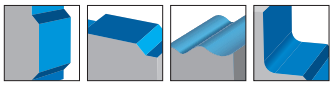
## Exchangeable Milling Head

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PXNL | C.888 | | Low variable helix with roughing shape<br>~45HRC<br>~5xD |
| | PXNL OH | C.889 | | Variable helix solid carbide head with coolant hole<br>~45HRC<br>~5xD |
| | PXNH | C.888 | | High variable helix with roughing shape<br>~45HRC<br>~5xD |
| | PXNH OH | C.890 | | Variable helix solid carbide head with coolant hole<br>~45HRC<br>~5xD |
| | PXVC | C.891 | | High variable helix for L/D up to 7xD<br>~55HRC<br>4xD -7xD |
| | PXSE | C.892 | | Variable helix for L/D up to 5xD<br>~55HRC<br>~5xD |
| | PXSE OH | C.893 | | Variable helix solid carbide head with coolant hole<br>~55HRC<br>~5xD |
| | PXSM | C.894 | | Multi flute variable helix for L/D up to 5xD<br>~55HRC<br>~5xD |

# SELECTION CHART

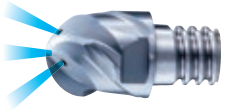


| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 2 | 6 - 32 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
| | 2 | 10 - 30 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
|  | 2 | 6 - 32 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |
|  | 2 | 10 - 32 mm | ◉ | ◉ | ◉ | ◉ | ◉ | ◉ |

| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
| | 4 | 10 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 12 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 12 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 12 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 10 - 32 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 10 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 4 | 12 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
| | 6 - 10 | 10 - 25 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |

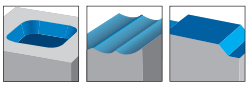
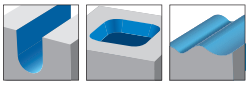
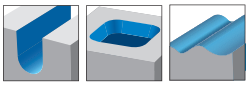
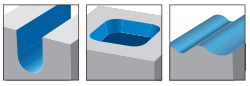
## Exchangeable Milling Head

Milling | Indexables

| | Product name | Page | Tool specification | Features |
|---|---|---|---|---|
| | PXRE | C.895 | | Corner radius with straight flute for L/D up to 5xD<br>~60HRC<br>~5xD |
| | PXDR-P | C.895 | | Corner radius with high helix flute for L/D up to 7xD<br>~52HRC<br>~7xD |
| | PXDR-N | C.895 | | Corner radius with high helix flute for L/D up to 7xD<br>~60HRC<br>4xD / 7xD |
| | PXSH | C.896 | | Multi flute square solid carbide head<br>For high hardness steels |
| | PXBE | C.897 | | Multi flute variable helix solid carbide head for L/D up to 5xD<br>~60HRC<br>~5xD |
|  | PXBE OH | C.898 | | Multi flute variable helix solid carbide head with coolant holes for L/D up to 5xD<br>~60HRC<br>~5xD |
| | PXBM | C.897 | | Multi flute ball nose for L/D up to 5xD<br>~60HRC<br>~5xD |
| | PXAL | C.899 | | 3 flutes variable helix for aluminium and copper alloys |
| | PXHF-AM | C.900 | | Multi flute for high feed additive manufacturing milling<br>~70HRC |

# SELECTION CHART



| Application | Z | Range | P | M | K | N | S | H |
|---|---|---|---|---|---|---|---|---|
|  | 4 - 6 | 10 - 20 mm | ◉ | | ◉ | | | ◉ |
| | 3 | 10 - 20 mm | ◉ | ◉ | ◉ | | | ◎ |
| | 3 | 10 - 20 mm | ◉ | ◉ | | | | ◉ |
| | 6-8 | 12 - 25 mm | | | | | | ◉ |
|  | 3 | 10 - 20 mm | ◉ | ◉ | ◉ | | ◎ | ◎ |
|  | 3 | 12 - 20 mm | ◉ | ◉ | ◉ | | ◎ | ◉ |
|  | 4 - 6 | 10 - 20 mm | ◉ | ◉ | ◉ | | ◎ | ◉ |
| | 3 | 10 - 25 mm | | | | ◉ | | |
| | 6 | 12 - 20 mm | | | | | | ◉ |

# INDEX

Milling

## CFRP

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| DIA-BNC | DIA | | For CFRP milling<br>Multi flute, fine nick geometry | 6 - 12 | C.723 |
| DIA-HBC | DIA | | For CFRP milling<br>4 flutes, left-hand / right-hand flute to suppress delamination | 6 - 12 | C.724 |
| DIA-MFC | DIA | | For CFRP milling<br>Multi flute, for excellent surface finishing | 6 - 10 | C.725 |
| DIA-REC | DIA | | For CFRP milling<br>Multi flute, roughing and semi finishing | 6 - 10 | C.726 |
| HBC60 | - | | For honeycomb composite materials<br>2 flutes, left-hand / right-hand flute | 6 - 12 | C.727 |

## Ceramic end mills

Milling | Ceramic end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| CM-RMS | CERAMIC | | Ceramic end mill, peripheral cutting edge type<br>4 or 6 flutes | 6 - 12 | C.736 |
| CM-CRE | CERAMIC | | Ceramic end mill, end cutting edge type<br>5-7 flutes | 16 - 25 | C.737 |

## For super engineering plastics

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| SEP-EL NEW | DLC-IGUS | | DLC coated carbide end mill for super engineering plastics<br>2-3 flutes, sharp corner edge | 0,5 - 6 | C.747 |

## Variant Radius end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| VU-TBR | WXL | | Ball end mill for finishing, Taper barrel solid type | R150 - R500 | C.710 |
| VU-EGG | WXL | | Ball end mill for finishing, Oval shape type | R50 | C.711 |
| VU-EGG-H | DUROREY | | Ball end mill for finishing, Oval shape type | R50 | C.712 |
| PFB-BR | | | Ball end mill for finishing, Barrel type | R15 - R48 | C.882 |
| PFB-LZ | | | Ball end mill for finishing, Lens type | R15 - R48 | C.883 |

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Milling

## Super radius end mills

Milling | Carbide end mills

| | Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | AE-CRE-H | DUROREY | A | High efficiency radius type carbide end mill for high-hardness steels<br>4-5 flutes | 1 - 13 | C.639 |
| | AE-HS-CRE-H | DUROREY | A | For hardened steels up to 70 HRC<br>5 flutes, shorter overall length | 6 - 12 | C.640 |
| | WXS-HS-CRE | WXS | | For hardened steels up to 65 HRC and stainless steels<br>5 flutes, shorter overall length, super radius | 6 - 12 | C.715 |
| | WXS-CRE | WXS | | For hardened steels up to 65 HRC and stainless steels<br>Multi flute with super radius | 2 - 12 | C.716 |
| | SX-CRE<br>NEW | EgiAs | | For steels, stainless steel and Titanium alloys<br>Multi flute with super radius | 2 - 12 | C.656 |
| | SX-HS-CRE<br>NEW | EgiAs | | For steels, stainless steel and Titanium alloys<br>Shorter overall length, super radius | 6 - 12 | C.657 |
| | WX-HS-CRE | WX | | For general applications<br>4 flutes, shorter overall length, super radius | 6 - 12 | C.715 |
| | WX-CRE | WX | | For general applications<br>Multi flute, super radius | 2 - 13 | C.716 |
| | AE-HFE-H | | | High feed radius type carbide end mill for high-hardness steels<br>4-5 flutes | 1 - 12 | C.641 |
| | HFC-TI | - | | For high feed Titanium alloy milling<br>Multi flute | 16 - 25 | C.735 |
| | AM-HFC | DUROREY | A | For high feed additive manufacturing milling<br>Multi flute | 4 - 12 | C.706 |

## Corner radius long neck

Milling | Carbide end mills

| | Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | AE-CPR4-H | DUROREY | A | Carbide end mill with DUROREY coating<br>For hardened material up to 70HRC<br>4 flutes, unequal spacing. New spiral-shaped gash specification | 0,2 - 6 | C.642 |
| | AE-CPR2-H | DUROREY | A | Carbide end mill with DUROREY coating<br>For hardened material up to 70HRC<br>2 flutes, unequal spacing. | 0,2 - 3 | C.649 |
| | PHX-LN-CRE | WXS | | For steels up to 60 HRC<br>4 flutes, long neck, corner radius | 0,8 - 3 | C.708 |
| | WXS-CPR | WXS | | For hardened steels up to 65 HRC and stainless steels<br>2 flutes, long and pencil neck, corner radius, for mould and die<br>164 sizes | 0,2 - 4 | C.667 |
| | AE-CPR-N | DLC-IGUS | A | DLC-IGUSS Coated Carbide End Mill for Copper Electrodes<br>Long neck radius type for high-efficiency finishing<br>2-3 flutes | 0,2 - 6 | C.750 |

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Milling

## Corner radius long neck

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| DG-CPR | DG | | For graphite milling<br>Multi flute, long neck for deep reach, corner radius | 0,5 - 12 | C.722 |
| EPL-CPR | TiAlN | | For general applications<br>2 flutes, long neck, corner radius | 2 - 8 | C.793 |
| EPL-CPR-DIA | DIA | | For steels and stainless steels<br>2 flutes, long neck, corner radius | 4 - 8 | C.796 |
| EPS-CPR | TiAlN | | For hardened steels up to 65 HRC<br>2 flutes, long and pencil neck, corner radius | 1 - 4 | C.788 |

## Corner radius end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-VMS | DURARISE | A | Wide variety in applications and work materials<br>4 flutes, variable helix and unequal spacing | 1 - 25 | C.616 |
| AE-VML | DURARISE | A | Wide variety in applications and work materials<br>4 flutes, variable helix and unequal spacing<br>For side milling up to 4xD | 6 - 20 | C.624 |
| AE-VMFE | DURARISE | A | Wide variety in applications and work materials<br>4 flutes, variable helix and unequal spacing<br>Radius at both ends of cutting edge, deep wall milling | 6 - 22 | C.627 |
| NEO-CR-PHS | FX | | For exotic materials<br>4 flutes, variable helix and unequal spacing, corner radius | 3 - 20 | C.765 |
| NEO-CR-EMS | FX | | For exotic materials<br>6 flutes, variable helix and unequal spacing, corner radius | 6 - 20 | C.762 |
| AE-MS-H | DUROREY | A | For hardened steels up to 65 HRC and stainless steels<br>4-6 flutes, corner radius | 1 - 20 | C.629 |
| WXL-CR-EDS-6 | WXL | | For general applications<br>2 flutes, corner radius<br>Shank diameter 6 | 0,6 - 2,5 | C.690 |
| AM-CRE | DUROREY | | For additive manufacturing.<br>6-8 flutes | 6 - 20 | C.705 |
| UVX-TI-4FL | FX | | For steels and Titanium alloys<br>4 flutes, variable helix and unequal spacing, corner radius | 12 - 25 | C.728 |
| UVX-TI-4FL SAFE-LOCK® | FX | | For steels and Titanium alloys<br>4 flutes, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.729 |
| UVX-TI-5FL | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius | 12 - 25 | C.730 |
| UVX-TI-5FL-HB | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 12 - 20 | C.731 |
| UVX-TI-5FL SAFE-LOCK® | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.732 |

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Milling

## Corner radius end mills

Milling | Carbide end mills

| | Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | UVXL-TI-5FL | FX | | For steels and Titanium alloys<br>5 flutes, long length of cut, variable helix and unequal spacing, corner radius | 12 - 25 | C.733 |
| | UVXL-TI-5FL SAFE-LOCK | FX | | For steels and Titanium alloys<br>5 flutes, long length of cut, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.734 |
| | AE-TS-N | DLC | A | For non-ferrous materials<br>3 flutes, 1,5xD flute length (Neck length 3xD) | 1 - 25 | C.738 |
| | AE-VTS-N | DLC-IGUSS | A | For non-ferrous materials<br>3 flutes, 1,5xD flute length (Neck length 3xD), high performance | 1 - 12 | C.744 |
| | AE-VTFE-N | DLC-IGUSS | A | For aluminium and copper alloys<br>3 flutes, variable helix and unequal spacing<br>Long shank for deep reach | 6 - 22 | C.746 |
| | AERO-O-ETS | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, short length of cut, corner radius | 20 - 25 | C.758 |
| | AERO-ETS | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, short length of cut, corner radius | 12 - 25 | C.756 |
| | AERO-LN-ETS | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, long neck, corner radius | 16 - 25 | C.757 |
| | AERO-ETL | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, long length of cut, corner radius | 12 - 20 | C.759 |
| | AERO-EXTL | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, extra long length of cut, corner radius | 20 | C.760 |
| | AERO-LN-EDS | DLC | | For ultra high volume milling of aluminium alloys<br>2 flutes, long neck, corner radius | 16 - 25 | C.755 |
| | DLC-AIR-EDS | DLC | | For high volume milling of aluminium alloys<br>2 flutes, short length of cut, corner radius | 12 - 25 | C.754 |
| | EPL-HP-4FL | EgiAs | | For general applications and exotic materials<br>4 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 3 - 20 | C.771 |
| | EPL-HP-5FL | EgiAs | | For general applications and exotic materials<br>5 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 6 - 20 | C.773 |
| | EPL-TI-7FL NEW | AlCrN | | For Aerospace Alloys<br>7 flutes, centre cutting, square end and corner radius | 10 - 20 | C.774 |
| | FX-CR-MG-EMS | FX | | For general applications and cast iron<br>4 flutes, short length of cut, corner radius | 4 - 12 | C.766 |
| | FXS-PKE | FX | | For general applications<br>4 flutes, corner radius, for pocketing | 3 - 12 | C.767 |
| | EPN-AL-3FS | - | | For aluminium and copper alloys<br>3 flutes, short length of cut | 3 - 20 | C.798 |
| | EPN-AL-3FL | - | | For aluminium and copper alloys<br>3 flutes, long length of cut | 3 - 20 | C.799 |

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Milling

## Corner radius end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| EPA-AL-3FS | ALC | | For aluminium and copper alloys<br>3 flutes, with ALC coating, short length of cut | 3 - 20 | C.800 |
| EPA-AL-3FL | ALC | | For aluminium and copper alloys<br>3 flutes, with ALC coating, long length of cut | 3 - 20 | C.797 |
| HYP-CR-HI-WEMS | FX | | For general applications<br>4 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 4 - 20 | C.801 |
| HYP-CR-HD-WEMS | FX | | For general applications<br>4 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 6 - 20 | C.803 |
| EPL-HI-CR-WEMS | FX | | For general applications<br>4 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 4 - 20 | C.779 |
| EPL-HI-CR-EMS | FX | | For general applications<br>4 flutes, variable helix and unequal spacing, corner radius | 4 - 16 | C.778 |

## Ball nose end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-BD-H | DUROREY | A | For high hardness steels<br>2-flute ball type for high precision finishing | R0,5 - R6 | C.632 |
| AE-BM-H | DUROREY | A | For high hardness steels<br>4-flute ball type for high efficiency processing | R1 - R6 | C.631 |
| WXS-HS-EBD | WXS | | For hardened steels up to 65 HRC and stainless steels<br>2 flutes, shorter overall length, ball nose | R0,5 - R6 | C.661 |
| WXL-EBD | WXL | | For high speed milling in steels, stainless and cast iron<br>2 flutes, ball nose | R0,05 - R10 | C.692 |
| WXL-HS-EBD | WXL | | For high speed milling in steels, stainless and cast iron<br>2 flutes, shorter overall length, ball nose | R0,1 - R6 | C.691 |
| DG-EBD | DG | | For graphite milling<br>2 flutes, ball nose | R2 - R6 | C.720 |
| FXS-HS-EBM | FX | | For high speed milling in hardened steels<br>4 flutes, ball nose, shorter overall length | R3 - R10 | C.768 |
| FXS-EQD | FX | | For general applications<br>2 flutes, 220 degree ball nose | R0,5 - R5 | C.717 |
| AM-EBT | DUROREY | | For additive manufacturing<br>3 flutes | R1 - R10 | C.707 |
| CBN-FB2 NEW | - | | 2 fl utes CBN ball end mill<br>Excellent ball radius accuracy for high-quality surface fi nishing<br>Optimized shank design for ultra-high precision | R0,1 - R1,5 | C.718 |

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Milling

## Ball nose end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| HYP-SB-EBD | TiAlN | | For general applications<br>2 flutes, ball nose | R1,5 - R6 | C.805 |
| EPL-SB-EBD | TiAlN | | For general applications<br>2 flutes, ball nose | R0,5 - R10 | C.782 |
| EPL-SB-LN-EBD | TiAlN | | For general applications<br>2 flutes, long neck, ball nose | R0,5 - R10 | C.783 |
| EPL-SB-EBM | TiAlN | | For general applications<br>4 flutes, ball nose | R2 - R6 | C.784 |

## Ball nose end mills long neck

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-LNBD-H | DUROREY | A | For hardened steels up to 70 HRC and stainless steels<br>2 flutes, long neck, ball nose | R0,05 - R3 | C.633 |
| WXS-LN-EBD | WXS | | For hardened steels up to 65 HRC and stainless steels<br>2 flutes, long neck, ball nose | R0,05 - R3 | C.662 |
| WXL-LN-EBD | WXL | | For hardened steels up to 52 HRC and stainless steels<br>2 flutes, long neck, ball nose | R0,05 - R3 | C.694 |
| WXL-PC-EBD | WXL | | For hardened steels up to 52 HRC<br>2 flutes, ball nose, pencil neck | R0,2 - R6 | C.701 |
| PHX-LN-DBT | WXS | | For steels up to 60 HRC<br>3 flutes, long neck, ball nose | R0,3 - R3 | C.709 |
| AE-LNBD-N | DLC-IGUS | A | For aluminium and copper alloys<br>2 flutes, long neck, ball nose | R0,05 - R3 | C.748 |
| DG-LN-EBD | DG | | For graphite milling<br>2 flutes, ball nose, long neck for deep reach | R0,2 - R2 | C.721 |
| EPL-LN-EBD | TiAlN | | For general applications<br>2 flutes, long neck, ball nose | R0,15 - R3 | C.789 |
| EPS-LN-EBD | TiAlN | | For hardened steels up to 65 HRC<br>2 flutes, long neck, ball nose | R0,1 - R3 | C.785 |
| EPL-PC-EBD | TiAlN | | For general applications<br>2 flutes, pencil neck, ball nose | R0,5 - R4 | C.791 |
| EPL-PC-EBD-DIA | DIA | | For steels and stainless steels<br>2 flutes, pencil neck, ball nose | R0,5 - R4 | C.792 |

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Milling

## Square end mills

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| WXL-1.5D-DE | WXL | | For steels, stainless, copper<br>2 flutes, 1.5xD applications, square | 0,1 - 12 | C.673 |
| WXL-2D-DE | WXL | | For steels, stainless, copper<br>2 flutes, 2xD applications, square | 0,1 - 30 | C.675 |
| WXL-3D-DE | WXL | | For steels, stainless, copper<br>2 flutes, 3xD applications, square | 0,1 - 20 | C.679 |
| WXL-4D-DE | WXL | | For steels, stainless, copper<br>2 flutes, 4xD applications, square | 0,2 - 12 | C.681 |
| CA-RG-EDS | - | | For aluminium and copper alloys<br>2 flutes, short length of cut | 1 - 20 | C.769 |
| HYP-F1 | - | | For aluminium milling<br>1 flute | 3 - 12 | C.807 |

## Square end mills multi flute

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-VMS | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration carbide end mill | 3 - 25 | C.616 |
| AE-VMS RA | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration carbide end mill<br>With right corner for milling straight corners | 3-6 | C.618 |
| AE-VMSS | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration stub carbide end mill | 1 - 12 | C.619 |
| AE-VMSS RA | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration stub carbide end mill<br>With right corner for milling straight corners | 1-6 | C.621 |
| AE-VMSX NEW | DURAREY | A | 4 flutes, variable helix and unequal spacing<br>Reinforced cutting edge and micro relief | 3 - 12 | C.623 |
| AE-VML | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration long carbide end mill | 6 - 20 | C.624 |
| AE-VMFE | DUARISE | A | Wide variety in applications and work materials<br>4 flutes, anti-vibration carbide end mill<br>Long shank for deep reach | 6 - 22 | C.627 |
| AE-MS-H | DURAREY | A | For hardened steels up to 65 HRC and stainless steels<br>4-6 flutes, anti-vibration carbide end mill | 1 - 20 | C.629 |
| AE-MSS-H | DURAREY | A | For hardened steels up to 65 HRC and stainless steels<br>4-6 flutes anti-vibration stub carbide endmills | 3 - 12 | C.628 |
| AE-ML-H | DURAREY | A | For hardened steels up to 65 HRC and stainless steels<br>4-6 flutes anti-vibration long carbide endmills | 3 - 20 | C.630 |
| WXS-EMS | WXS | | For hardened steels and stainless steels<br>Multi flute, high speed machining | 1 - 20 | C.660 |

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Milling

## Square end mills multi flute

Milling | Carbide end mills

| | Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|---|
| | WXL-EMS | WXL | | For high speed milling in steels, stainless and cast iron<br>4 flutes, square | 1 - 30 | C.683 |
| | NEO-EMS | FX | | For exotic materials<br>6 flutes, variable helix and unequal spacing | 6 - 20 | C.763 |
| | NEO-PHS | FX | | For exotic materials<br>4 flutes, variable helix and unequal spacing | 3 - 20 | C.764 |
| | UP-PHS | FX | | For steels, stainless, Titanium alloys<br>4 flutes, anti-vibration | 3 - 12 | C.761 |
| | UVX-TI-4FL | FX | | For steels and Titanium alloys<br>4 flutes, variable helix and unequal spacing, corner radius | 12 - 25 | C.728 |
| | UVX-TI-4FL<br>SAFE-LOCK® | FX | | For steels and Titanium alloys<br>4 flutes, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.729 |
| | UVX-TI-5FL | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius | 12 - 25 | C.730 |
| | UVX-TI-5FL-HB | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 12 - 20 | C.731 |
| | UVX-TI-5FL<br>SAFE-LOCK® | FX | | For steels and Titanium alloys<br>5 flutes, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.732 |
| | UVXL-TI-5FL | FX | | For steels and Titanium alloys<br>5 flutes, long length of cut, variable helix and unequal spacing, corner radius | 12 - 25 | C.733 |
| | UVXL-TI-5FL<br>SAFE-LOCK® | FX | | For steels and Titanium alloys<br>5 flutes, long length of cut, variable helix and unequal spacing, corner radius<br>SafeLock shank | 12 - 25 | C.734 |
| | WX-G-ETSS | WX | | For general applications<br>3 flutes, extra short length of cut | 3 - 16 | C.714 |
| | AE-TS-N | DLC | A | For aluminium and copper alloys<br>3 flutes, up to 3xD | 1 - 25 | C.738 |
| | AE-TS-N SP | DLC | A | For aluminium and copper alloys<br>3 flutes, up to 3xD<br>With sharp corner edge for straight corner finishing | 1 - 12 | C.739 |
| | AE-TL-N | DLC | A | For aluminium and copper alloys<br>3 flutes, up to 5D | 3 - 25 | C.740 |
| | AE-TL-N SP | DLC | A | For aluminium and copper alloys<br>3 flutes, up to 5D<br>With sharp corner edge for straight corner finishing | 3 - 12 | C.741 |
| | AE-TL-N<br>CHIPBREAKER NEW | DLC | A | For non-ferrous materials<br>3 flutes, long length of cut | 6 - 20 | C.742 |
| | AE-VTS-N | DLC-IGUSS | A | For aluminium and copper alloys<br>3 flutes, variable helix and unequal spacing<br>Up to 3xD | 1 - 12 | C.744 |
| | AE-VTS-N SP | DLC-IGUSS | A | For aluminium and copper alloys<br>3 flutes, variable helix and unequal spacing up to 3xD<br>With sharp corner edge for straight corner finishing | 1 - 12 | C.745 |

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Milling

## Square end mills multi flute

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-VTFE-N | DLC-IGUSS | A | For aluminium and copper alloys<br>3 flutes, variable helix and unequal spacing<br>Long shank for deep reach | 6 - 22 | C.746 |
| AERO-ETS | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, short length of cut, corner radius | 12 - 25 | C.756 |
| AERO-ETL | DLC | | For ultra high volume milling of aluminium alloys<br>3 flutes, long length of cut, corner radius | 12 - 20 | C.759 |
| CA-ETS | - | | For aluminium and copper alloys<br>3 flutes, short length of cut | 3 - 20 | C.770 |
| EPL-HP-4FL | EgiAs | | For general applications and exotic materials<br>4 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 3 - 20 | C.771 |
| EPL-HP-5FL | EgiAs | | For general applications and exotic materials<br>5 flutes, variable helix and unequal spacing, corner radius<br>Weldon shank | 6 - 20 | C.773 |
| EPL-TI-7FL NEW | AlCrN | | For Aerospace Alloys<br>7 flutes, centre cutting, square end and corner radius | 10 - 20 | C.774 |
| HYP-HI-(W)EMS | TiAlN | | For general applications<br>4 flutes, variable helix and unequal spacing<br>Also with Weldon shank | 4 - 20 | C.802 |
| EPL-ETS | TiAlN | | For general applications<br>3 flutes, square | 4 - 16 | C.781 |
| EPL-HI-WEMS | TiAlN | | For general applications<br>4 flutes, variable helix and unequal spacing<br>Weldon shank | 4 - 20 | C.777 |
| EPL-HI-EMS | TiAlN | | For general applications<br>4 flutes, variable helix and unequal spacing | 4 - 20 | C.776 |

## Square end mills long neck

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| WXL-LN-EDS | WXL | | For hardened steels up to 52 HRC<br>2 flutes, long neck, square | 0,1 - 12 | C.685 |
| WXL-LN-EMS-6 | WXL | | For hardened steels up to 52 HRC<br>4 flutes, long neck<br>Shank diameter 6 | 1 - 6 | C.684 |

# INDEX

Milling

## Roughing

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| HYP-HP-WRESF | TiAlN | | For general applications<br>Multi flute, for roughing<br>Weldon shank | 6 - 25 | C.804 |
| EPL-WRESF | TiAlN | | For general applications<br>4 flutes, roughing<br>Weldon shank | 4 - 25 | C.780 |

## Plunging

Milling | Carbide end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| AE-VTSS | DURARISE | A | Anti-Vibration Carbide End Mill Compatible with Sliding Head Lathes<br>Wide variety in applications and work materials<br>3 flutes, variable helix and unequal spacing | 3 - 12 | C.713 |
| WX-G-ETSS | WX | | For general applications<br>3 flutes, extra short length of cut | 3 - 16 | C.714 |
| HYP-ZDS | TiAlN | | For general applications<br>For counterboring | 4 - 10 | C.806 |

## Slotting

Milling | HSS/PM end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| V-XPM-WEDS | V | | Powder metal end mill with V coating<br>2 flutes square, short length of cut<br>Weldon shank | 2 - 30 | C.808 |
| V-XPM-WEDL | V | | Powder metal end mill with V coating<br>2 flutes square, long length of cut<br>Weldon shank | 3 - 30 | C.811 |
| V-WEDS | V | | HSS-Co end mill with V coating<br>2 flutes square, short length of cut<br>Weldon shank | 1 - 40 | C.809 |
| V-WEDL | V | | HSS-Co end mill with V coating<br>2 flutes square, long length of cut<br>Weldon shank | 1,5 - 30 | C.812 |

# INDEX

Milling

## Multi fluted end mills

Milling | HSS/PM end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| V-XPM-WETS | V | | Powder metal end mill with V coating<br>3 flutes square, short length of cut<br>Weldon shank | 3 - 30 | C.813 |
| V-XPM-WETL | V | | Powder metal end mill with V coating<br>3 flutes square, long length of cut<br>Weldon shank | 3 - 30 | C.816 |
| V-XPM-WEHS | V | | Powder metal end mill with V coating<br>Multi flute square with 50° helix, short length of cut<br>Weldon shank | 2 - 30 | C.814 |
| V-XPM-WEMS | V | | Powder metal end mill with V coating<br>Multi flute square, short length of cut<br>Weldon shank | 3 - 30 | C.818 |
| V-XPM-WEML | V | | Powder metal end mill with V coating<br>Multi flute square, long length of cut<br>Weldon shank | 3 - 30 | C.820 |
| V-WETS | V | | HSS-Co end mill with V coating<br>3 flutes square, short length of cut<br>Weldon shank | 1,5 - 30 | C.815 |
| V-WETL | V | | HSS-Co end mill with V coating<br>3 flutes square, long length of cut<br>Weldon shank | 3 - 30 | C.817 |
| V-WEMS | V | | HSS-Co end mill with V coating<br>Multi flute square, short length of cut<br>Weldon shank | 1,5 - 40 | C.819 |
| V-WEML | V | | Powder metal end mill with V coating<br>Multi flute square, long length of cut<br>Weldon shank | 2 - 40 | C.821 |

## Roughing end mills

Milling | HSS/PM end mills

| Product name | | A-brand | Features | Range | Page |
|---|---|---|---|---|---|
| V-XPM-WRESF | V | | Powder metal end mill with V coating<br>Roughing multi flute square, short length of cut<br>Weldon shank | 6 - 32 | C.823 |
| VP-RESF-SP | V | | Powder metal end mill with V coating<br>Roughing multi flute square, short length of cut<br>Weldon shank | 6 - 25 | C.825 |
| VP-RELF | V | | Powder metal end mill with V coating<br>Roughing multi flute square, long length of cut<br>Weldon shank | 10 - 25 | C.826 |
| V-WREES | V | | HSS-Co end mill with V coating<br>Roughing multi flute square, short length of cut<br>Weldon shank | 6 - 40 | C.827 |
| V-WREEL | V | | HSS-Co end mill with V coating<br>Roughing multi flute square, long length of cut<br>Weldon shank | 8 - 40 | C.828 |
| SI-WH-WRESF | WXL | | Powder metal end mill with WXL coating<br>Roughing fine pitch, multi flute square<br>Short length of cut, variable helix and unequal spacing<br>Weldon shank | 6 - 25 | C.822 |
| V-WRESF | V | | HSS-Co end mill with V coating<br>Roughing fine pitch, multi flute square, short length of cut<br>Weldon shank | 6 - 40 | C.824 |

# INDEX

Milling

## Face milling cutters

Milling | Indexables

| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PAS BORE | 45° | 45° face milling with double side 8 corner inserts | 50 -125 mm | 4 - 8 | C.836 |
| PAO BORE | 45° | 45° face milling with double side 16 corner inserts | 50 -200 mm | 5 - 25 | C.837 |
| PFAL BORE | - | Face milling finishing cutter for aluminium with PCD blades | 50 -160 mm | 5 - 20 | C.838 |
| PFDC | 90° | Economical 4-corner insert with 90° cutting angle | 80 -125 mm | 4-5 | C.839 |

## Shoulder cutters

Milling | Indexables

| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PSTW SS | 90° | 90° shoulder milling with double side 6 corner inserts | 25 - 40 mm | 2 - 5 | C.840 |
| PSTW BORE | 90° | 90° shoulder milling with double side 6 corner inserts | 40 - 125 mm | 3 - 9 | C.841 |
| PSE WS/PSE SS | 90° | 90° shoulder milling with 2 corner insert with bottom notch | 10 - 63 mm | 2 - 6 | C.842 |
| PSE BORE | 90° | 90° shoulder milling with 2 corner insert with bottom notch | 40 - 100 mm | 4 - 10 | C.844 |
| PSE SCREW FIT | 90° | 90° shoulder milling with 2 corner insert with bottom notch | 10 - 40 mm | 2 - 6 | C.845 |
| PSEL SS | 90° | 90° shoulder milling with long length of cut | 25 - 50 mm | 2 - 4 | C.846 |
| PSEL BORE | 90° | 90° shoulder milling with long length of cut | 50 - 80 mm | 3 - 4 | C.847 |
| PSF SS | - | Shoulder milling with 4 corner inserts | 25 - 40 mm | 3 - 5 | C.848 |
| PSF BORE | - | Shoulder milling with 4 corner inserts | 50 - 80 mm | 6 - 9 | C.849 |

# INDEX

Milling

## Shoulder cutters

Milling | Indexables

| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PSFL SS | - | Shoulder milling with 4 corner inserts with long length of cut | 32 - 40 mm | 2 - 3 | C.850 |
| PSFL BORE | - | Shoulder milling with 4 corner inserts with long length of cut | 50 - 100 mm | 4 - 6 | C.851 |
| PMD SS | 90° | Multi function cutter, milling and drilling | 16 - 32 mm | 2 | C.852 |
| PMD SF | 90° | Multi function cutter, milling and drilling | 16 - 32 mm | 2 | C.853 |

## Radius cutters

Milling | Indexables

| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PHC SS | HIGH FEED | High feed cutter for long overhang | 16 - 40 mm | 2 - 5 | C.854 |
| PHC BORE | HIGH FEED | High feed cutter | 40 - 100 mm | 4 - 8 | C.855 |
| PHC SCREW FIT | HIGH FEED | High feed cutter | 16 - 40 mm | 2 - 5 | C.856 |
| PRC SS | | Radius cutter with round inserts | 20 - 63 mm | 2 - 4 | C.857 |
| PRC BORE | | Radius cutter with round inserts | 50 - 100 mm | 4 - 10 | C.858 |
| PRC SCREW FIT | | Radius cutter with round inserts | 20 - 40 mm | 2 - 4 | C.859 |
| PDR SS | HIGH FEED CORNER RADIUS | Corner radius cutter for deep depth of cut | 40 - 50 mm | 2 - 3 | C.860 |
| PDR BORE | HIGH FEED CORNER RADIUS | Corner radius cutter for deep depth of cut | 63 - 125 mm | 3 - 6 | C.861 |

# INDEX

Milling

## Profile finishing

Milling | Indexables

| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PFB | | Finishing ball nose cutter | 6 - 32 mm | 2 | C.862 |
| PFB SCREW FIT | | Finishing ball nose cutter | 10 - 30 mm | 2 | C.863 |
| PFR | | Finishing corner radius cutter | 6 - 32 mm | 2 | C.864 |
| PFR SCREW FIT | | Finishing corner radius cutter | 10 - 32 mm | 2 | C.865 |

## Exchangeable Milling Head

Milling | Indexables

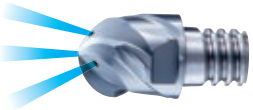
| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PXNL | | Low variable helix with roughing shape | 10 - 25 mm | 4 | C.888 |
| PXNL OH | | Low variable helix with roughing shape | 12 - 25 mm | 4 | C.889 |
| PXNH | | High variable helix with roughing shape | 10 - 25 mm | 4 | C.888 |
| PXNH OH | | High variable helix with roughing shape | 12 - 25 mm | 4 | C.890 |
| PXVC | | High variable helix for L/D up to 7xD | 10 - 32 mm | 4 | C.891 |
| PXSE | | Variable helix for L/D up to 5xD | 10 - 25 mm | 4 | C.892 |
| PXSE OH | | Variable helix for L/D up to 5xD | 12 - 25 mm | 4 | C.893 |
| PXSM | | Multi flute variable helix for L/D up to 5xD | 10 - 25 mm | 6 - 10 | C.894 |
| PXRE | | Corner radius with straight flute for L/D up to 5xD | 10 - 20 mm | 4 - 6 | C.895 |

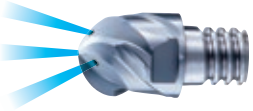
# INDEX

Milling

## Exchangeable Milling Head

Milling | Indexables





| Product series | Tool specification | Features | Size range | Z | Page |
|---|---|---|---|---|---|
| PXDR-P | | Corner radius with high helix flute for L/D up to 7xD | 10 - 20 mm | 3 | C.895 |
| PXDR-N | | Corner radius with high helix flute for L/D up to 7xD | 10 - 20 mm | 3 | C.895 |
| PXSH | | Multi flute square solid carbide head<br>For high hardness steels | 12 - 25 mm | 6-8 | C.896 |
| PXBE-P | | 3 flute ball nose for L/D up to 7xD | 10 - 20 mm | 3 | C.895 |
| PXBE-P OH | | 3 flute ball nose for L/D up to 7xD | 12 - 20 mm | 3 | C.898 |
| PXBE-N | | 3 flute ball nose for L/D up to 5xD | 10 - 20 mm | 3 | C.897 |
| PXBE-N OH | | 3 flute ball nose for L/D up to 5xD | 12 - 20 mm | 3 | C.898 |
| PXBM | | Multi flute ball nose for L/D up to 5xD | 10 - 20 mm | 4 - 6 | C.897 |
| PXAL | | 3 flutes variable helix for aluminium and copper alloys | 10 - 25 mm | 3 | C.899 |
| PXHF-AM | | Multi flute for high feed additive manufacturing milling | 12 - 20 mm | 6 | C.900 |

# ISO 13399 LEGEND



| ISO code | Description |
|---|---|
| APMX | Depth of cut maximum |
| CHW | Corner chamfer width |
| DC | Cutting diameter |
| DCF | Cutting diameter face contact |
| DCON | Connection diameter |
| DN | Neck diameter |
| DNX | Neck diameter maximum |
| LCF | Length chip flute |
| LF | Functional length |
| LH | Head length |
| LU | Usable length |
| RE | Corner radius |
| RE2 | Secondary radius |
| RE3 | Tertiary radius |
| ULDR | Usable length diameter ratio |
| ZEFP | Peripheral effective cutting edge count |
| θk | Tool piece angle |
| θn | Neck half taper angle |

# AE-VMS

**Milling | Solid carbide**

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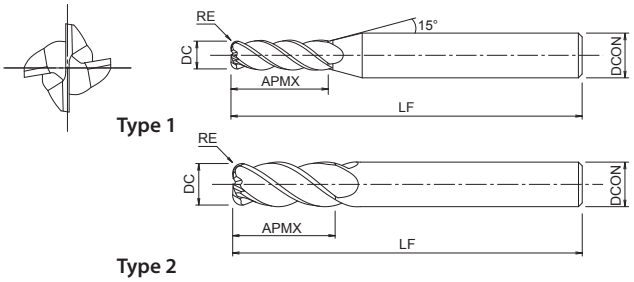
## NEW SIZES




- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

A | CARBIDE | DUARISE | 37°~40° | 0~-0.02 | SHRINK FIT | C.905

| EDP | DC | RE | APMX | DCON | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8556020 NEW | 1 | 0,1 | 2,5 | 4 | 50 | 4 | 1 |
| 8556021 NEW | 1 | 0,2 | 2,5 | 4 | 50 | 4 | 1 |
| 8555821 NEW | 1 | - | 2,5 | 4 | 50 | 4 | 1 |
| 8555822 NEW | 1,5 | - | 4 | 4 | 50 | 4 | 1 |
| 8555823 NEW | 2 | - | 5 | 4 | 50 | 4 | 1 |
| 8556022 NEW | 2 | 0,1 | 5 | 4 | 50 | 4 | 1 |
| 8556023 NEW | 2 | 0,2 | 5 | 4 | 50 | 4 | 1 |
| 8555824 NEW | 2,5 | - | 6,5 | 4 | 50 | 4 | 1 |
| 8555830 | 3 | - | 8 | 6 | 60 | 4 | 1 |
| 8556050 | 3 | 0,2 | 8 | 6 | 60 | 4 | 1 |
| 8556060 | 3 | 0,5 | 8 | 6 | 60 | 4 | 1 |
| 8555835 NEW | 3,5 | - | 10 | 6 | 60 | 4 | 1 |
| 8555840 | 4 | - | 11 | 6 | 60 | 4 | 1 |
| 8556070 | 4 | 0,2 | 11 | 6 | 60 | 4 | 1 |
| 8556080 | 4 | 0,5 | 11 | 6 | 60 | 4 | 1 |
| 8556090 | 4 | 1 | 11 | 6 | 60 | 4 | 1 |
| 8555845 NEW | 4,5 | - | 11 | 6 | 60 | 4 | 1 |
| 8555850 | 5 | - | 13 | 6 | 60 | 4 | 1 |
| 8556100 | 5 | 0,2 | 13 | 6 | 60 | 4 | 1 |
| 8556110 | 5 | 0,5 | 13 | 6 | 60 | 4 | 1 |
| 8556120 | 5 | 1 | 13 | 6 | 60 | 4 | 1 |
| 8555855 NEW | 5,5 | - | 13 | 6 | 60 | 4 | 1 |
| 8555860 | 6 | - | 13 | 6 | 60 | 4 | 2 |
| 8556130 | 6 | 0,3 | 13 | 6 | 60 | 4 | 2 |
| 8556140 | 6 | 0,5 | 13 | 6 | 60 | 4 | 2 |
| 8556150 | 6 | 1 | 13 | 6 | 60 | 4 | 2 |
| 8555880 | 8 | - | 19 | 8 | 70 | 4 | 2 |
| 8556160 | 8 | 0,3 | 19 | 8 | 70 | 4 | 2 |
| 8556170 | 8 | 0,5 | 19 | 8 | 70 | 4 | 2 |
| 8556180 | 8 | 1 | 19 | 8 | 70 | 4 | 2 |
| 8556190 | 8 | 1,5 | 19 | 8 | 70 | 4 | 2 |
| 8556200 | 8 | 2 | 19 | 8 | 70 | 4 | 2 |
| 8555900 | 10 | - | 22 | 10 | 80 | 4 | 2 |
| 8556210 | 10 | 0,3 | 22 | 10 | 80 | 4 | 2 |
| 8556220 | 10 | 0,5 | 22 | 10 | 80 | 4 | 2 |
| 8556230 | 10 | 1 | 22 | 10 | 80 | 4 | 2 |
| 8556240 | 10 | 1,5 | 22 | 10 | 80 | 4 | 2 |
| 8556250 | 10 | 2 | 22 | 10 | 80 | 4 | 2 |
| 8556260 | 10 | 3 | 22 | 10 | 80 | 4 | 2 |
| 8555920 | 12 | - | 26 | 12 | 90 | 4 | 2 |
| 48354123 | 12 | 0,3 | 26 | 12 | 90 | 4 | 2 |
| 8556270 | 12 | 0,5 | 26 | 12 | 90 | 4 | 2 |
| 8556280 | 12 | 1 | 26 | 12 | 90 | 4 | 2 |
| 8556290 | 12 | 1,5 | 26 | 12 | 90 | 4 | 2 |
| 8556300 | 12 | 2 | 26 | 12 | 90 | 4 | 2 |
| 8556310 | 12 | 3 | 26 | 12 | 90 | 4 | 2 |

# AE-VMS

**Milling | Solid carbide**

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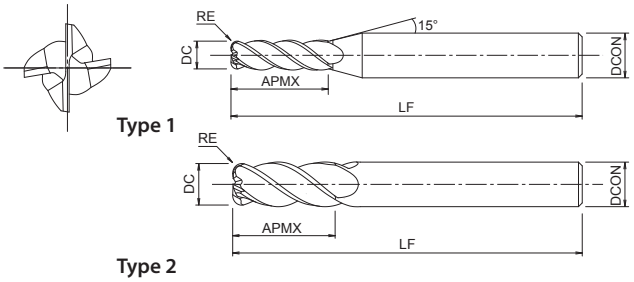


- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

A | CARBIDE | DUARISE | 37°~40° | 0~-0.02 | SHRINK FIT

C.905

| EDP | DC | RE | APMX | DCON | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8555960 | 16 | - | 32 | 16 | 100 | 4 | 2 |
| 8557300 | 16 | 0,5 | 32 | 16 | 100 | 4 | 2 |
| 8557301 | 16 | 1 | 32 | 16 | 100 | 4 | 2 |
| 48354163 | 16 | 1,5 | 32 | 16 | 100 | 4 | 2 |
| 8557302 | 16 | 2 | 32 | 16 | 100 | 4 | 2 |
| 8557303 | 16 | 2,5 | 32 | 16 | 100 | 4 | 2 |
| 8557304 | 16 | 3 | 32 | 16 | 100 | 4 | 2 |
| 8557305 | 16 | 4 | 32 | 16 | 100 | 4 | 2 |
| 8556000 | 20 | - | 40 | 20 | 110 | 4 | 2 |
| 8557310 | 20 | 0,5 | 40 | 20 | 110 | 4 | 2 |
| 8557311 | 20 | 1 | 40 | 20 | 110 | 4 | 2 |
| 8557312 | 20 | 2 | 40 | 20 | 110 | 4 | 2 |
| 8557313 | 20 | 2,5 | 40 | 20 | 110 | 4 | 2 |
| 8557314 | 20 | 3 | 40 | 20 | 110 | 4 | 2 |
| 8557315 | 20 | 4 | 40 | 20 | 110 | 4 | 2 |
| 8557316 | 20 | 5 | 40 | 20 | 110 | 4 | 2 |
| 8556010 | 25 | - | 50 | 25 | 120 | 4 | 2 |
| 8557321 | 25 | 1 | 50 | 25 | 120 | 4 | 2 |
| 8557322 | 25 | 2 | 50 | 25 | 120 | 4 | 2 |
| 8557324 | 25 | 3 | 50 | 25 | 120 | 4 | 2 |
| 8557325 | 25 | 4 | 50 | 25 | 120 | 4 | 2 |
| 8557326 | 25 | 5 | 50 | 25 | 120 | 4 | 2 |

# AE-VMS RA

**Milling | Solid carbide**

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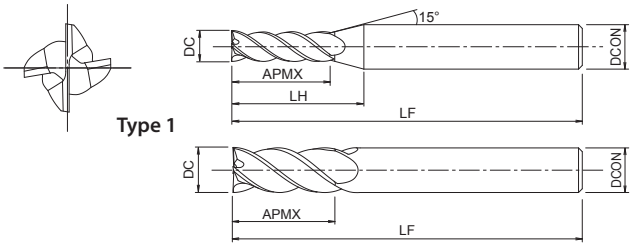
**NEW SIZES**




Type 1

Type 2

- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing
- Right angle for milling straight corners

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

A | CARBIDE | DUARISE | 37°~40° | 0~-0.02 | SHRINK FIT | RA

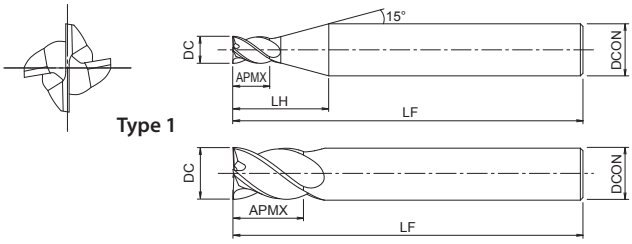
C.905

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8555728 NEW | 1 | 2,5 | 4 | 50 | 8,9 | 4 | 1 |
| 8555729 NEW | 2 | 5 | 4 | 50 | 10,2 | 4 | 1 |
| 8555730 | 3 | 8 | 6 | 60 | 15,9 | 4 | 1 |
| 8555740 | 4 | 11 | 6 | 60 | 17,1 | 4 | 1 |
| 8555750 | 5 | 13 | 6 | 60 | 17,2 | 4 | 1 |
| 8555760 | 6 | 13 | 6 | 60 | - | 4 | 2 |

# AE-VMSS



**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing
- Stub length of cut

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8556410 | 1 | 1,5 | 4 | 40 | 7,9 | 4 | 1 |
| 8556411 | 1,1 | 1,7 | 4 | 40 | 8 | 4 | 1 |
| 8556412 | 1,2 | 1,8 | 4 | 40 | 7,9 | 4 | 1 |
| 8556413 | 1,3 | 2 | 4 | 40 | 7,9 | 4 | 1 |
| 8556414 | 1,4 | 2,1 | 4 | 40 | 8 | 4 | 1 |
| 8556415 | 1,5 | 2,3 | 4 | 40 | 7,8 | 4 | 1 |
| 8556416 | 1,6 | 2,4 | 4 | 40 | 7,9 | 4 | 1 |
| 8556417 | 1,7 | 2,6 | 4 | 40 | 7,7 | 4 | 1 |
| 8556418 | 1,8 | 2,7 | 4 | 40 | 7,6 | 4 | 1 |
| 8556419 | 1,9 | 2,9 | 4 | 40 | 7,7 | 4 | 1 |
| 8556420 | 2 | 3 | 4 | 40 | 8,2 | 4 | 1 |
| 8556421 | 2,1 | 3,2 | 4 | 40 | 8,2 | 4 | 1 |
| 8556422 | 2,2 | 3,3 | 4 | 40 | 8,1 | 4 | 1 |
| 8556423 | 2,3 | 3,5 | 4 | 40 | 8,1 | 4 | 1 |
| 8556424 | 2,4 | 3,6 | 4 | 40 | 8 | 4 | 1 |
| 8556425 | 2,5 | 3,8 | 4 | 40 | 8 | 4 | 1 |
| 8556426 | 2,6 | 3,9 | 4 | 40 | 8,5 | 4 | 1 |
| 8556427 | 2,7 | 4,1 | 4 | 40 | 8,5 | 4 | 1 |
| 8556428 | 2,8 | 4,2 | 4 | 40 | 8,4 | 4 | 1 |
| 8556429 | 2,9 | 4,4 | 4 | 40 | 8,4 | 4 | 1 |
| 8556430 | 3 | 4,5 | 6 | 45 | 12,2 | 4 | 1 |
| 8556431 | 3,1 | 4,7 | 6 | 45 | 12,2 | 4 | 1 |
| 8556432 | 3,2 | 4,8 | 6 | 45 | 12,2 | 4 | 1 |
| 8556433 | 3,3 | 5 | 6 | 45 | 12,2 | 4 | 1 |
| 8556434 | 3,4 | 5,1 | 6 | 45 | 12,1 | 4 | 1 |
| 8556435 | 3,5 | 5,3 | 6 | 45 | 12,1 | 4 | 1 |
| 8556436 | 3,6 | 5,4 | 6 | 45 | 12 | 4 | 1 |
| 8556437 | 3,7 | 5,6 | 6 | 45 | 12 | 4 | 1 |
| 8556438 | 3,8 | 5,7 | 6 | 45 | 11,9 | 4 | 1 |
| 8556439 | 3,9 | 5,9 | 6 | 45 | 11,9 | 4 | 1 |
| 8556440 | 4 | 6 | 6 | 45 | 11,9 | 4 | 1 |
| 8556441 | 4,1 | 6,2 | 6 | 45 | 12,1 | 4 | 1 |
| 8556442 | 4,2 | 6,3 | 6 | 45 | 12 | 4 | 1 |
| 8556443 | 4,3 | 6,5 | 6 | 45 | 12 | 4 | 1 |
| 8556444 | 4,4 | 6,6 | 6 | 45 | 11,9 | 4 | 1 |
| 8556445 | 4,5 | 6,8 | 6 | 45 | 11,9 | 4 | 1 |
| 8556446 | 4,6 | 6,9 | 6 | 45 | 11,8 | 4 | 1 |
| 8556447 | 4,7 | 7,1 | 6 | 45 | 11,9 | 4 | 1 |
| 8556448 | 4,8 | 7,2 | 6 | 45 | 11,8 | 4 | 1 |
| 8556449 | 4,9 | 7,4 | 6 | 45 | 11,8 | 4 | 1 |
| 8556450 | 5 | 7,5 | 6 | 45 | 11,7 | 4 | 1 |
| 8556451 | 5,1 | 7,7 | 6 | 45 | 11,7 | 4 | 1 |
| 8556452 | 5,2 | 7,8 | 6 | 45 | 11,6 | 4 | 1 |
| 8556453 | 5,3 | 8 | 6 | 45 | 11,6 | 4 | 1 |
| 8556454 | 5,4 | 8,1 | 6 | 45 | 11,5 | 4 | 1 |
| 8556455 | 5,5 | 8,3 | 6 | 45 | 11,6 | 4 | 1 |

# AE-VMSS

**Milling | Solid carbide**

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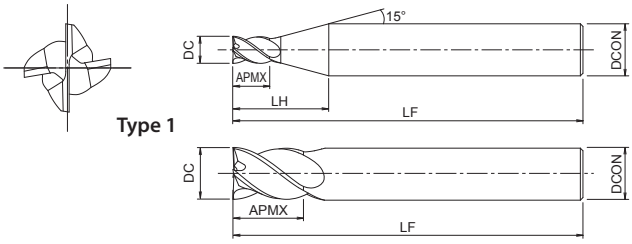


Type 1




Type 2

- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing
- Stub length of cut

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8556456 | 5,6 | 8,4 | 6 | 45 | 11,5 | 4 | 1 |
| 8556457 | 5,7 | 8,6 | 6 | 45 | 11,5 | 4 | 1 |
| 8556458 | 5,8 | 8,7 | 6 | 45 | 11,4 | 4 | 1 |
| 8556459 | 5,9 | 8,9 | 6 | 45 | 11,4 | 4 | 1 |
| 8556460 | 6 | 9 | 6 | 45 | - | 4 | 2 |
| 8556465 | 6,5 | 9,8 | 8 | 60 | 14,9 | 4 | 1 |
| 8556470 | 7 | 10,5 | 8 | 60 | 14,7 | 4 | 1 |
| 8556475 | 7,5 | 11,3 | 8 | 60 | 14,6 | 4 | 1 |
| 8556480 | 8 | 12 | 8 | 60 | - | 4 | 2 |
| 8556485 | 8,5 | 12,8 | 10 | 70 | 17,9 | 4 | 1 |
| 8556490 | 9 | 13,5 | 10 | 70 | 17,7 | 4 | 1 |
| 8556495 | 9,5 | 14,3 | 10 | 70 | 17,6 | 4 | 1 |
| 8556500 | 10 | 15 | 10 | 70 | - | 4 | 2 |
| 8556505 | 10,5 | 15,8 | 12 | 75 | 20,9 | 4 | 1 |
| 8556510 | 11 | 16,5 | 12 | 75 | 20,7 | 4 | 1 |
| 8556515 | 11,5 | 17,3 | 12 | 75 | 20,6 | 4 | 1 |
| 8556520 | 12 | 18 | 12 | 75 | - | 4 | 2 |

# AE-VMSS RA

**Milling | Solid carbide**

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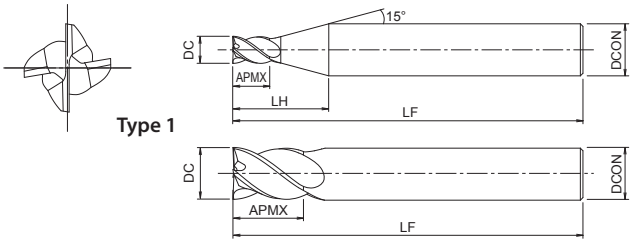



Type 1




Type 2

- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing
- Stub length of cut, right angle for milling 90° corners

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

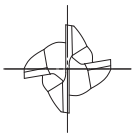
A | CARBIDE | DUARISE | 37°~40° | 0~-0.02 | SHRINK FIT | RA

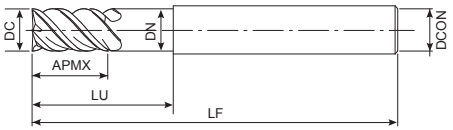
C.906

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8556550 | 1 | 1,5 | 4 | 40 | 7,9 | 4 | 1 |
| 8556555 | 1,5 | 2,3 | 4 | 40 | 7,8 | 4 | 1 |
| 8556560 | 2 | 3 | 4 | 40 | 8,2 | 4 | 1 |
| 8556565 | 2,5 | 3,8 | 4 | 40 | 8 | 4 | 1 |
| 8556570 | 3 | 4,5 | 6 | 45 | 12,2 | 4 | 1 |
| 8556575 | 3,5 | 5,3 | 6 | 45 | 12,1 | 4 | 1 |
| 8556580 | 4 | 6 | 6 | 45 | 11,9 | 4 | 1 |
| 8556585 | 4,5 | 6,8 | 6 | 45 | 11,9 | 4 | 1 |
| 8556590 | 5 | 7,5 | 6 | 45 | 11,7 | 4 | 1 |
| 8556595 | 5,5 | 8,3 | 6 | 45 | 11,6 | 4 | 1 |
| 8556600 | 6 | 9 | 6 | 45 | - | 4 | 2 |

# AE-VMSS

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with DUARISE coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing
- Stub length of cut, long neck type

| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| 8556618 | 6 | 18 | 9 | 6 | 5,8 | 60 | 4 |
| 8556630 | 6 | 30 | 9 | 6 | 5,8 | 70 | 4 |
| 8556724 | 8 | 24 | 12 | 8 | 7,7 | 70 | 4 |
| 8556740 | 8 | 40 | 12 | 8 | 7,7 | 80 | 4 |
| 8556830 | 10 | 30 | 15 | 10 | 9,7 | 80 | 4 |
| 8556850 | 10 | 50 | 15 | 10 | 9,7 | 100 | 4 |
| 8556936 | 12 | 36 | 18 | 12 | 11,7 | 90 | 4 |
| 8556960 | 12 | 60 | 18 | 12 | 11,7 | 110 | 4 |

# AE-VMSX

**Milling | Solid carbide**

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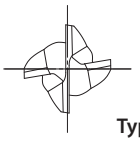
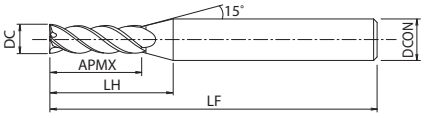
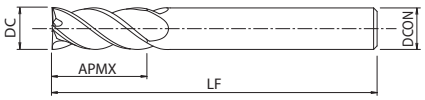
**NEW**



Type 1




Type 2

- First choice in quality and performance
- Carbide end mill with DUROREY coating
- 4 flutes, variable helix and unequal spacing
- Reinforced cutting edge and micro relief

P ~45 HRC | P ~55 HRC | P ~60 HRC | M ~35 HRC | K ~350 HB | S Ti | H ~65 HRC

A | CARBIDE | DUROREY | 39°~42° | 0~-0.02 | SHRINK FIT

C.1048

| EDP | DC | APMX | DCON | LH | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8558030 | 3 | 8 | 6 | 15,9 | 60 | 4 | 1 |
| 8558040 | 4 | 11 | 6 | 17,1 | 60 | 4 | 1 |
| 8558050 | 5 | 13 | 6 | 17,2 | 60 | 4 | 1 |
| 8558060 | 6 | 13 | 6 | - | 60 | 4 | 2 |
| 8558080 | 8 | 19 | 8 | - | 70 | 4 | 2 |
| 8558100 | 10 | 22 | 10 | - | 80 | 4 | 2 |
| 8558120 | 12 | 26 | 12 | - | 90 | 4 | 2 |

# AE-VML

**Milling | Solid carbide**

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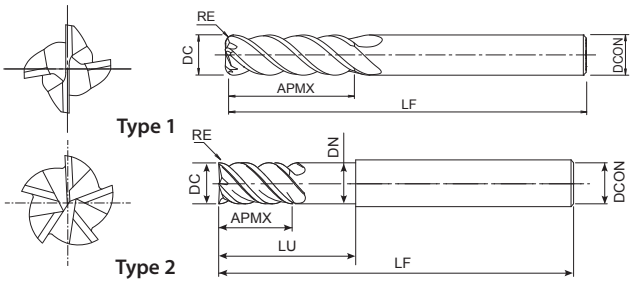


- First choice in quality and performance
- Carbide end mill with DUARISE coating
- For side milling with length of cut up to 4xD
- 4 or 5 flutes, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

A | CARBIDE | DUARISE | 42°~44° | 0~-0.02 | SHRINK FIT | C.908

| EDP | DC | RE | APMX | DCON | LF | ULDR | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 8556320 | 6 | - | 19 | 6 | 70 | 3 | 4 | 1 |
| 8556328 | 6 | - | 24 | 6 | 70 | 4 | 4 | 1 |
| 8556336 | 6 | 0,3 | 19 | 6 | 70 | 3 | 4 | 1 |
| 8556355 | 6 | 0,3 | 24 | 6 | 70 | 4 | 4 | 1 |
| 8556337 | 6 | 0,5 | 19 | 6 | 70 | 3 | 4 | 1 |
| 8556356 | 6 | 0,5 | 24 | 6 | 70 | 4 | 4 | 1 |
| 8556338 | 6 | 1 | 19 | 6 | 70 | 3 | 4 | 1 |
| 8556357 | 6 | 1 | 24 | 6 | 70 | 4 | 4 | 1 |
| 8556322 | 8 | - | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556330 | 8 | - | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556339 | 8 | 0,3 | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556358 | 8 | 0,3 | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556340 | 8 | 0,5 | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556359 | 8 | 0,5 | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556341 | 8 | 1 | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556360 | 8 | 1 | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556342 | 8 | 1,5 | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556361 | 8 | 1,5 | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556343 | 8 | 2 | 25 | 8 | 80 | 3 | 4 | 1 |
| 8556362 | 8 | 2 | 32 | 8 | 90 | 4 | 4 | 1 |
| 8556324 | 10 | - | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556332 | 10 | - | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556344 | 10 | 0,3 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556363 | 10 | 0,3 | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556345 | 10 | 0,5 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556364 | 10 | 0,5 | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556346 | 10 | 1 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556365 | 10 | 1 | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556347 | 10 | 1,5 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556366 | 10 | 1,5 | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556348 | 10 | 2 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556367 | 10 | 2 | 40 | 10 | 100 | 4 | 4 | 1 |
| 8556349 | 10 | 3 | 31 | 10 | 90 | 3 | 4 | 1 |
| 8556368 | 10 | 3 | 40 | 10 | 100 | 4 | 4 | 1 |

# AE-VML

**Milling | Solid carbide**

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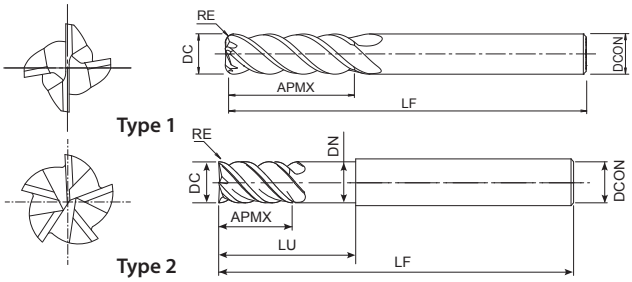



- First choice in quality and performance
- Carbide end mill with DUARISE coating
- For side milling with length of cut up to 4xD
- 4 or 5 flutes, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

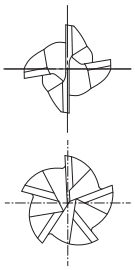
A | CARBIDE | DUARISE | 42°~44° | 0~-0.02 | SHRINK FIT

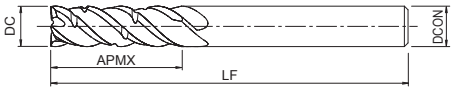
C.908

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ULDR | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 8556326 | 12 | - | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556334 | 12 | - | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556350 | 12 | 0,5 | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556369 | 12 | 0,5 | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556351 | 12 | 1 | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556370 | 12 | 1 | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556352 | 12 | 1,5 | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556371 | 12 | 1,5 | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556353 | 12 | 2 | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556372 | 12 | 2 | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556354 | 12 | 3 | - | 38 | 12 | - | 100 | 3 | 4 | 1 |
| 8556373 | 12 | 3 | - | 48 | 12 | - | 110 | 4 | 4 | 1 |
| 8556374 | 16 | - | - | 50 | 16 | - | 125 | 3 | 5 | 1 |
| 8556378 | 16 | - | - | 64 | 16 | - | 140 | 4 | 5 | 1 |
| 48330162 | 16 | 1 | 100 | 64 | 16 | 15,5 | 150 | 4 | 4 | 2 |
| 8556376 | 20 | - | - | 62 | 20 | - | 135 | 3 | 5 | 1 |
| 8556380 | 20 | - | - | 80 | 20 | - | 155 | 4 | 5 | 1 |
| 48330202 | 20 | 1 | 100 | 80 | 20 | 19,4 | 150 | 4 | 4 | 2 |

# AE-VML

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with DUARISE coating
- For side milling with length of cut up to 4xD
- 4 or 5 flutes, variable helix and unequal spacing
- With chipbreaker

| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8556321 | 6 | 19 | 6 | 70 | 4 |
| 8556329 | 6 | 24 | 6 | 70 | 4 |
| 8556323 | 8 | 25 | 8 | 80 | 4 |
| 8556331 | 8 | 32 | 8 | 90 | 4 |
| 8556325 | 10 | 31 | 10 | 90 | 4 |
| 8556333 | 10 | 40 | 10 | 100 | 4 |
| 8556327 | 12 | 38 | 12 | 100 | 4 |
| 8556335 | 12 | 48 | 12 | 110 | 4 |
| 8556375 | 16 | 50 | 16 | 125 | 5 |
| 8556379 | 16 | 64 | 16 | 140 | 5 |
| 8556377 | 20 | 62 | 20 | 135 | 5 |
| 8556381 | 20 | 80 | 20 | 155 | 5 |

# AE-VMFE

**Milling | Solid carbide**

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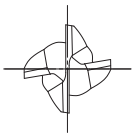
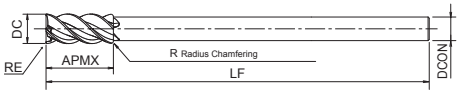
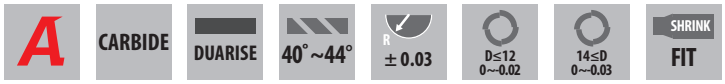





- First choice in quality and performance
- Carbide end mill with DUARISE coating
- For deep wall milling
- 4 or 5 flutes, variable helix and unequal spacing



| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8549916 | 6 | - | 15 | 4 | 100 | 4 |
| 8549945 | 6 | 0,5 | 15 | 4 | 100 | 4 |
| 8549918 | 8 | - | 20 | 6 | 110 | 4 |
| 8549955 | 8 | 0,5 | 20 | 6 | 110 | 4 |
| 8549920 | 10 | - | 25 | 8 | 130 | 4 |
| 8549965 | 10 | 0,5 | 25 | 8 | 130 | 4 |
| 8549966 | 10 | 1 | 25 | 8 | 130 | 4 |
| 8549922 | 12 | - | 30 | 10 | 150 | 4 |
| 8549975 | 12 | 0,5 | 30 | 10 | 150 | 4 |
| 8549976 | 12 | 1 | 30 | 10 | 150 | 4 |
| 8549924 | 14 | - | 35 | 12 | 160 | 5 |
| 8549985 | 14 | 0,5 | 35 | 12 | 160 | 5 |
| 8549986 | 14 | 1 | 35 | 12 | 160 | 5 |
| 8549928 | 18 | - | 45 | 16 | 180 | 5 |
| 8549995 | 18 | 0,5 | 45 | 16 | 180 | 5 |
| 8549996 | 18 | 1 | 45 | 16 | 180 | 5 |
| 8549932 | 22 | - | 55 | 20 | 200 | 5 |
| 8550005 | 22 | 0,5 | 55 | 20 | 200 | 5 |
| 8550006 | 22 | 1 | 55 | 20 | 200 | 5 |

# AE-MSS-H

**Milling | Solid carbide**

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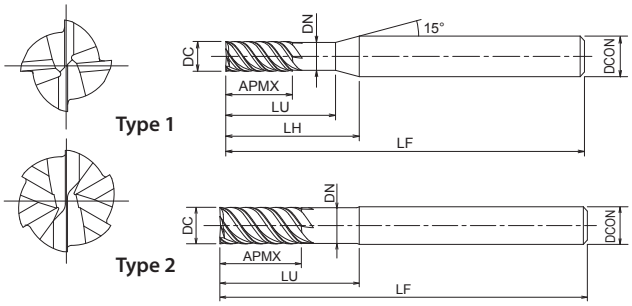
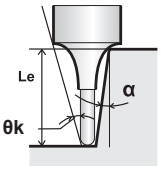



- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- Multi flute, variable helix and unequal spacing
- 1.5XD length of cut, long neck up to 3XD




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 43° | SHRINK FIT | 0~-0.02 | C.911

| EDP | DC | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48364199 | 1 | 3 | 1,5 | 6 | 0,95 | 45 | 12,3 | 11,46 | 3,1 | 3,21 | 3,33 | 3,45 | 3,73 | 4 | 1 |
| 48364299 | 2 | 6 | 3 | 6 | 1,95 | 45 | 13,9 | 8,19 | 6,65 | 6,88 | 7,13 | 7,39 | 7,99 | 4 | 1 |
| 8549830 | 3 | 9 | 4,5 | 6 | 2,85 | 45 | 14,8 | 5,78 | 9,46 | 9,87 | 10,23 | 10,62 | 11,48 | 4 | 1 |
| 8549831 | 4 | 12 | 6 | 6 | 3,85 | 50 | 16 | 3,59 | 12,6 | 13,09 | 13,56 | 14,07 | 15,21 | 4 | 1 |
| 8549832 | 5 | 15 | 7,5 | 6 | 4,85 | 60 | 17,1 | 1,68 | 15,72 | 16,3 | 16,88 | - | - | 4 | 1 |
| 8549833 | 6 | 18 | 9 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 6 | 2 |
| 8549834 | 8 | 24 | 12 | 8 | 7,85 | 90 | - | - | - | - | - | - | - | 6 | 2 |
| 8549835 | 10 | 30 | 15 | 10 | 9,85 | 100 | - | - | - | - | - | - | - | 6 | 2 |
| 8549836 | 12 | 36 | 18 | 12 | 11,8 | 110 | - | - | - | - | - | - | - | 6 | 2 |

# AE-MS-H

**Milling | Solid carbide**

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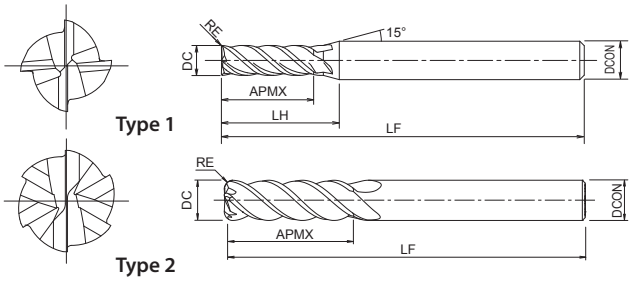



- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- Multi flute, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

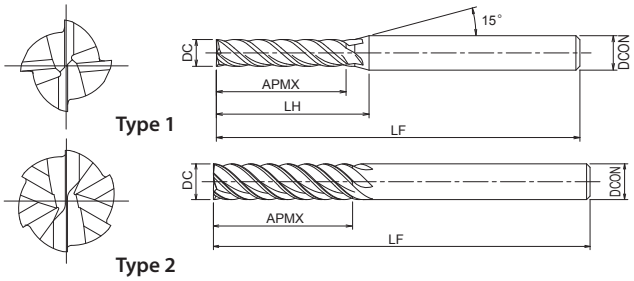
A | CARBIDE | DUROREY | 43° | SHRINK FIT | R ±0.02 | 0~-0.02 | C.912

| EDP | DC | RE | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 8549710 | 1 | - | 2,5 | 6 | 60 | 12,7 | 4 | 1 |
| 8549715 | 1,5 | - | 3,8 | 6 | 60 | 13 | 4 | 1 |
| 8549720 | 2 | - | 5 | 6 | 60 | 13,9 | 4 | 1 |
| 8549725 | 2,5 | - | 6,3 | 6 | 60 | 14,5 | 4 | 1 |
| 8549730 | 3 | - | 7,5 | 6 | 60 | 15,4 | 4 | 1 |
| 8549842 | 3 | 0,2 | 7,5 | 6 | 60 | 15,4 | 4 | 1 |
| 8549845 | 3 | 0,5 | 7,5 | 6 | 60 | 15,4 | 4 | 1 |
| 8549735 | 3,5 | - | 8,8 | 6 | 60 | 15,6 | 4 | 1 |
| 8549740 | 4 | - | 10 | 6 | 60 | 16,1 | 4 | 1 |
| 8549852 | 4 | 0,2 | 10 | 6 | 60 | 16,1 | 4 | 1 |
| 8549855 | 4 | 0,5 | 10 | 6 | 60 | 16,1 | 4 | 1 |
| 8549856 | 4 | 1 | 10 | 6 | 60 | 16,1 | 4 | 1 |
| 8549745 | 4,5 | - | 11,3 | 6 | 60 | 16,4 | 4 | 1 |
| 8549750 | 5 | - | 12,5 | 6 | 60 | 16,7 | 4 | 1 |
| 8549862 | 5 | 0,2 | 12,5 | 6 | 60 | 16,7 | 4 | 1 |
| 8549865 | 5 | 0,5 | 12,5 | 6 | 60 | 16,7 | 4 | 1 |
| 8549866 | 5 | 1 | 12,5 | 6 | 60 | 16,7 | 4 | 1 |
| 8549755 | 5,5 | - | 13,8 | 6 | 60 | 17,1 | 4 | 1 |
| 8549760 | 6 | - | 15 | 6 | 60 | - | 6 | 2 |
| 8549873 | 6 | 0,3 | 15 | 6 | 60 | - | 6 | 2 |
| 8549875 | 6 | 0,5 | 15 | 6 | 60 | - | 6 | 2 |
| 8549876 | 6 | 1 | 15 | 6 | 60 | - | 6 | 2 |
| 8549780 | 8 | - | 20 | 8 | 70 | - | 6 | 2 |
| 8549883 | 8 | 0,3 | 20 | 8 | 70 | - | 6 | 2 |
| 8549885 | 8 | 0,5 | 20 | 8 | 70 | - | 6 | 2 |
| 8549886 | 8 | 1 | 20 | 8 | 70 | - | 6 | 2 |
| 8549887 | 8 | 1,5 | 20 | 8 | 70 | - | 6 | 2 |
| 8549888 | 8 | 2 | 20 | 8 | 70 | - | 6 | 2 |
| 8549810 | 10 | - | 25 | 10 | 80 | - | 6 | 2 |
| 8549893 | 10 | 0,3 | 25 | 10 | 80 | - | 6 | 2 |
| 8549895 | 10 | 0,5 | 25 | 10 | 80 | - | 6 | 2 |
| 8549896 | 10 | 1 | 25 | 10 | 80 | - | 6 | 2 |
| 8549897 | 10 | 1,5 | 25 | 10 | 80 | - | 6 | 2 |
| 8549898 | 10 | 2 | 25 | 10 | 80 | - | 6 | 2 |
| 8549899 | 10 | 3 | 25 | 10 | 80 | - | 6 | 2 |
| 8549812 | 12 | - | 30 | 12 | 90 | - | 6 | 2 |
| 8549903 | 12 | 0,3 | 30 | 12 | 90 | - | 6 | 2 |
| 8549905 | 12 | 0,5 | 30 | 12 | 90 | - | 6 | 2 |
| 8549906 | 12 | 1 | 30 | 12 | 90 | - | 6 | 2 |
| 8549907 | 12 | 1,5 | 30 | 12 | 90 | - | 6 | 2 |
| 8549908 | 12 | 2 | 30 | 12 | 90 | - | 6 | 2 |
| 8549909 | 12 | 3 | 30 | 12 | 90 | - | 6 | 2 |
| 8549816 | 16 | - | 40 | 16 | 105 | - | 6 | 2 |
| 8549820 | 20 | - | 50 | 20 | 120 | - | 6 | 2 |

# AE-ML-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- Multi flute, variable helix and unequal spacing
- For side milling, length of cut up to 4xD

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

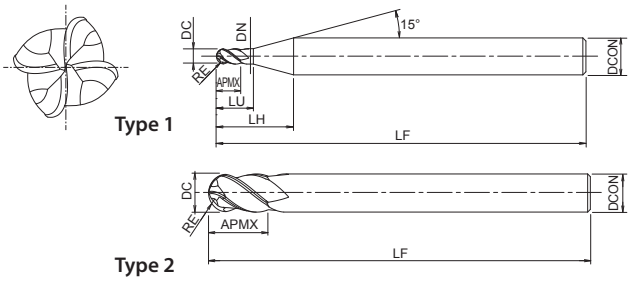
A | CARBIDE | DUROREY | 43° | SHRINK FIT | 0~-0.02 | C.913

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8550010 | 3 | 12 | 6 | 60 | 19,9 | 4 | 1 |
| 8550011 | 4 | 16 | 6 | 60 | 22,1 | 4 | 1 |
| 8550012 | 5 | 20 | 6 | 70 | 24,2 | 4 | 1 |
| 8550013 | 6 | 24 | 6 | 70 | - | 6 | 2 |
| 8550014 | 8 | 32 | 8 | 80 | - | 6 | 2 |
| 8550015 | 10 | 40 | 10 | 100 | - | 6 | 2 |
| 8550016 | 12 | 48 | 12 | 110 | - | 6 | 2 |
| 8550017 | 16 | 64 | 16 | 130 | - | 6 | 2 |
| 8550018 | 20 | 80 | 20 | 150 | - | 6 | 2 |

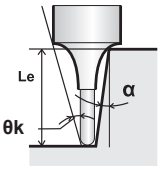
# AE-BM-H



**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 4 flutes, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 40° | SHRINK FIT | ± 0.005 R≤1,5 | ± 0.007 1,5<R≤3 | ± 0.01 3<R

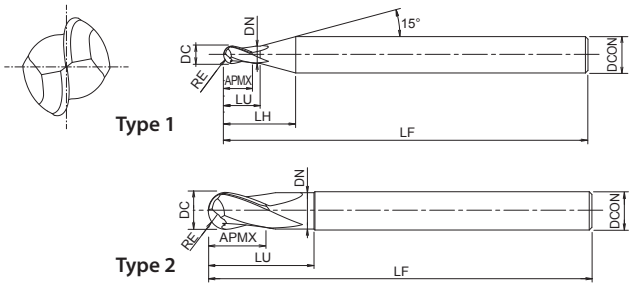
C.914

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8549602 | 2 | 1 | 4 | 2 | 6 | 1,95 | 50 | 11,9 | 10,64 | 4,19 | 4,3 | 4,42 | 4,55 | 4,85 | 4 | 1 |
| 8549603 | 3 | 1,5 | 6 | 3 | 6 | 2,85 | 50 | 11,8 | 8,15 | 6,44 | 6,61 | 6,79 | 7 | 7,45 | 4 | 1 |
| 8549604 | 4 | 2 | 8 | 4 | 6 | 3,85 | 60 | 12 | 5,65 | 8,49 | 8,71 | 8,96 | 9,22 | 9,81 | 4 | 1 |
| 8549605 | 5 | 2,5 | 10 | 5 | 6 | 4,85 | 60 | 12,1 | 2,95 | 10,54 | 10,82 | 11,12 | 11,45 | - | 4 | 1 |
| 8549606 | 6 | 3 | - | 9 | 6 | - | 60 | - | - | - | - | - | - | - | 4 | 2 |
| 8549608 | 8 | 4 | - | 12 | 8 | - | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8549610 | 10 | 5 | - | 15 | 10 | - | 80 | - | - | - | - | - | - | - | 4 | 2 |
| 8549612 | 12 | 6 | - | 18 | 12 | - | 90 | - | - | - | - | - | - | - | 4 | 2 |

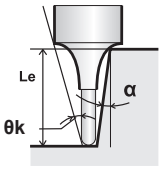
# AE-BD-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 25° | SHRINK FIT | SHRINK h4 | R ± 0.005

C.916

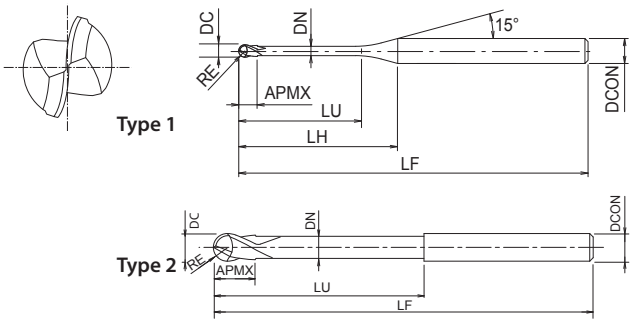
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3042001 | 1 | 0,5 | 2 | 0,8 | 4 | 0,95 | 50 | 7,6 | 11,71 | 2,14 | 2,2 | 2,26 | 2,33 | 2,48 | 2 | 1 |
| 3042002 | 1,5 | 0,75 | 3 | 1,2 | 4 | 1,45 | 50 | 7,8 | 10,03 | 3,17 | 3,25 | 3,34 | 3,44 | 3,66 | 2 | 1 |
| 3042003 | 2 | 1 | 4 | 1,6 | 6 | 1,95 | 50 | 11,9 | 10,64 | 4,19 | 4,3 | 4,42 | 4,55 | 4,85 | 2 | 1 |
| 3042004 | 3 | 1,5 | 6 | 2,4 | 6 | 2,85 | 60 | 11,8 | 8,15 | 6,44 | 6,61 | 6,79 | 7 | 7,45 | 2 | 1 |
| 3042005 | 4 | 2 | 8 | 3,2 | 4 | 3,85 | 60 | - | - | - | - | - | - | - | 2 | 2 |
| 3042006 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 70 | 12 | 5,65 | 8,49 | 8,71 | 8,96 | 9,22 | 9,81 | 2 | 1 |
| 3042007 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 45 | 12 | 5,65 | 8,49 | 8,71 | 8,96 | 9,22 | 9,81 | 2 | 1 |
| 3042008 | 5 | 2,5 | 10 | 4 | 6 | 4,8 | 80 | 12,1 | 2,92 | 10,63 | 10,9 | 11,22 | 11,55 | - | 2 | 1 |
| 3042009 | 5 | 2,5 | 10 | 4 | 6 | 4,8 | 50 | 12,1 | 2,92 | 10,63 | 10,9 | 11,22 | 11,55 | - | 2 | 1 |
| 3042010 | 6 | 3 | 18 | 9 | 6 | 5,8 | 90 | - | - | - | - | - | - | - | 2 | 2 |
| 3042011 | 6 | 3 | 18 | 9 | 6 | 5,8 | 55 | - | - | - | - | - | - | - | 2 | 2 |
| 3042012 | 8 | 4 | 24 | 12 | 8 | 7,7 | 100 | - | - | - | - | - | - | - | 2 | 2 |
| 3042013 | 8 | 4 | 24 | 12 | 8 | 7,7 | 75 | - | - | - | - | - | - | - | 2 | 2 |
| 3042014 | 10 | 5 | 30 | 15 | 10 | 9,7 | 100 | - | - | - | - | - | - | - | 2 | 2 |
| 3042015 | 10 | 5 | 30 | 15 | 10 | 9,7 | 75 | - | - | - | - | - | - | - | 2 | 2 |
| 3042016 | 12 | 6 | 36 | 18 | 12 | 11,7 | 110 | - | - | - | - | - | - | - | 2 | 2 |
| 3042017 | 12 | 6 | 36 | 18 | 12 | 11,7 | 80 | - | - | - | - | - | - | - | 2 | 2 |

# AE-LNBD-H

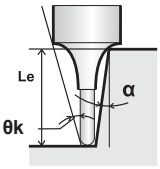
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

C.917

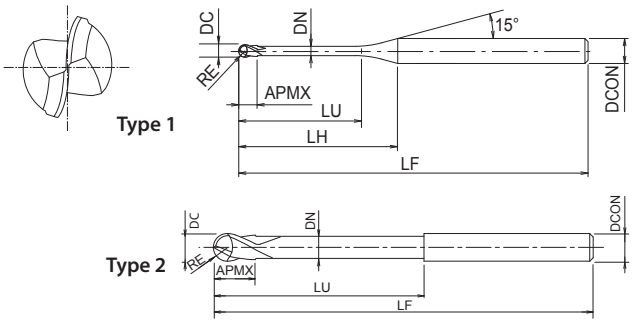
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056100 | 0,1 | 0,05 | 0,2 | 0,08 | 4 | 0,1 | 45 | 7,5 | 14,69 | 0,21 | 0,22 | 0,22 | 0,23 | 0,24 | 2 | 1 |
| 3056101 | 0,1 | 0,05 | 0,3 | 0,08 | 4 | 0,1 | 45 | 7,6 | 14,52 | 0,3 | 0,31 | 0,32 | 0,33 | 0,36 | 2 | 1 |
| 3056102 | 0,1 | 0,05 | 0,5 | 0,08 | 4 | 0,1 | 45 | 7,8 | 14,16 | 0,51 | 0,53 | 0,54 | 0,56 | 0,6 | 2 | 1 |
| 3056103 | 0,2 | 0,1 | 0,3 | 0,16 | 4 | 0,19 | 45 | 7,4 | 14,55 | 0,32 | 0,33 | 0,34 | 0,35 | 0,37 | 2 | 1 |
| 3056104 | 0,2 | 0,1 | 0,5 | 0,16 | 4 | 0,19 | 45 | 7,6 | 14,18 | 0,53 | 0,54 | 0,56 | 0,58 | 0,62 | 2 | 1 |
| 3056105 | 0,2 | 0,1 | 0,75 | 0,16 | 4 | 0,19 | 45 | 7,9 | 13,74 | 0,79 | 0,81 | 0,84 | 0,86 | 0,93 | 2 | 1 |
| 3056106 | 0,2 | 0,1 | 1 | 0,16 | 4 | 0,19 | 45 | 8,1 | 13,33 | 1,04 | 1,08 | 1,11 | 1,15 | 1,24 | 2 | 1 |
| 3056107 | 0,2 | 0,1 | 1 | 0,16 | 6 | 0,19 | 45 | 11,8 | 13,86 | 1,04 | 1,08 | 1,11 | 1,15 | 1,24 | 2 | 1 |
| 3056108 | 0,2 | 0,1 | 1,25 | 0,16 | 4 | 0,19 | 45 | 8,4 | 12,94 | 1,3 | 1,35 | 1,39 | 1,44 | 1,55 | 2 | 1 |
| 3056109 | 0,2 | 0,1 | 1,5 | 0,16 | 4 | 0,19 | 45 | 8,6 | 12,58 | 1,56 | 1,61 | 1,67 | 1,73 | 1,86 | 2 | 1 |
| 3056110 | 0,2 | 0,1 | 1,75 | 0,16 | 4 | 0,19 | 45 | 8,9 | 12,23 | 1,82 | 1,88 | 1,94 | 2,01 | 2,17 | 2 | 1 |
| 3056111 | 0,2 | 0,1 | 2 | 0,16 | 4 | 0,19 | 45 | 9,1 | 11,9 | 2,08 | 2,15 | 2,22 | 2,3 | 2,48 | 2 | 1 |
| 3056112 | 0,2 | 0,1 | 2,5 | 0,16 | 4 | 0,19 | 45 | 9,6 | 11,29 | 2,6 | 2,68 | 2,78 | 2,88 | 3,1 | 2 | 1 |
| 3056113 | 0,2 | 0,1 | 3 | 0,16 | 4 | 0,19 | 45 | 10,1 | 10,74 | 3,11 | 3,22 | 3,33 | 3,45 | 3,72 | 2 | 1 |
| 3056114 | 0,3 | 0,15 | 0,5 | 0,24 | 4 | 0,29 | 45 | 7,4 | 14,24 | 0,53 | 0,54 | 0,55 | 0,57 | 0,6 | 2 | 1 |
| 3056115 | 0,3 | 0,15 | 0,6 | 0,24 | 4 | 0,29 | 45 | 7,5 | 14,06 | 0,63 | 0,65 | 0,66 | 0,68 | 0,73 | 2 | 1 |
| 3056116 | 0,3 | 0,15 | 0,75 | 0,24 | 4 | 0,29 | 45 | 7,7 | 13,79 | 0,78 | 0,81 | 0,83 | 0,86 | 0,92 | 2 | 1 |
| 3056117 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,29 | 45 | 7,9 | 13,36 | 1,04 | 1,07 | 1,11 | 1,14 | 1,23 | 2 | 1 |
| 3056118 | 0,3 | 0,15 | 1,25 | 0,24 | 4 | 0,29 | 45 | 8,2 | 12,96 | 1,3 | 1,34 | 1,39 | 1,43 | 1,54 | 2 | 1 |
| 3056119 | 0,3 | 0,15 | 1,5 | 0,24 | 4 | 0,29 | 45 | 8,4 | 12,59 | 1,56 | 1,61 | 1,66 | 1,72 | 1,85 | 2 | 1 |
| 3056120 | 0,3 | 0,15 | 1,5 | 0,24 | 6 | 0,29 | 45 | 12,2 | 13,34 | 1,56 | 1,61 | 1,66 | 1,72 | 1,85 | 2 | 1 |
| 3056121 | 0,3 | 0,15 | 1,75 | 0,24 | 4 | 0,29 | 45 | 8,7 | 12,23 | 1,82 | 1,88 | 1,94 | 2,01 | 2,16 | 2 | 1 |
| 3056122 | 0,3 | 0,15 | 2 | 0,24 | 4 | 0,29 | 45 | 8,9 | 11,89 | 2,08 | 2,14 | 2,22 | 2,29 | 2,47 | 2 | 1 |
| 3056123 | 0,3 | 0,15 | 2,25 | 0,24 | 4 | 0,29 | 45 | 9,2 | 11,57 | 2,34 | 2,41 | 2,49 | 2,58 | 2,78 | 2 | 1 |
| 3056124 | 0,3 | 0,15 | 2,5 | 0,24 | 4 | 0,29 | 45 | 9,4 | 11,27 | 2,59 | 2,68 | 2,77 | 2,87 | 3,09 | 2 | 1 |
| 3056125 | 0,3 | 0,15 | 3 | 0,24 | 4 | 0,29 | 45 | 9,9 | 10,71 | 3,11 | 3,21 | 3,32 | 3,44 | 3,71 | 2 | 1 |
| 3056126 | 0,3 | 0,15 | 3,5 | 0,24 | 4 | 0,29 | 45 | 10,4 | 10,2 | 3,63 | 3,75 | 3,88 | 4,02 | 4,33 | 2 | 1 |
| 3056127 | 0,3 | 0,15 | 4 | 0,24 | 4 | 0,29 | 45 | 10,9 | 9,74 | 4,14 | 4,28 | 4,43 | 4,59 | 4,96 | 2 | 1 |
| 3056128 | 0,3 | 0,15 | 4,5 | 0,24 | 4 | 0,29 | 45 | 11,4 | 9,31 | 4,66 | 4,82 | 4,99 | 5,17 | 5,58 | 2 | 1 |
| 3056129 | 0,3 | 0,15 | 5 | 0,24 | 4 | 0,29 | 45 | 11,9 | 8,93 | 5,18 | 5,35 | 5,54 | 5,74 | 6,2 | 2 | 1 |
| 3056130 | 0,4 | 0,2 | 0,5 | 0,3 | 4 | 0,38 | 45 | 7,3 | 14,27 | 0,54 | 0,56 | 0,57 | 0,58 | 0,62 | 2 | 1 |
| 3056131 | 0,4 | 0,2 | 0,75 | 0,3 | 4 | 0,38 | 45 | 7,5 | 13,8 | 0,8 | 0,82 | 0,85 | 0,87 | 0,93 | 2 | 1 |
| 3056132 | 0,4 | 0,2 | 0,8 | 0,3 | 4 | 0,38 | 45 | 7,6 | 13,71 | 0,85 | 0,88 | 0,9 | 0,93 | 0,99 | 2 | 1 |
| 3056133 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,38 | 45 | 7,8 | 13,37 | 1,06 | 1,09 | 1,12 | 1,16 | 1,24 | 2 | 1 |
| 3056134 | 0,4 | 0,2 | 1 | 0,3 | 6 | 0,38 | 45 | 11,5 | 13,91 | 1,06 | 1,09 | 1,12 | 1,16 | 1,24 | 2 | 1 |
| 3056135 | 0,4 | 0,2 | 1,5 | 0,3 | 4 | 0,38 | 45 | 8,3 | 12,57 | 1,58 | 1,63 | 1,68 | 1,73 | 1,86 | 2 | 1 |
| 3056136 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,38 | 45 | 8,8 | 11,86 | 2,09 | 2,16 | 2,23 | 2,31 | 2,48 | 2 | 1 |
| 3056137 | 0,4 | 0,2 | 2 | 0,3 | 6 | 0,38 | 45 | 12,5 | 12,82 | 2,09 | 2,16 | 2,23 | 2,31 | 2,48 | 2 | 1 |
| 3056138 | 0,4 | 0,2 | 2,5 | 0,3 | 4 | 0,38 | 45 | 9,3 | 11,22 | 2,61 | 2,7 | 2,79 | 2,88 | 3,1 | 2 | 1 |
| 3056139 | 0,4 | 0,2 | 3 | 0,3 | 4 | 0,38 | 45 | 9,8 | 10,65 | 3,13 | 3,23 | 3,34 | 3,46 | 3,72 | 2 | 1 |
| 3056140 | 0,4 | 0,2 | 3,5 | 0,3 | 4 | 0,38 | 45 | 10,3 | 10,14 | 3,64 | 3,76 | 3,89 | 4,03 | 4,35 | 2 | 1 |
| 3056141 | 0,4 | 0,2 | 4 | 0,3 | 4 | 0,38 | 45 | 10,8 | 9,67 | 4,16 | 4,3 | 4,45 | 4,61 | 4,97 | 2 | 1 |
| 3056142 | 0,4 | 0,2 | 4,5 | 0,3 | 4 | 0,38 | 45 | 11,3 | 9,24 | 4,68 | 4,83 | 5 | 5,18 | 5,59 | 2 | 1 |
| 3056143 | 0,4 | 0,2 | 5 | 0,3 | 4 | 0,38 | 45 | 11,8 | 8,85 | 5,2 | 5,37 | 5,56 | 5,76 | 6,21 | 2 | 1 |
| 3056144 | 0,4 | 0,2 | 5,5 | 0,3 | 4 | 0,38 | 45 | 12,3 | 8,49 | 5,71 | 5,9 | 6,11 | 6,33 | 6,83 | 2 | 1 |
| 3056145 | 0,4 | 0,2 | 6 | 0,3 | 4 | 0,38 | 45 | 12,8 | 8,15 | 6,23 | 6,44 | 6,66 | 6,91 | 7,45 | 2 | 1 |

# AE-LNBD-H

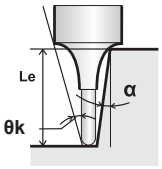
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

C.917

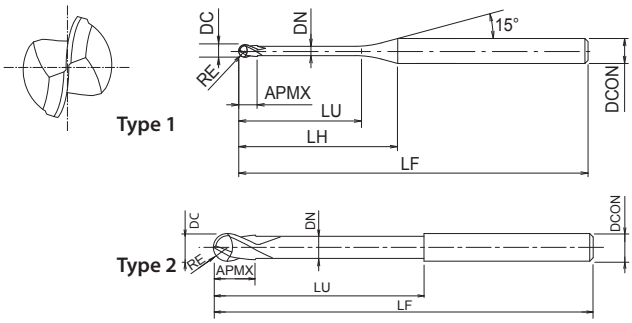
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056146 | 0,5 | 0,25 | 0,75 | 0,4 | 4 | 0,48 | 45 | 7,3 | 13,85 | 0,8 | 0,82 | 0,84 | 0,86 | 0,91 | 2 | 1 |
| 3056147 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,48 | 45 | 7,6 | 13,4 | 1,06 | 1,09 | 1,12 | 1,15 | 1,23 | 2 | 1 |
| 3056148 | 0,5 | 0,25 | 1,5 | 0,4 | 4 | 0,48 | 45 | 8,1 | 12,58 | 1,58 | 1,62 | 1,67 | 1,73 | 1,85 | 2 | 1 |
| 3056149 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,48 | 45 | 8,6 | 11,85 | 2,09 | 2,16 | 2,23 | 2,3 | 2,47 | 2 | 1 |
| 3056150 | 0,5 | 0,25 | 2,5 | 0,4 | 4 | 0,48 | 45 | 9,1 | 11,2 | 2,61 | 2,69 | 2,78 | 2,88 | 3,09 | 2 | 1 |
| 3056151 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,48 | 45 | 9,6 | 10,62 | 3,13 | 3,23 | 3,33 | 3,45 | 3,71 | 2 | 1 |
| 3056152 | 0,5 | 0,25 | 3,5 | 0,4 | 4 | 0,48 | 45 | 10,1 | 10,09 | 3,64 | 3,76 | 3,89 | 4,03 | 4,33 | 2 | 1 |
| 3056153 | 0,5 | 0,25 | 4 | 0,4 | 4 | 0,48 | 45 | 10,6 | 9,61 | 4,16 | 4,3 | 4,44 | 4,6 | 4,95 | 2 | 1 |
| 3056154 | 0,5 | 0,25 | 4,5 | 0,4 | 4 | 0,48 | 45 | 11,1 | 9,18 | 4,68 | 4,83 | 5 | 5,18 | 5,58 | 2 | 1 |
| 3056155 | 0,5 | 0,25 | 5 | 0,4 | 4 | 0,48 | 45 | 11,6 | 8,78 | 5,19 | 5,37 | 5,55 | 5,75 | 6,2 | 2 | 1 |
| 3056156 | 0,5 | 0,25 | 5,5 | 0,4 | 4 | 0,48 | 45 | 12,1 | 8,41 | 5,71 | 5,9 | 6,11 | 6,33 | 6,82 | 2 | 1 |
| 3056157 | 0,5 | 0,25 | 6 | 0,4 | 4 | 0,48 | 45 | 12,6 | 8,08 | 6,23 | 6,44 | 6,66 | 6,9 | 7,44 | 2 | 1 |
| 3056158 | 0,5 | 0,25 | 7 | 0,4 | 4 | 0,48 | 45 | 13,6 | 7,48 | 7,26 | 7,51 | 7,77 | 8,05 | 8,68 | 2 | 1 |
| 3056159 | 0,5 | 0,25 | 8 | 0,4 | 4 | 0,48 | 45 | 14,6 | 6,97 | 8,29 | 8,58 | 8,88 | 9,2 | 9,93 | 2 | 1 |
| 3056160 | 0,5 | 0,25 | 9 | 0,4 | 4 | 0,48 | 45 | 15,6 | 6,52 | 9,33 | 9,64 | 9,98 | 10,35 | 11,17 | 2 | 1 |
| 3056161 | 0,5 | 0,25 | 10 | 0,4 | 4 | 0,48 | 45 | 16,6 | 6,12 | 10,36 | 10,71 | 11,09 | 11,5 | 12,41 | 2 | 1 |
| 3056162 | 0,6 | 0,3 | 0,75 | 0,5 | 4 | 0,55 | 45 | 7,2 | 13,8 | 0,86 | 0,88 | 0,9 | 0,92 | 0,97 | 2 | 1 |
| 3056163 | 0,6 | 0,3 | 1 | 0,5 | 4 | 0,55 | 45 | 7,4 | 13,34 | 1,12 | 1,14 | 1,17 | 1,21 | 1,28 | 2 | 1 |
| 3056164 | 0,6 | 0,3 | 1,2 | 0,5 | 4 | 0,55 | 45 | 7,6 | 12,99 | 1,32 | 1,36 | 1,4 | 1,44 | 1,53 | 2 | 1 |
| 3056165 | 0,6 | 0,3 | 1,5 | 0,5 | 4 | 0,55 | 45 | 7,9 | 12,5 | 1,63 | 1,68 | 1,73 | 1,78 | 1,9 | 2 | 1 |
| 3056166 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 8,4 | 11,76 | 2,15 | 2,21 | 2,28 | 2,36 | 2,53 | 2 | 1 |
| 3056167 | 0,6 | 0,3 | 2 | 0,5 | 6 | 0,55 | 45 | 12,2 | 12,78 | 2,15 | 2,21 | 2,28 | 2,36 | 2,53 | 2 | 1 |
| 3056168 | 0,6 | 0,3 | 2,5 | 0,5 | 4 | 0,55 | 45 | 8,9 | 11,1 | 2,67 | 2,75 | 2,84 | 2,93 | 3,15 | 2 | 1 |
| 3056169 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 9,4 | 10,51 | 3,18 | 3,28 | 3,39 | 3,51 | 3,77 | 2 | 1 |
| 3056170 | 0,6 | 0,3 | 3 | 0,5 | 6 | 0,55 | 45 | 13,2 | 11,83 | 3,18 | 3,28 | 3,39 | 3,51 | 3,77 | 2 | 1 |
| 3056171 | 0,6 | 0,3 | 3,5 | 0,5 | 4 | 0,55 | 45 | 9,9 | 9,98 | 3,7 | 3,82 | 3,95 | 4,08 | 4,39 | 2 | 1 |
| 3056172 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 10,4 | 9,5 | 4,22 | 4,35 | 4,5 | 4,66 | 5,01 | 2 | 1 |
| 3056173 | 0,6 | 0,3 | 4 | 0,5 | 6 | 0,55 | 45 | 14,2 | 11 | 4,22 | 4,35 | 4,5 | 4,66 | 5,01 | 2 | 1 |
| 3056174 | 0,6 | 0,3 | 4,5 | 0,5 | 4 | 0,55 | 45 | 10,9 | 9,06 | 4,73 | 4,89 | 5,05 | 5,23 | 5,63 | 2 | 1 |
| 3056175 | 0,6 | 0,3 | 5 | 0,5 | 4 | 0,55 | 45 | 11,4 | 8,67 | 5,25 | 5,42 | 5,61 | 5,81 | 6,26 | 2 | 1 |
| 3056176 | 0,6 | 0,3 | 5,5 | 0,5 | 4 | 0,55 | 45 | 11,9 | 8,3 | 5,77 | 5,96 | 6,16 | 6,38 | 6,88 | 2 | 1 |
| 3056177 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 12,4 | 7,96 | 6,28 | 6,49 | 6,72 | 6,96 | 7,5 | 2 | 1 |
| 3056178 | 0,6 | 0,3 | 6,5 | 0,5 | 4 | 0,55 | 45 | 12,9 | 7,65 | 6,8 | 7,03 | 7,27 | 7,53 | 8,12 | 2 | 1 |
| 3056179 | 0,6 | 0,3 | 7 | 0,5 | 4 | 0,55 | 45 | 13,4 | 7,37 | 7,32 | 7,56 | 7,82 | 8,11 | 8,74 | 2 | 1 |
| 3056180 | 0,6 | 0,3 | 7,5 | 0,5 | 4 | 0,55 | 45 | 13,9 | 7,1 | 7,83 | 8,1 | 8,38 | 8,68 | 9,36 | 2 | 1 |
| 3056181 | 0,6 | 0,3 | 8 | 0,5 | 4 | 0,55 | 45 | 14,4 | 6,85 | 8,35 | 8,63 | 8,93 | 9,26 | 9,99 | 2 | 1 |
| 3056182 | 0,6 | 0,3 | 8,5 | 0,5 | 4 | 0,55 | 45 | 14,9 | 6,62 | 8,87 | 9,17 | 9,49 | 9,83 | 10,61 | 2 | 1 |
| 3056183 | 0,6 | 0,3 | 9 | 0,5 | 4 | 0,55 | 45 | 15,4 | 6,41 | 9,38 | 9,7 | 10,04 | 10,41 | 11,23 | 2 | 1 |
| 3056184 | 0,6 | 0,3 | 9,5 | 0,5 | 4 | 0,55 | 45 | 15,9 | 6,2 | 9,9 | 10,24 | 10,6 | 10,98 | 11,85 | 2 | 1 |
| 3056185 | 0,6 | 0,3 | 10 | 0,5 | 4 | 0,55 | 45 | 16,4 | 6,01 | 10,42 | 10,77 | 11,15 | 11,56 | 12,47 | 2 | 1 |
| 3056186 | 0,6 | 0,3 | 11 | 0,5 | 4 | 0,55 | 50 | 17,4 | 5,67 | 11,45 | 11,84 | 12,26 | 12,71 | 13,71 | 2 | 1 |
| 3056187 | 0,6 | 0,3 | 12 | 0,5 | 4 | 0,55 | 50 | 18,4 | 5,36 | 12,49 | 12,91 | 13,37 | 13,86 | 14,96 | 2 | 1 |
| 3056188 | 0,8 | 0,4 | 1 | 0,6 | 4 | 0,75 | 45 | 7,1 | 13,41 | 1,11 | 1,14 | 1,16 | 1,19 | 1,26 | 2 | 1 |
| 3056189 | 0,8 | 0,4 | 1,5 | 0,6 | 4 | 0,75 | 45 | 7,6 | 12,52 | 1,63 | 1,67 | 1,72 | 1,77 | 1,88 | 2 | 1 |
| 3056190 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 8,1 | 11,74 | 2,15 | 2,21 | 2,27 | 2,34 | 2,5 | 2 | 1 |
| 3056191 | 0,8 | 0,4 | 2 | 0,6 | 6 | 0,75 | 45 | 11,8 | 12,81 | 2,15 | 2,21 | 2,27 | 2,34 | 2,5 | 2 | 1 |

# AE-LNBD-H

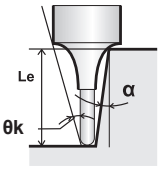
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

C.917

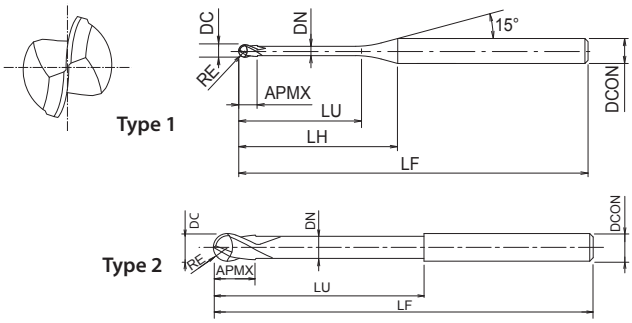
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056192 | 0,8 | 0,4 | 2,5 | 0,6 | 4 | 0,75 | 45 | 8,6 | 11,04 | 2,66 | 2,74 | 2,83 | 2,92 | 3,12 | 2 | 1 |
| 3056193 | 0,8 | 0,4 | 3 | 0,6 | 4 | 0,75 | 45 | 9,1 | 10,42 | 3,18 | 3,28 | 3,38 | 3,49 | 3,75 | 2 | 1 |
| 3056194 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 10,1 | 9,37 | 4,21 | 4,35 | 4,49 | 4,64 | 4,99 | 2 | 1 |
| 3056195 | 0,8 | 0,4 | 5 | 0,6 | 4 | 0,75 | 45 | 11,1 | 8,51 | 5,25 | 5,42 | 5,6 | 5,79 | 6,23 | 2 | 1 |
| 3056196 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 12,1 | 7,8 | 6,28 | 6,49 | 6,71 | 6,94 | 7,48 | 2 | 1 |
| 3056197 | 0,8 | 0,4 | 7 | 0,6 | 4 | 0,75 | 45 | 13,1 | 7,19 | 7,31 | 7,55 | 7,81 | 8,09 | 8,72 | 2 | 1 |
| 3056198 | 0,8 | 0,4 | 8 | 0,6 | 4 | 0,75 | 45 | 14,1 | 6,67 | 8,35 | 8,62 | 8,92 | 9,24 | 9,96 | 2 | 1 |
| 3056199 | 0,8 | 0,4 | 9 | 0,6 | 4 | 0,75 | 45 | 15,1 | 6,22 | 9,38 | 9,69 | 10,03 | 10,39 | 11,2 | 2 | 1 |
| 3056200 | 0,8 | 0,4 | 10 | 0,6 | 4 | 0,75 | 45 | 16,1 | 5,83 | 10,41 | 10,76 | 11,14 | 11,54 | 12,45 | 2 | 1 |
| 3056201 | 0,8 | 0,4 | 12 | 0,6 | 4 | 0,75 | 50 | 18,1 | 5,18 | 12,48 | 12,9 | 13,36 | 13,84 | 14,93 | 2 | 1 |
| 3056202 | 1 | 0,5 | 1,5 | 0,8 | 4 | 0,95 | 45 | 7,2 | 12,54 | 1,63 | 1,66 | 1,71 | 1,75 | 1,86 | 2 | 1 |
| 3056203 | 1 | 0,5 | 2 | 0,8 | 4 | 0,95 | 45 | 7,7 | 11,71 | 2,14 | 2,2 | 2,26 | 2,33 | 2,48 | 2 | 1 |
| 3056204 | 1 | 0,5 | 2 | 0,8 | 6 | 0,95 | 45 | 11,4 | 12,83 | 2,14 | 2,2 | 2,26 | 2,33 | 2,48 | 2 | 1 |
| 3056205 | 1 | 0,5 | 2,5 | 0,8 | 4 | 0,95 | 45 | 8,2 | 10,97 | 2,66 | 2,73 | 2,82 | 2,9 | 3,1 | 2 | 1 |
| 3056206 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 8,7 | 10,33 | 3,18 | 3,27 | 3,37 | 3,48 | 3,72 | 2 | 1 |
| 3056207 | 1 | 0,5 | 3 | 0,8 | 6 | 0,95 | 45 | 12,4 | 11,8 | 3,18 | 3,27 | 3,37 | 3,48 | 3,72 | 2 | 1 |
| 3056208 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,7 | 9,23 | 4,21 | 4,34 | 4,48 | 4,63 | 4,97 | 2 | 1 |
| 3056209 | 1 | 0,5 | 4 | 0,8 | 6 | 0,95 | 45 | 13,4 | 10,91 | 4,21 | 4,34 | 4,48 | 4,63 | 4,97 | 2 | 1 |
| 3056210 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 10,7 | 8,35 | 5,24 | 5,41 | 5,59 | 5,78 | 6,21 | 2 | 1 |
| 3056211 | 1 | 0,5 | 5 | 0,8 | 6 | 0,95 | 45 | 14,4 | 10,15 | 5,24 | 5,41 | 5,59 | 5,78 | 6,21 | 2 | 1 |
| 3056212 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 11,7 | 7,62 | 6,28 | 6,48 | 6,69 | 6,93 | 7,45 | 2 | 1 |
| 3056213 | 1 | 0,5 | 6 | 0,8 | 6 | 0,95 | 45 | 15,4 | 9,49 | 6,28 | 6,48 | 6,69 | 6,93 | 7,45 | 2 | 1 |
| 3056214 | 1 | 0,5 | 7 | 0,8 | 4 | 0,95 | 45 | 12,7 | 7 | 7,31 | 7,55 | 7,8 | 8,08 | 8,69 | 2 | 1 |
| 3056215 | 1 | 0,5 | 7 | 0,8 | 6 | 0,95 | 45 | 16,4 | 8,91 | 7,31 | 7,55 | 7,8 | 8,08 | 8,69 | 2 | 1 |
| 3056216 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 13,7 | 6,48 | 8,34 | 8,62 | 8,91 | 9,23 | 9,94 | 2 | 1 |
| 3056217 | 1 | 0,5 | 8 | 0,8 | 6 | 0,95 | 45 | 17,4 | 8,39 | 8,34 | 8,62 | 8,91 | 9,23 | 9,94 | 2 | 1 |
| 3056218 | 1 | 0,5 | 9 | 0,8 | 4 | 0,95 | 45 | 14,7 | 6,03 | 9,38 | 9,69 | 10,02 | 10,38 | 11,18 | 2 | 1 |
| 3056219 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 15,7 | 5,64 | 10,41 | 10,76 | 11,13 | 11,53 | 12,42 | 2 | 1 |
| 3056220 | 1 | 0,5 | 10 | 0,8 | 6 | 0,95 | 50 | 19,4 | 7,52 | 10,41 | 10,76 | 11,13 | 11,53 | 12,42 | 2 | 1 |
| 3056221 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 17,7 | 4,99 | 12,48 | 12,9 | 13,34 | 13,83 | 14,91 | 2 | 1 |
| 3056222 | 1 | 0,5 | 13 | 0,8 | 4 | 0,95 | 50 | 18,7 | 4,71 | 13,51 | 13,97 | 14,45 | 14,98 | 16,15 | 2 | 1 |
| 3056223 | 1 | 0,5 | 14 | 0,8 | 4 | 0,95 | 50 | 19,7 | 4,47 | 14,55 | 15,04 | 15,56 | 16,13 | 17,4 | 2 | 1 |
| 3056224 | 1 | 0,5 | 16 | 0,8 | 4 | 0,95 | 50 | 21,7 | 4,05 | 16,61 | 17,18 | 17,78 | 18,43 | 19,88 | 2 | 1 |
| 3056225 | 1 | 0,5 | 18 | 0,8 | 4 | 0,95 | 55 | 23,7 | 3,7 | 18,68 | 19,31 | 19,99 | 20,73 | 22,37 | 2 | 1 |
| 3056226 | 1 | 0,5 | 20 | 0,8 | 4 | 0,95 | 55 | 25,7 | 3,41 | 20,75 | 21,45 | 22,21 | 23,03 | 24,86 | 2 | 1 |
| 3056227 | 1 | 0,5 | 22 | 0,8 | 4 | 0,95 | 60 | 27,7 | 3,16 | 22,82 | 23,59 | 24,43 | 25,33 | 27,34 | 2 | 1 |
| 3056228 | 1 | 0,5 | 22 | 0,8 | 6 | 0,95 | 60 | 31,4 | 4,62 | 22,82 | 23,59 | 24,43 | 25,33 | 27,34 | 2 | 1 |
| 3056229 | 1,2 | 0,6 | 2 | 1 | 4 | 1,15 | 45 | 7,3 | 11,67 | 2,14 | 2,19 | 2,25 | 2,31 | 2,46 | 2 | 1 |
| 3056230 | 1,2 | 0,6 | 2 | 1 | 6 | 1,15 | 45 | 11,1 | 12,86 | 2,14 | 2,19 | 2,25 | 2,31 | 2,46 | 2 | 1 |
| 3056231 | 1,2 | 0,6 | 2,4 | 1 | 4 | 1,15 | 45 | 7,7 | 11,04 | 2,55 | 2,62 | 2,69 | 2,77 | 2,95 | 2 | 1 |
| 3056232 | 1,2 | 0,6 | 2,5 | 1 | 4 | 1,15 | 45 | 7,8 | 10,9 | 2,66 | 2,73 | 2,81 | 2,89 | 3,08 | 2 | 1 |
| 3056233 | 1,2 | 0,6 | 3 | 1 | 4 | 1,15 | 45 | 8,3 | 10,22 | 3,17 | 3,26 | 3,36 | 3,46 | 3,7 | 2 | 1 |
| 3056234 | 1,2 | 0,6 | 4 | 1 | 4 | 1,15 | 45 | 9,3 | 9,08 | 4,21 | 4,33 | 4,47 | 4,61 | 4,94 | 2 | 1 |
| 3056235 | 1,2 | 0,6 | 4 | 1 | 6 | 1,15 | 45 | 13,1 | 10,87 | 4,21 | 4,33 | 4,47 | 4,61 | 4,94 | 2 | 1 |
| 3056236 | 1,2 | 0,6 | 6 | 1 | 4 | 1,15 | 45 | 11,3 | 7,42 | 6,27 | 6,47 | 6,68 | 6,91 | 7,43 | 2 | 1 |
| 3056237 | 1,2 | 0,6 | 8 | 1 | 4 | 1,15 | 45 | 13,3 | 6,27 | 8,34 | 8,61 | 8,9 | 9,21 | 9,91 | 2 | 1 |

# AE-LNBD-H

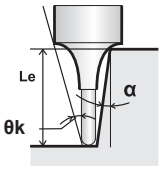
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

C.917

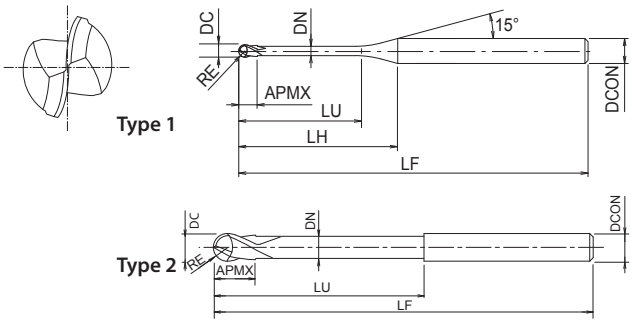
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056238 | 1,2 | 0,6 | 10 | 1 | 4 | 1,15 | 45 | 15,3 | 5,43 | 10,41 | 10,75 | 11,12 | 11,51 | 12,4 | 2 | 1 |
| 3056239 | 1,2 | 0,6 | 12 | 1 | 4 | 1,15 | 45 | 17,3 | 4,78 | 12,48 | 12,89 | 13,33 | 13,81 | 14,89 | 2 | 1 |
| 3056240 | 1,2 | 0,6 | 14 | 1 | 4 | 1,15 | 50 | 19,3 | 4,28 | 14,54 | 15,03 | 15,55 | 16,11 | 17,37 | 2 | 1 |
| 3056241 | 1,2 | 0,6 | 16 | 1 | 4 | 1,15 | 50 | 21,3 | 3,87 | 16,61 | 17,17 | 17,77 | 18,41 | 19,86 | 2 | 1 |
| 3056242 | 1,2 | 0,6 | 18 | 1 | 4 | 1,15 | 55 | 23,3 | 3,53 | 18,68 | 19,31 | 19,98 | 20,71 | 22,35 | 2 | 1 |
| 3056243 | 1,2 | 0,6 | 20 | 1 | 4 | 1,15 | 55 | 25,3 | 3,24 | 20,74 | 21,45 | 22,2 | 23,01 | 24,83 | 2 | 1 |
| 3056244 | 1,5 | 0,75 | 2 | 1,2 | 4 | 1,45 | 45 | 6,8 | 11,61 | 2,13 | 2,18 | 2,23 | 2,29 | 2,42 | 2 | 1 |
| 3056245 | 1,5 | 0,75 | 2,5 | 1,2 | 4 | 1,45 | 45 | 7,3 | 10,76 | 2,65 | 2,72 | 2,79 | 2,87 | 3,04 | 2 | 1 |
| 3056246 | 1,5 | 0,75 | 3 | 1,2 | 4 | 1,45 | 45 | 7,8 | 10,03 | 3,17 | 3,25 | 3,34 | 3,44 | 3,66 | 2 | 1 |
| 3056247 | 1,5 | 0,75 | 3 | 1,2 | 6 | 1,45 | 45 | 11,5 | 11,75 | 3,17 | 3,25 | 3,34 | 3,44 | 3,66 | 2 | 1 |
| 3056248 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,8 | 8,81 | 4,2 | 4,32 | 4,45 | 4,59 | 4,91 | 2 | 1 |
| 3056249 | 1,5 | 0,75 | 5 | 1,2 | 4 | 1,45 | 45 | 9,8 | 7,86 | 5,23 | 5,39 | 5,56 | 5,74 | 6,15 | 2 | 1 |
| 3056250 | 1,5 | 0,75 | 5 | 1,2 | 6 | 1,45 | 45 | 13,5 | 9,97 | 5,23 | 5,39 | 5,56 | 5,74 | 6,15 | 2 | 1 |
| 3056251 | 1,5 | 0,75 | 6 | 1,2 | 4 | 1,45 | 45 | 10,8 | 7,09 | 6,27 | 6,46 | 6,67 | 6,89 | 7,39 | 2 | 1 |
| 3056252 | 1,5 | 0,75 | 6 | 1,2 | 6 | 1,45 | 45 | 14,5 | 9,26 | 6,27 | 6,46 | 6,67 | 6,89 | 7,39 | 2 | 1 |
| 3056253 | 1,5 | 0,75 | 8 | 1,2 | 4 | 1,45 | 45 | 12,8 | 5,93 | 8,34 | 8,6 | 8,88 | 9,19 | 9,88 | 2 | 1 |
| 3056254 | 1,5 | 0,75 | 8 | 1,2 | 6 | 1,45 | 45 | 16,5 | 8,11 | 8,34 | 8,6 | 8,88 | 9,19 | 9,88 | 2 | 1 |
| 3056255 | 1,5 | 0,75 | 10 | 1,2 | 4 | 1,45 | 45 | 14,8 | 5,09 | 10,4 | 10,74 | 11,1 | 11,49 | 12,36 | 2 | 1 |
| 3056256 | 1,5 | 0,75 | 12 | 1,2 | 4 | 1,45 | 45 | 16,8 | 4,46 | 12,47 | 12,88 | 13,32 | 13,79 | 14,85 | 2 | 1 |
| 48363151 | 1,5 | 0,75 | 12 | 1,2 | 6 | 1,45 | 50 | 20,5 | 6,49 | 12,48 | 12,89 | 13,33 | 13,8 | 14,87 | 2 | 1 |
| 3056257 | 1,5 | 0,75 | 14 | 1,2 | 4 | 1,45 | 50 | 18,8 | 3,97 | 14,54 | 15,02 | 15,53 | 16,09 | 17,34 | 2 | 1 |
| 3056258 | 1,5 | 0,75 | 16 | 1,2 | 4 | 1,45 | 50 | 20,8 | 3,58 | 16,6 | 17,16 | 17,75 | 18,39 | 19,82 | 2 | 1 |
| 3056259 | 1,5 | 0,75 | 18 | 1,2 | 4 | 1,45 | 55 | 22,8 | 3,25 | 18,67 | 19,3 | 19,97 | 20,69 | 22,31 | 2 | 1 |
| 3056260 | 1,5 | 0,75 | 20 | 1,2 | 4 | 1,45 | 55 | 24,8 | 2,98 | 20,74 | 21,44 | 22,18 | 22,99 | - | 2 | 1 |
| 3056261 | 1,5 | 0,75 | 22 | 1,2 | 4 | 1,45 | 60 | 26,8 | 2,75 | 22,81 | 23,58 | 24,4 | 25,29 | - | 2 | 1 |
| 3056262 | 1,5 | 0,75 | 25 | 1,2 | 4 | 1,45 | 65 | 29,8 | 2,47 | 25,91 | 26,79 | 27,73 | 28,74 | - | 2 | 1 |
| 3056263 | 1,5 | 0,75 | 30 | 1,2 | 4 | 1,45 | 70 | 34,8 | 2,11 | 31,08 | 32,13 | 33,27 | 34,49 | - | 2 | 1 |
| 3056264 | 1,6 | 0,8 | 4 | 1,3 | 4 | 1,55 | 45 | 8,6 | 8,72 | 4,2 | 4,32 | 4,45 | 4,58 | 4,89 | 2 | 1 |
| 3056265 | 1,6 | 0,8 | 8 | 1,3 | 4 | 1,55 | 45 | 12,6 | 5,81 | 8,33 | 8,6 | 8,88 | 9,18 | 9,87 | 2 | 1 |
| 3056266 | 1,6 | 0,8 | 12 | 1,3 | 4 | 1,55 | 45 | 16,6 | 4,35 | 12,47 | 12,88 | 13,31 | 13,78 | 14,84 | 2 | 1 |
| 3056267 | 1,6 | 0,8 | 16 | 1,3 | 4 | 1,55 | 50 | 20,6 | 3,47 | 16,6 | 17,15 | 17,75 | 18,38 | 19,81 | 2 | 1 |
| 3056268 | 1,6 | 0,8 | 20 | 1,3 | 4 | 1,55 | 55 | 24,6 | 2,89 | 20,74 | 21,43 | 22,18 | 22,98 | - | 2 | 1 |
| 3056269 | 2 | 1 | 2,5 | 1,6 | 4 | 1,95 | 45 | 6,3 | 10,46 | 2,64 | 2,7 | 2,76 | 2,83 | 2,98 | 2 | 1 |
| 3056270 | 2 | 1 | 3 | 1,6 | 4 | 1,95 | 45 | 6,8 | 9,61 | 3,16 | 3,23 | 3,32 | 3,4 | 3,6 | 2 | 1 |
| 3056271 | 2 | 1 | 3 | 1,6 | 6 | 1,95 | 45 | 10,6 | 11,7 | 3,16 | 3,23 | 3,32 | 3,4 | 3,6 | 2 | 1 |
| 3056272 | 2 | 1 | 4 | 1,6 | 4 | 1,95 | 45 | 7,8 | 8,25 | 4,19 | 4,3 | 4,42 | 4,55 | 4,85 | 2 | 1 |
| 3056273 | 2 | 1 | 4 | 1,6 | 6 | 1,95 | 45 | 11,6 | 10,64 | 4,19 | 4,3 | 4,42 | 4,55 | 4,85 | 2 | 1 |
| 3056274 | 2 | 1 | 5 | 1,6 | 4 | 1,95 | 45 | 8,8 | 7,23 | 5,23 | 5,37 | 5,53 | 5,7 | 6,09 | 2 | 1 |
| 3056275 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 45 | 9,8 | 6,43 | 6,26 | 6,44 | 6,64 | 6,85 | 7,33 | 2 | 1 |
| 3056276 | 2 | 1 | 6 | 1,6 | 6 | 1,95 | 45 | 13,6 | 9 | 6,26 | 6,44 | 6,64 | 6,85 | 7,33 | 2 | 1 |
| 3056277 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 45 | 11,8 | 5,26 | 8,33 | 8,58 | 8,86 | 9,15 | 9,82 | 2 | 1 |
| 3056278 | 2 | 1 | 8 | 1,6 | 6 | 1,95 | 45 | 15,6 | 7,79 | 8,33 | 8,58 | 8,86 | 9,15 | 9,82 | 2 | 1 |
| 3056279 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 45 | 13,8 | 4,45 | 10,39 | 10,72 | 11,07 | 11,45 | 12,31 | 2 | 1 |
| 3056280 | 2 | 1 | 10 | 1,6 | 6 | 1,95 | 50 | 17,6 | 6,87 | 10,39 | 10,72 | 11,07 | 11,45 | 12,31 | 2 | 1 |
| 3056281 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 45 | 15,8 | 3,86 | 12,46 | 12,86 | 13,29 | 13,75 | 14,79 | 2 | 1 |
| 3056282 | 2 | 1 | 12 | 1,6 | 6 | 1,95 | 50 | 19,6 | 6,14 | 12,46 | 12,86 | 13,29 | 13,75 | 14,79 | 2 | 1 |

# AE-LNBD-H

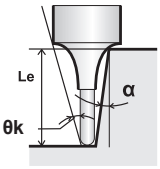
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

C.917

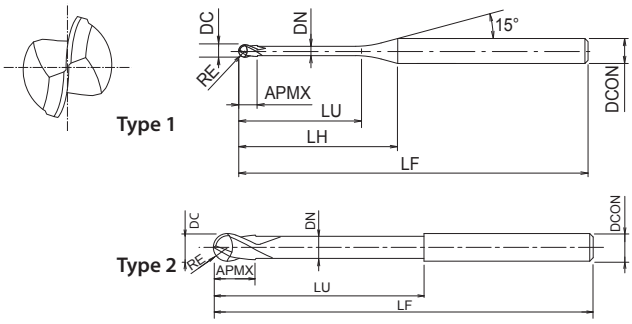
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056283 | 2 | 1 | 13 | 1,6 | 4 | 1,95 | 50 | 16,8 | 3,61 | 13,5 | 13,93 | 14,4 | 14,9 | 16,04 | 2 | 1 |
| 3056284 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 17,8 | 3,4 | 14,53 | 15 | 15,51 | 16,05 | 17,28 | 2 | 1 |
| 3056285 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 19,8 | 3,04 | 16,6 | 17,14 | 17,72 | 18,35 | 19,76 | 2 | 1 |
| 3056286 | 2 | 1 | 16 | 1,6 | 6 | 1,95 | 55 | 23,6 | 5,06 | 16,6 | 17,14 | 17,72 | 18,35 | 19,76 | 2 | 1 |
| 3056287 | 2 | 1 | 18 | 1,6 | 4 | 1,95 | 55 | 21,8 | 2,75 | 18,66 | 19,28 | 19,94 | 20,65 | - | 2 | 1 |
| 3056288 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 55 | 23,8 | 2,51 | 20,73 | 21,42 | 22,16 | 22,95 | - | 2 | 1 |
| 3056289 | 2 | 1 | 20 | 1,6 | 6 | 1,95 | 60 | 27,6 | 4,31 | 20,73 | 21,42 | 22,16 | 22,95 | 24,74 | 2 | 1 |
| 3056290 | 2 | 1 | 22 | 1,6 | 4 | 1,95 | 60 | 25,8 | 2,31 | 22,8 | 23,56 | 24,37 | 25,25 | - | 2 | 1 |
| 3056291 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 65 | 28,8 | 2,06 | 25,9 | 26,77 | 27,7 | 28,7 | - | 2 | 1 |
| 3056292 | 2 | 1 | 25 | 1,6 | 6 | 1,95 | 65 | 32,6 | 3,63 | 25,9 | 26,77 | 27,7 | 28,7 | 30,95 | 2 | 1 |
| 3056293 | 2 | 1 | 30 | 1,6 | 4 | 1,95 | 70 | 33,8 | 1,75 | 31,07 | 32,12 | 33,24 | - | - | 2 | 1 |
| 3056294 | 2 | 1 | 35 | 1,6 | 4 | 1,95 | 70 | 38,8 | 1,52 | 36,24 | 37,46 | 38,78 | - | - | 2 | 1 |
| 3056295 | 2 | 1 | 40 | 1,6 | 4 | 1,95 | 80 | 43,8 | 1,34 | 41,4 | 42,81 | - | - | - | 2 | 1 |
| 3056296 | 2,5 | 1,25 | 6 | 2 | 4 | 2,35 | 45 | 9,1 | 5,44 | 6,44 | 6,63 | 6,82 | 7,03 | 7,51 | 2 | 1 |
| 3056297 | 2,5 | 1,25 | 8 | 2 | 4 | 2,35 | 45 | 11,1 | 4,35 | 8,51 | 8,77 | 9,04 | 9,33 | 9,99 | 2 | 1 |
| 3056298 | 2,5 | 1,25 | 10 | 2 | 4 | 2,35 | 45 | 13,1 | 3,62 | 10,58 | 10,9 | 11,25 | 11,63 | 12,48 | 2 | 1 |
| 3056299 | 2,5 | 1,25 | 15 | 2 | 4 | 2,35 | 50 | 18,1 | 2,55 | 15,75 | 16,25 | 16,8 | 17,38 | - | 2 | 1 |
| 3056300 | 2,5 | 1,25 | 20 | 2 | 4 | 2,35 | 55 | 23,1 | 1,97 | 20,92 | 21,6 | 22,34 | - | - | 2 | 1 |
| 3056301 | 2,5 | 1,25 | 25 | 2 | 4 | 2,35 | 65 | 28,1 | 1,61 | 26,08 | 26,95 | 27,88 | - | - | 2 | 1 |
| 3056302 | 2,5 | 1,25 | 30 | 2 | 4 | 2,35 | 70 | 33,1 | 1,35 | 31,25 | 32,3 | - | - | - | 2 | 1 |
| 3056303 | 2,5 | 1,25 | 35 | 2 | 4 | 2,35 | 70 | 38,1 | 1,17 | 36,42 | 37,65 | - | - | - | 2 | 1 |
| 3056304 | 3 | 1,5 | 6 | 2,4 | 6 | 2,85 | 50 | 11,9 | 8,15 | 6,44 | 6,61 | 6,79 | 7 | 7,45 | 2 | 1 |
| 3056305 | 3 | 1,5 | 8 | 2,4 | 6 | 2,85 | 50 | 13,9 | 6,87 | 8,5 | 8,75 | 9,01 | 9,29 | 9,93 | 2 | 1 |
| 3056306 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 50 | 15,9 | 5,93 | 10,57 | 10,89 | 11,23 | 11,59 | 12,42 | 2 | 1 |
| 3056307 | 3 | 1,5 | 12 | 2,4 | 6 | 2,85 | 55 | 17,9 | 5,22 | 12,64 | 13,03 | 13,44 | 13,89 | 14,91 | 2 | 1 |
| 3056308 | 3 | 1,5 | 13 | 2,4 | 6 | 2,85 | 55 | 18,9 | 4,92 | 13,67 | 14,1 | 14,55 | 15,04 | 16,15 | 2 | 1 |
| 3056309 | 3 | 1,5 | 14 | 2,4 | 6 | 2,85 | 55 | 19,9 | 4,66 | 14,71 | 15,17 | 15,66 | 16,19 | 17,39 | 2 | 1 |
| 3056310 | 3 | 1,5 | 15 | 2,4 | 6 | 2,85 | 55 | 20,9 | 4,42 | 15,74 | 16,24 | 16,77 | 17,34 | 18,63 | 2 | 1 |
| 3056311 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 21,9 | 4,2 | 16,77 | 17,31 | 17,88 | 18,49 | 19,88 | 2 | 1 |
| 3056312 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 60 | 25,9 | 3,52 | 20,91 | 21,58 | 22,31 | 23,09 | 24,85 | 2 | 1 |
| 3056313 | 3 | 1,5 | 25 | 2,4 | 6 | 2,85 | 65 | 30,9 | 2,92 | 26,08 | 26,93 | 27,85 | 28,84 | - | 2 | 1 |
| 3056314 | 3 | 1,5 | 30 | 2,4 | 6 | 2,85 | 70 | 35,9 | 2,5 | 31,24 | 32,28 | 33,39 | 34,59 | - | 2 | 1 |
| 3056315 | 3 | 1,5 | 35 | 2,4 | 6 | 2,85 | 80 | 40,9 | 2,18 | 36,41 | 37,63 | 38,94 | 40,34 | - | 2 | 1 |
| 3056316 | 3 | 1,5 | 40 | 2,4 | 6 | 2,85 | 90 | 45,9 | 1,94 | 41,58 | 42,98 | 44,48 | - | - | 2 | 1 |
| 3056317 | 3,5 | 1,75 | 10 | 2,8 | 6 | 3,35 | 50 | 14,9 | 5,38 | 10,56 | 10,87 | 11,2 | 11,56 | 12,36 | 2 | 1 |
| 3056318 | 3,5 | 1,75 | 15 | 2,8 | 6 | 3,35 | 55 | 19,9 | 3,92 | 15,73 | 16,22 | 16,74 | 17,31 | 18,58 | 2 | 1 |
| 3056319 | 3,5 | 1,75 | 16 | 2,8 | 6 | 3,35 | 55 | 20,9 | 3,72 | 16,76 | 17,29 | 17,85 | 18,46 | 19,82 | 2 | 1 |
| 3056320 | 3,5 | 1,75 | 20 | 2,8 | 6 | 3,35 | 60 | 24,9 | 3,08 | 20,9 | 21,57 | 22,28 | 23,06 | 24,79 | 2 | 1 |
| 3056321 | 3,5 | 1,75 | 25 | 2,8 | 6 | 3,35 | 65 | 29,9 | 2,54 | 26,07 | 26,92 | 27,83 | 28,81 | - | 2 | 1 |
| 3056322 | 3,5 | 1,75 | 30 | 2,8 | 6 | 3,35 | 70 | 34,9 | 2,16 | 31,24 | 32,26 | 33,37 | 34,55 | - | 2 | 1 |
| 3056323 | 3,5 | 1,75 | 35 | 2,8 | 6 | 3,35 | 80 | 39,9 | 1,88 | 36,4 | 37,61 | 38,91 | - | - | 2 | 1 |
| 3056324 | 3,5 | 1,75 | 40 | 2,8 | 6 | 3,35 | 90 | 44,9 | 1,66 | 41,57 | 42,96 | 44,45 | - | - | 2 | 1 |
| 3056325 | 3,5 | 1,75 | 45 | 2,8 | 6 | 3,35 | 90 | 49,9 | 1,49 | 46,74 | 48,31 | - | - | - | 2 | 1 |
| 3056326 | 4 | 2 | 8 | 3,2 | 4 | 3,85 | 55 | - | - | - | - | - | - | - | 2 | 2 |
| 3056327 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 55 | 12 | 5,65 | 8,49 | 8,71 | 8,96 | 9,22 | 9,81 | 2 | 1 |
| 3056328 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 14 | 4,73 | 10,55 | 10,85 | 11,17 | 11,52 | 12,3 | 2 | 1 |

# AE-LNBD-H

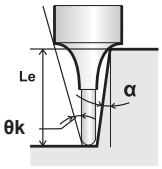
**Milling | Solid carbide**

INDEX

**NEW SIZE**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, ball nose
- 262 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | 30° | SHRINK FIT | SHANK h4 | R ± 0.003 ≤0,25 | R ± 0.005 0,25<R

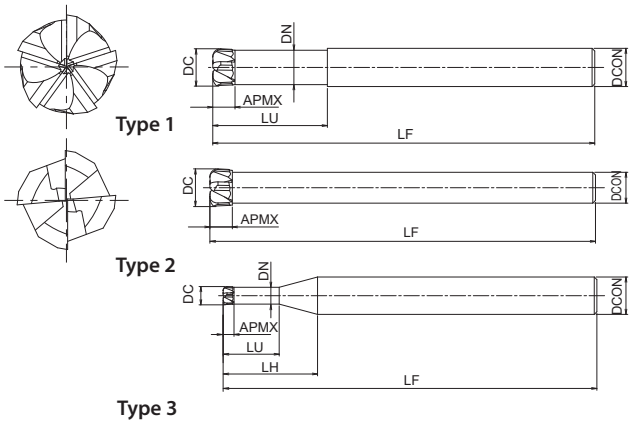
C.917

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056329 | 4 | 2 | 12 | 3,2 | 6 | 3,85 | 60 | 16 | 4,07 | 12,62 | 12,99 | 13,39 | 13,82 | 14,79 | 2 | 1 |
| 3056330 | 4 | 2 | 13 | 3,2 | 6 | 3,85 | 60 | 17 | 3,8 | 13,65 | 14,06 | 14,5 | 14,97 | 16,03 | 2 | 1 |
| 3056331 | 4 | 2 | 14 | 3,2 | 6 | 3,85 | 60 | 18 | 3,56 | 14,69 | 15,13 | 15,61 | 16,12 | 17,27 | 2 | 1 |
| 3056332 | 4 | 2 | 15 | 3,2 | 6 | 3,85 | 60 | 19 | 3,36 | 15,72 | 16,2 | 16,72 | 17,27 | 18,52 | 2 | 1 |
| 3056333 | 4 | 2 | 16 | 3,2 | 6 | 3,85 | 60 | 20 | 3,17 | 16,76 | 17,27 | 17,82 | 18,42 | 19,76 | 2 | 1 |
| 48363418 NEW | 4 | 2 | 18 | 3,2 | 6 | 3,85 | 60 | 22 | 2,86 | 18,76 | 19,37 | 20 | 20,67 | - | 2 | 1 |
| 3056334 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 24 | 2,6 | 20,89 | 21,55 | 22,26 | 23,02 | - | 2 | 1 |
| 3056335 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 70 | 29 | 2,12 | 26,06 | 26,9 | 27,8 | 28,77 | - | 2 | 1 |
| 3056336 | 4 | 2 | 30 | 3,2 | 6 | 3,85 | 80 | 34 | 1,79 | 31,23 | 32,25 | 33,34 | - | - | 2 | 1 |
| 3056337 | 4 | 2 | 35 | 3,2 | 6 | 3,85 | 80 | 39 | 1,55 | 36,4 | 37,6 | 38,88 | - | - | 2 | 1 |
| 3056338 | 4 | 2 | 40 | 3,2 | 6 | 3,85 | 90 | 44 | 1,37 | 41,56 | 42,94 | - | - | - | 2 | 1 |
| 3056339 | 4 | 2 | 45 | 3,2 | 6 | 3,85 | 90 | 49 | 1,22 | 46,73 | 48,29 | - | - | - | 2 | 1 |
| 3056340 | 4 | 2 | 50 | 3,2 | 6 | 3,85 | 100 | 54 | 1,11 | 51,9 | 53,64 | - | - | - | 2 | 1 |
| 3056341 | 5 | 2,5 | 10 | 4 | 6 | 4,85 | 60 | 12,1 | 2,95 | 10,54 | 10,82 | 11,12 | 11,45 | - | 2 | 1 |
| 3056342 | 5 | 2,5 | 15 | 4 | 6 | 4,85 | 60 | 17,1 | 1,95 | 15,71 | 16,17 | 16,66 | - | - | 2 | 1 |
| 3056343 | 5 | 2,5 | 20 | 4 | 6 | 4,85 | 70 | 22,1 | 1,46 | 20,87 | 21,52 | - | - | - | 2 | 1 |
| 3056344 | 5 | 2,5 | 25 | 4 | 6 | 4,85 | 70 | 27,1 | 1,17 | 26,04 | 26,86 | - | - | - | 2 | 1 |
| 3056345 | 5 | 2,5 | 30 | 4 | 6 | 4,85 | 80 | 32,1 | 0,97 | 31,21 | - | - | - | - | 2 | 1 |
| 3056346 | 5 | 2,5 | 35 | 4 | 6 | 4,85 | 80 | 37,1 | 0,83 | 36,38 | - | - | - | - | 2 | 1 |
| 3056347 | 5 | 2,5 | 40 | 4 | 6 | 4,85 | 90 | 42,1 | 0,73 | 41,55 | - | - | - | - | 2 | 1 |
| 3056348 | 5 | 2,5 | 45 | 4 | 6 | 4,85 | 100 | 47,1 | 0,65 | 46,72 | - | - | - | - | 2 | 1 |
| 3056349 | 5 | 2,5 | 50 | 4 | 6 | 4,85 | 100 | 52,1 | 0,58 | 51,88 | - | - | - | - | 2 | 1 |
| 3056350 | 6 | 3 | 10 | 4,8 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 2 | 2 |
| 3056351 | 6 | 3 | 12 | 4,8 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 2 | 2 |
| 3056352 | 6 | 3 | 15 | 4,8 | 6 | 5,85 | 65 | - | - | - | - | - | - | - | 2 | 2 |
| 3056353 | 6 | 3 | 20 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 | 2 |
| 3056354 | 6 | 3 | 25 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 | 2 |
| 3056355 | 6 | 3 | 30 | 4,8 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 2 | 2 |
| 3056356 | 6 | 3 | 35 | 4,8 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 2 | 2 |
| 3056357 | 6 | 3 | 40 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 2 | 2 |
| 3056358 | 6 | 3 | 45 | 4,8 | 6 | 5,85 | 100 | - | - | - | - | - | - | - | 2 | 2 |
| 3056359 | 6 | 3 | 50 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 2 | 2 |
| 3056360 | 6 | 3 | 60 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 2 | 2 |

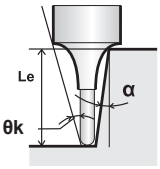
# AE-CRE-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- Multi flute with super radius



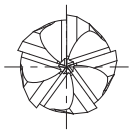
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8550028 | 1 | 0,2 | 3 | 0,4 | 6 | 0,85 | 50 | 12,6 | 11,24 | 3,37 | 3,54 | 3,71 | 3,88 | 4,22 | 4 | 1 |
| 8550029 | 2 | 0,5 | 6 | 0,8 | 6 | 1,8 | 60 | 13,6 | 8,51 | 6,48 | 6,75 | 7 | 7,25 | 7,8 | 4 | 1 |
| 8550030 | 3 | 0,75 | 9 | 1,3 | 6 | 2,7 | 60 | 14,7 | 6,05 | 9,55 | 9,88 | 10,21 | 10,56 | 11,36 | 5 | 1 |
| 8550031 | 4 | 1 | 12 | 1,6 | 6 | 3,6 | 70 | 15,8 | 3,82 | 12,61 | 13,01 | 13,45 | 13,92 | 14,97 | 5 | 1 |
| 8550032 | 5 | 1,2 | 15 | 2 | 6 | 4,5 | 80 | 16,9 | 1,81 | 15,68 | 16,18 | 16,72 | - | - | 5 | 1 |
| 8550033 | 6 | 1,5 | 18 | 2,5 | 6 | 5,4 | 90 | - | - | - | - | - | - | - | 5 | 2 |
| 8550034 | 7 | 1,5 | - | 3 | 6 | - | 90 | - | - | - | - | - | - | - | 5 | 3 |
| 8550035 | 8 | 2 | 24 | 3,5 | 8 | 7,2 | 100 | - | - | - | - | - | - | - | 5 | 2 |
| 8550036 | 9 | 2 | - | 4 | 8 | - | 100 | - | - | - | - | - | - | - | 5 | 3 |
| 8550037 | 10 | 2 | 30 | 5 | 10 | 9 | 100 | - | - | - | - | - | - | - | 5 | 2 |
| 8550038 | 11 | - | 2 | 5 | 10 | - | 100 | - | - | - | - | - | - | - | 5 | 3 |
| 8550039 | 12 | 3 | 36 | 5 | 12 | 11 | 110 | - | - | - | - | - | - | - | 5 | 2 |
| 8550040 | 13 | 3 | - | 6 | 12 | - | 110 | - | - | - | - | - | - | - | 5 | 3 |

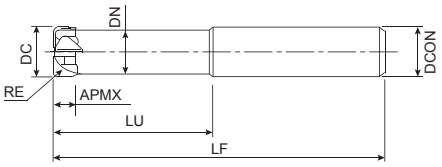
# AE-HS-CRE-H

**Milling | Solid carbide**

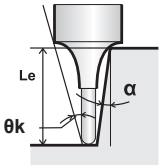
INDEX

**NEW**






- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened steels up to 70HRC
- 5 flutes, shorter overall lenght

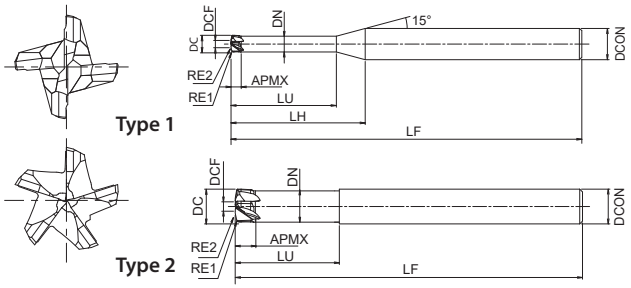


| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48448267 | 6 | 1,5 | 12 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48448367 | 6 | 1,5 | 18 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48448467 | 6 | 1,5 | 24 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48448289 | 8 | 2 | 16 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48448389 | 8 | 2 | 24 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48448489 | 8 | 2 | 32 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48448209 | 10 | 2 | 20 | 4 | 10 | 9 | 70 | 5 |
| 48448309 | 10 | 2 | 30 | 4 | 10 | 9 | 70 | 5 |
| 48448509 | 10 | 2 | 40 | 4 | 10 | 9 | 70 | 5 |
| 48448233 | 12 | 3 | 24 | 4,8 | 12 | 11 | 80 | 5 |
| 48448333 | 12 | 3 | 36 | 4,8 | 12 | 11 | 80 | 5 |
| 48448533 | 12 | 3 | 48 | 4,8 | 12 | 11 | 80 | 5 |

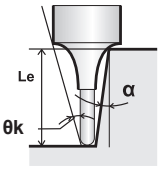
# AE-HFE-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- For high feed milling

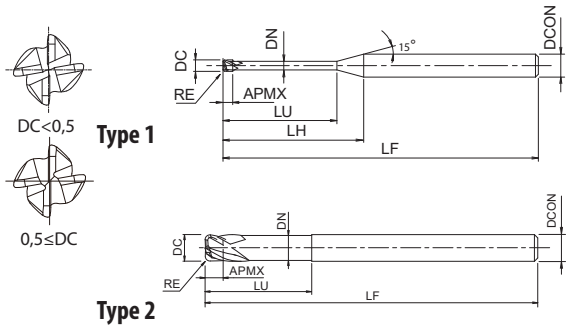


| EDP | DC | RE | RE2 | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type | DCF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8550019 | 1 | 0,1 | 0,49 | 3 | 0,4 | 6 | 0,85 | 60 | 12,6 | 11,33 | 3,16 | 3,33 | 3,5 | 3,66 | 4 | 4 | 1 | 0,36 |
| 8550020 | 2 | 0,15 | 0,98 | 6 | 0,8 | 6 | 1,8 | 60 | 13,6 | 8,46 | 6,29 | 6,56 | 6,82 | 7,07 | 7,63 | 4 | 1 | 0,73 |
| 8550021 | 3 | 0,2 | 1,46 | 9 | 1,3 | 6 | 2,7 | 60 | 14,7 | 5,95 | 9,36 | 9,7 | 10,04 | 10,4 | 11,22 | 5 | 1 | 1,10 |
| 8550022 | 4 | 0,2 | 1,95 | 12 | 1,6 | 6 | 3,6 | 70 | 15,8 | 3,71 | 12,42 | 12,85 | 13,3 | 13,78 | 14,87 | 5 | 1 | 1,50 |
| 8550023 | 5 | 0,2 | 2,44 | 15 | 2 | 6 | 4,5 | 80 | 16,9 | 1,74 | 15,5 | 16,02 | 16,59 | - | - | 5 | 1 | 1,87 |
| 8550024 | 6 | 0,2 | 2,93 | 18 | 2,5 | 6 | 5,4 | 90 | - | - | - | - | - | - | - | 5 | 2 | 2,24 |
| 8550025 | 8 | 0,3 | 3,9 | 24 | 3,5 | 8 | 7,2 | 100 | - | - | - | - | - | - | - | 5 | 2 | 2,99 |
| 8550026 | 10 | 0,3 | 4,88 | 30 | 4,5 | 10 | 9 | 110 | - | - | - | - | - | - | - | 5 | 2 | 3,83 |
| 8550027 | 12 | 0,3 | 5,85 | 36 | 5 | 12 | 11 | 135 | - | - | - | - | - | - | - | 5 | 2 | 4,59 |

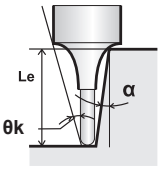
# AE-CPR4-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DURAREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DURAREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557470 | 0,2 | 0,02 | 0,5 | 0,15 | 4 | 0,18 | 45 | 7,7 | 13,88 | 0,53 | 0,57 | 0,61 | 0,65 | 0,73 | 4 | 1 |
| 8557471 | 0,2 | 0,02 | 1 | 0,15 | 4 | 0,18 | 45 | 8,2 | 13,07 | 1,06 | 1,13 | 1,2 | 1,26 | 1,38 | 4 | 1 |
| 8557472 | 0,2 | 0,02 | 1,5 | 0,15 | 4 | 0,18 | 45 | 8,7 | 12,34 | 1,6 | 1,69 | 1,77 | 1,85 | 2 | 4 | 1 |
| 8557473 | 0,2 | 0,02 | 2 | 0,15 | 4 | 0,18 | 45 | 9,2 | 11,69 | 2,12 | 2,24 | 2,33 | 2,43 | 2,62 | 4 | 1 |
| 8557474 | 0,2 | 0,05 | 0,5 | 0,15 | 4 | 0,18 | 45 | 7,7 | 13,93 | 0,53 | 0,56 | 0,6 | 0,64 | 0,72 | 4 | 1 |
| 8557475 | 0,2 | 0,05 | 1 | 0,15 | 4 | 0,18 | 45 | 8,2 | 13,11 | 1,06 | 1,13 | 1,19 | 1,25 | 1,37 | 4 | 1 |
| 8557476 | 0,2 | 0,05 | 1,5 | 0,15 | 4 | 0,18 | 45 | 8,7 | 12,37 | 1,59 | 1,68 | 1,77 | 1,84 | 1,99 | 4 | 1 |
| 8557477 | 0,2 | 0,05 | 2 | 0,15 | 4 | 0,18 | 45 | 9,2 | 11,72 | 2,12 | 2,23 | 2,33 | 2,42 | 2,61 | 4 | 1 |
| 8557478 | 0,3 | 0,02 | 1 | 0,25 | 4 | 0,28 | 45 | 8 | 13,02 | 1,06 | 1,13 | 1,2 | 1,26 | 1,38 | 4 | 1 |
| 8557479 | 0,3 | 0,02 | 1,5 | 0,25 | 4 | 0,28 | 45 | 8,5 | 12,28 | 1,6 | 1,69 | 1,77 | 1,85 | 2 | 4 | 1 |
| 8557480 | 0,3 | 0,02 | 2 | 0,25 | 4 | 0,28 | 45 | 9 | 11,62 | 2,12 | 2,24 | 2,33 | 2,43 | 2,62 | 4 | 1 |
| 8557481 | 0,3 | 0,02 | 2,5 | 0,25 | 4 | 0,28 | 45 | 9,5 | 11,02 | 2,65 | 2,78 | 2,89 | 3 | 3,24 | 4 | 1 |
| 8557482 | 0,3 | 0,02 | 3 | 0,25 | 4 | 0,28 | 45 | 10 | 10,48 | 3,18 | 3,32 | 3,45 | 3,58 | 3,87 | 4 | 1 |
| 8557483 | 0,3 | 0,05 | 1 | 0,25 | 4 | 0,28 | 45 | 8 | 13,06 | 1,06 | 1,13 | 1,19 | 1,25 | 1,37 | 4 | 1 |
| 8557484 | 0,3 | 0,05 | 1,5 | 0,25 | 4 | 0,28 | 45 | 8,5 | 12,32 | 1,59 | 1,68 | 1,77 | 1,84 | 1,99 | 4 | 1 |
| 8557485 | 0,3 | 0,05 | 2 | 0,25 | 4 | 0,28 | 45 | 9 | 11,65 | 2,12 | 2,23 | 2,33 | 2,42 | 2,61 | 4 | 1 |
| 8557486 | 0,3 | 0,05 | 2,5 | 0,25 | 4 | 0,28 | 45 | 9,5 | 11,05 | 2,65 | 2,78 | 2,89 | 3 | 3,24 | 4 | 1 |
| 8557487 | 0,3 | 0,05 | 3 | 0,25 | 4 | 0,28 | 45 | 10 | 10,51 | 3,18 | 3,32 | 3,44 | 3,57 | 3,86 | 4 | 1 |
| 8557488 | 0,4 | 0,02 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,41 | 1,08 | 1,17 | 1,28 | 1,38 | 1,62 | 4 | 1 |
| 8557489 | 0,4 | 0,02 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,7 | 11,71 | 1,62 | 1,76 | 1,89 | 2,03 | 2,32 | 4 | 1 |
| 8557490 | 0,4 | 0,02 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,09 | 2,16 | 2,33 | 2,5 | 2,67 | 3 | 4 | 1 |
| 8557491 | 0,4 | 0,02 | 2,5 | 0,3 | 4 | 0,37 | 45 | 9,7 | 10,53 | 2,7 | 2,9 | 3,1 | 3,29 | 3,66 | 4 | 1 |
| 8557492 | 0,4 | 0,02 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,03 | 3,24 | 3,47 | 3,69 | 3,9 | 4,31 | 4 | 1 |
| 8557493 | 0,4 | 0,02 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,15 | 4,31 | 4,59 | 4,85 | 5,1 | 5,57 | 4 | 1 |
| 8557494 | 0,4 | 0,05 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,45 | 1,08 | 1,17 | 1,27 | 1,37 | 1,6 | 4 | 1 |
| 8557495 | 0,4 | 0,05 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,7 | 11,75 | 1,62 | 1,75 | 1,89 | 2,03 | 2,31 | 4 | 1 |
| 8557496 | 0,4 | 0,05 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,12 | 2,16 | 2,33 | 2,49 | 2,66 | 2,99 | 4 | 1 |
| 8557497 | 0,4 | 0,05 | 2,5 | 0,3 | 4 | 0,37 | 45 | 9,7 | 10,56 | 2,7 | 2,9 | 3,09 | 3,28 | 3,65 | 4 | 1 |
| 8557498 | 0,4 | 0,05 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,05 | 3,24 | 3,46 | 3,68 | 3,89 | 4,3 | 4 | 1 |
| 8557499 | 0,4 | 0,05 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,17 | 4,31 | 4,59 | 4,85 | 5,1 | 5,56 | 4 | 1 |
| 8557500 | 0,4 | 0,1 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,51 | 1,07 | 1,16 | 1,26 | 1,36 | 1,58 | 4 | 1 |
| 8557501 | 0,4 | 0,1 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,18 | 2,16 | 2,32 | 2,48 | 2,65 | 2,98 | 4 | 1 |
| 8557502 | 0,4 | 0,1 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,1 | 3,23 | 3,46 | 3,67 | 3,88 | 4,29 | 4 | 1 |
| 8557503 | 0,4 | 0,1 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,21 | 4,3 | 4,58 | 4,84 | 5,09 | 5,55 | 4 | 1 |
| 8557504 | 0,5 | 0,02 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,39 | 1,08 | 1,17 | 1,26 | 1,37 | 1,59 | 4 | 1 |
| 8557505 | 0,5 | 0,02 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,04 | 2,16 | 2,32 | 2,48 | 2,64 | 2,97 | 4 | 1 |
| 8557506 | 0,5 | 0,02 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 9,96 | 3,23 | 3,45 | 3,67 | 3,87 | 4,27 | 4 | 1 |
| 8557507 | 0,5 | 0,02 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,07 | 4,3 | 4,57 | 4,83 | 5,07 | 5,53 | 4 | 1 |
| 8557508 | 0,5 | 0,02 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,32 | 5,36 | 5,68 | 5,98 | 6,25 | 6,77 | 4 | 1 |
| 8557509 | 0,5 | 0,02 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,69 | 6,42 | 6,79 | 7,11 | 7,41 | 8,02 | 4 | 1 |
| 8557510 | 0,5 | 0,05 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,43 | 1,08 | 1,16 | 1,26 | 1,36 | 1,58 | 4 | 1 |
| 8557511 | 0,5 | 0,05 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,08 | 2,15 | 2,31 | 2,47 | 2,64 | 2,96 | 4 | 1 |
| 8557512 | 0,5 | 0,05 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 9,99 | 3,23 | 3,45 | 3,66 | 3,87 | 4,27 | 4 | 1 |
| 8557513 | 0,5 | 0,05 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,09 | 4,3 | 4,57 | 4,82 | 5,07 | 5,52 | 4 | 1 |
| 8557514 | 0,5 | 0,05 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,34 | 5,36 | 5,68 | 5,97 | 6,25 | 6,77 | 4 | 1 |
| 8557515 | 0,5 | 0,05 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,71 | 6,42 | 6,79 | 7,11 | 7,41 | 8,01 | 4 | 1 |

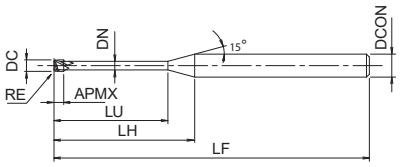
* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

# AE-CPR4-H

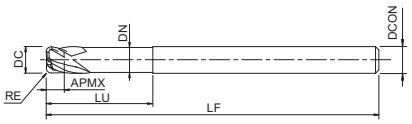
**Milling | Solid carbide**

INDEX

**Type 1**




**Type 2**




- First choice in quality and performance
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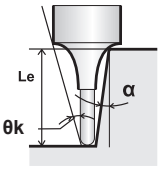



P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

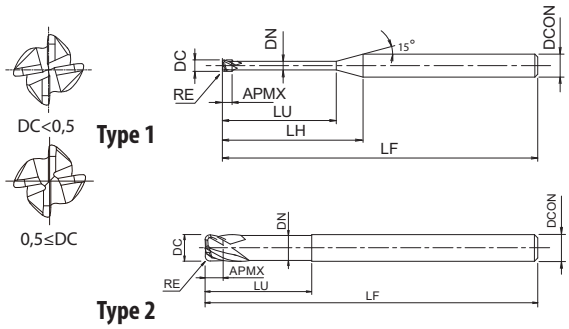
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557516 | 0,5 | 0,1 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,5 | 1,07 | 1,15 | 1,24 | 1,34 | 1,55 | 4 | 1 |
| 8557517 | 0,5 | 0,1 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,13 | 2,15 | 2,31 | 2,46 | 2,62 | 2,95 | 4 | 1 |
| 8557518 | 0,5 | 0,1 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 10,03 | 3,22 | 3,44 | 3,65 | 3,86 | 4,25 | 4 | 1 |
| 8557519 | 0,5 | 0,1 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,13 | 4,29 | 4,56 | 4,82 | 5,06 | 5,51 | 4 | 1 |
| 8557520 | 0,5 | 0,1 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,37 | 5,36 | 5,68 | 5,97 | 6,24 | 6,76 | 4 | 1 |
| 8557521 | 0,5 | 0,1 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,73 | 6,42 | 6,78 | 7,1 | 7,4 | 8 | 4 | 1 |
| 8544821 | 0,6 | 0,1 | 1 | 0,48 | 4 | 0,55 | 45 | 7,8 | 12,48 | 1,07 | 1,15 | 1,23 | 1,33 | 1,53 | 4 | 1 |
| 8544824 | 0,6 | 0,05 | 1 | 0,48 | 4 | 0,55 | 45 | 7,8 | 12,41 | 1,07 | 1,16 | 1,25 | 1,34 | 1,55 | 4 | 1 |
| 8544825 | 0,6 | 0,05 | 2 | 0,48 | 4 | 0,55 | 45 | 8,8 | 11,02 | 2,15 | 2,3 | 2,46 | 2,62 | 2,93 | 4 | 1 |
| 8544826 | 0,6 | 0,05 | 4 | 0,48 | 4 | 0,55 | 45 | 10,8 | 9,01 | 4,28 | 4,55 | 4,8 | 5,04 | 5,49 | 4 | 1 |
| 8544827 | 0,6 | 0,05 | 6 | 0,48 | 4 | 0,55 | 45 | 12,8 | 7,61 | 6,41 | 6,76 | 7,08 | 7,38 | 7,98 | 4 | 1 |
| 8557522 | 0,6 | 0,1 | 2 | 0,48 | 4 | 0,55 | 45 | 8,8 | 11,08 | 2,14 | 2,29 | 2,45 | 2,6 | 2,92 | 4 | 1 |
| 8557523 | 0,6 | 0,1 | 4 | 0,48 | 4 | 0,55 | 45 | 10,8 | 9,05 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 4 | 1 |
| 8557524 | 0,6 | 0,1 | 6 | 0,48 | 4 | 0,55 | 45 | 12,8 | 7,64 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 4 | 1 |
| 8544828 | 0,7 | 0,02 | 1,5 | 0,55 | 4 | 0,65 | 45 | 8,1 | 11,56 | 1,61 | 1,74 | 1,86 | 1,99 | 2,27 | 4 | 1 |
| 8544829 | 0,7 | 0,05 | 1,5 | 0,55 | 4 | 0,65 | 45 | 8,1 | 11,6 | 1,61 | 1,73 | 1,86 | 1,99 | 2,26 | 4 | 1 |
| 8557525 | 0,7 | 0,02 | 2 | 0,55 | 4 | 0,65 | 45 | 8,6 | 10,9 | 2,15 | 2,31 | 2,46 | 2,62 | 2,94 | 4 | 1 |
| 8557526 | 0,7 | 0,02 | 4 | 0,55 | 4 | 0,65 | 45 | 10,6 | 8,88 | 4,29 | 4,55 | 4,81 | 5,05 | 5,5 | 4 | 1 |
| 8557527 | 0,7 | 0,02 | 6 | 0,55 | 4 | 0,65 | 45 | 12,6 | 7,48 | 6,41 | 6,77 | 7,09 | 7,38 | 7,98 | 4 | 1 |
| 8557528 | 0,7 | 0,05 | 2 | 0,55 | 4 | 0,65 | 45 | 8,6 | 10,94 | 2,15 | 2,3 | 2,46 | 2,62 | 2,93 | 4 | 1 |
| 8557529 | 0,7 | 0,05 | 4 | 0,55 | 4 | 0,65 | 45 | 10,6 | 8,9 | 4,28 | 4,55 | 4,8 | 5,04 | 5,49 | 4 | 1 |
| 8557530 | 0,7 | 0,05 | 6 | 0,55 | 4 | 0,65 | 45 | 12,6 | 7,5 | 6,41 | 6,76 | 7,08 | 7,38 | 7,98 | 4 | 1 |
| 8557531 | 0,7 | 0,1 | 2 | 0,55 | 4 | 0,65 | 45 | 8,6 | 10,99 | 2,14 | 2,29 | 2,45 | 2,6 | 2,92 | 4 | 1 |
| 8557532 | 0,7 | 0,1 | 4 | 0,55 | 4 | 0,65 | 45 | 10,6 | 8,94 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 4 | 1 |
| 8557533 | 0,7 | 0,1 | 6 | 0,55 | 4 | 0,65 | 45 | 12,6 | 7,53 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 4 | 1 |
| 8544822 | 0,8 | 0,1 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 10,9 | 2,14 | 2,29 | 2,45 | 2,6 | 2,92 | 4 | 1 |
| 8544823 | 0,8 | 0,2 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 11,02 | 2,14 | 2,28 | 2,43 | 2,58 | 2,88 | 4 | 1 |
| 8544830 | 0,8 | 0,05 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 10,84 | 2,15 | 2,3 | 2,46 | 2,62 | 2,93 | 4 | 1 |
| 8544832 | 0,8 | 0,05 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,79 | 4,28 | 4,55 | 4,8 | 5,04 | 5,49 | 4 | 1 |
| 8544833 | 0,8 | 0,05 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,38 | 6,41 | 6,76 | 7,08 | 7,38 | 7,98 | 4 | 1 |
| 8557534 | 0,8 | 0,1 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,83 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 4 | 1 |
| 8557535 | 0,8 | 0,1 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,41 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 4 | 1 |
| 8557536 | 0,8 | 0,2 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,9 | 4,28 | 4,53 | 4,78 | 5,01 | 5,46 | 4 | 1 |
| 8557537 | 0,8 | 0,2 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,47 | 6,4 | 6,75 | 7,06 | 7,36 | 7,94 | 4 | 1 |
| 8557538 | 0,8 | 0,2 | 8 | 0,65 | 4 | 0,75 | 45 | 14,4 | 6,43 | 8,52 | 8,94 | 9,31 | 9,66 | 10,43 | 4 | 1 |
| 8557539 | 0,9 | 0,1 | 4 | 0,7 | 4 | 0,85 | 45 | 10,2 | 8,71 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 4 | 1 |
| 8557540 | 0,9 | 0,1 | 8 | 0,7 | 4 | 0,85 | 45 | 14,2 | 6,27 | 8,52 | 8,95 | 9,32 | 9,67 | 10,45 | 4 | 1 |
| 8544831 | 1 | 0,05 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,68 | 2,14 | 2,29 | 2,44 | 2,6 | 2,91 | 4 | 1 |
| 8544834 | 1 | 0,1 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,74 | 2,14 | 2,28 | 2,43 | 2,58 | 2,89 | 4 | 1 |
| 8544835 | 1 | 0,02 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,64 | 2,14 | 2,3 | 2,45 | 2,6 | 2,92 | 4 | 1 |
| 8544836 | 1 | 0,02 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,48 | 3,21 | 3,42 | 3,63 | 3,83 | 4,21 | 4 | 1 |
| 8544837 | 1 | 0,2 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,86 | 2,13 | 2,27 | 2,41 | 2,56 | 2,86 | 4 | 1 |
| 8544838 | 1 | 0,02 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,55 | 4,28 | 4,54 | 4,79 | 5,02 | 5,47 | 4 | 1 |
| 8544839 | 1 | 0,02 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,14 | 6,4 | 6,75 | 7,06 | 7,36 | 7,95 | 4 | 1 |
| 8544840 | 1 | 0,3 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,98 | 2,12 | 2,26 | 2,39 | 2,54 | 2,83 | 4 | 1 |
| 8544841 | 1 | 0,02 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,13 | 8,51 | 8,93 | 9,31 | 9,66 | 10,44 | 4 | 1 |

* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

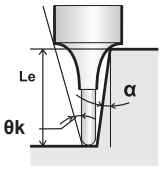
# AE-CPR4-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DURAREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DURAREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

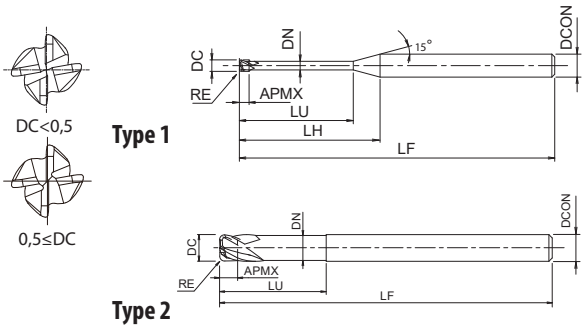
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8544842 | 1 | 0,02 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,37 | 10,62 | 11,1 | 11,53 | 11,96 | 12,93 | 4 | 1 |
| 8544843 | 1 | 0,05 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,51 | 3,21 | 3,42 | 3,62 | 3,82 | 4,21 | 4 | 1 |
| 8544844 | 1 | 0,1 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,56 | 3,21 | 3,41 | 3,61 | 3,81 | 4,19 | 4 | 1 |
| 8544845 | 1 | 0,1 | 16 | 0,8 | 4 | 0,94 | 55 | 22 | 3,92 | 16,89 | 17,54 | 18,17 | 18,84 | 20,37 | 4 | 1 |
| 8544846 | 1 | 0,1 | 20 | 0,8 | 4 | 0,94 | 55 | 26 | 3,32 | 21,06 | 21,82 | 22,6 | 23,44 | 25,34 | 4 | 1 |
| 8544847 | 1 | 0,2 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,66 | 3,2 | 3,4 | 3,6 | 3,79 | 4,17 | 4 | 1 |
| 8544848 | 1 | 0,3 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,75 | 3,19 | 3,39 | 3,58 | 3,77 | 4,14 | 4 | 1 |
| 8544849 | 1 | 0,3 | 16 | 0,8 | 4 | 0,94 | 55 | 22 | 3,96 | 16,88 | 17,52 | 18,15 | 18,82 | 20,32 | 4 | 1 |
| 8544850 | 1 | 0,3 | 20 | 0,8 | 4 | 0,94 | 55 | 26 | 3,34 | 21,05 | 21,8 | 22,58 | 23,41 | 25,29 | 4 | 1 |
| 8557541 | 1 | 0,05 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,57 | 4,28 | 4,54 | 4,78 | 5,02 | 5,46 | 4 | 1 |
| 8557542 | 1 | 0,05 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,16 | 6,4 | 6,75 | 7,06 | 7,35 | 7,95 | 4 | 1 |
| 8557543 | 1 | 0,05 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,14 | 8,51 | 8,93 | 9,3 | 9,65 | 10,43 | 4 | 1 |
| 8557544 | 1 | 0,05 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,38 | 10,61 | 11,1 | 11,52 | 11,95 | 12,92 | 4 | 1 |
| 8557545 | 1 | 0,05 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,78 | 12,71 | 13,26 | 13,74 | 14,25 | 15,41 | 4 | 1 |
| 8557546 | 1 | 0,1 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,61 | 4,27 | 4,53 | 4,77 | 5,01 | 5,45 | 4 | 1 |
| 8557547 | 1 | 0,1 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,18 | 6,39 | 6,74 | 7,05 | 7,34 | 7,93 | 4 | 1 |
| 8557548 | 1 | 0,1 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,16 | 8,51 | 8,93 | 9,3 | 9,65 | 10,42 | 4 | 1 |
| 8557549 | 1 | 0,1 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,39 | 10,61 | 11,1 | 11,52 | 11,95 | 12,91 | 4 | 1 |
| 8557550 | 1 | 0,1 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,79 | 12,71 | 13,25 | 13,73 | 14,25 | 15,39 | 4 | 1 |
| 8557551 | 1 | 0,2 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,69 | 4,27 | 4,52 | 4,76 | 4,99 | 5,42 | 4 | 1 |
| 8557552 | 1 | 0,2 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,24 | 6,39 | 6,73 | 7,04 | 7,33 | 7,91 | 4 | 1 |
| 8557553 | 1 | 0,2 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,2 | 8,5 | 8,92 | 9,29 | 9,63 | 10,4 | 4 | 1 |
| 8557554 | 1 | 0,2 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,42 | 10,61 | 11,09 | 11,51 | 11,93 | 12,88 | 4 | 1 |
| 8557555 | 1 | 0,2 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,82 | 12,7 | 13,24 | 13,72 | 14,23 | 15,37 | 4 | 1 |
| 8557556 | 1 | 0,2 | 16 | 0,8 | 4 | 0,94 | 55 | 22 | 3,94 | 16,89 | 17,53 | 18,16 | 18,83 | 20,34 | 4 | 1 |
| 8557557 | 1 | 0,2 | 20 | 0,8 | 4 | 0,94 | 55 | 26 | 3,33 | 21,05 | 21,81 | 22,59 | 23,43 | 25,32 | 4 | 1 |
| 8557558 | 1 | 0,3 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,77 | 4,26 | 4,51 | 4,74 | 4,97 | 5,4 | 4 | 1 |
| 8557559 | 1 | 0,3 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,3 | 6,38 | 6,72 | 7,03 | 7,31 | 7,89 | 4 | 1 |
| 8557560 | 1 | 0,3 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,24 | 8,5 | 8,91 | 9,27 | 9,62 | 10,37 | 4 | 1 |
| 8557561 | 1 | 0,3 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,46 | 10,6 | 11,08 | 11,5 | 11,92 | 12,86 | 4 | 1 |
| 8557562 | 1 | 0,3 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,84 | 12,7 | 13,24 | 13,71 | 14,22 | 15,35 | 4 | 1 |
| 8557563 | 1,2 | 0,2 | 6 | 1 | 4 | 1,14 | 45 | 11,6 | 6,98 | 6,39 | 6,73 | 7,04 | 7,33 | 7,91 | 4 | 1 |
| 8557564 | 1,2 | 0,2 | 8 | 1 | 4 | 1,14 | 45 | 13,6 | 5,95 | 8,5 | 8,92 | 9,29 | 9,63 | 10,4 | 4 | 1 |
| 8557565 | 1,2 | 0,2 | 10 | 1 | 4 | 1,14 | 45 | 15,6 | 5,19 | 10,61 | 11,09 | 11,51 | 11,93 | 12,88 | 4 | 1 |
| 8557566 | 1,2 | 0,3 | 6 | 1 | 4 | 1,14 | 45 | 11,6 | 7,04 | 6,38 | 6,72 | 7,03 | 7,31 | 7,89 | 4 | 1 |
| 8557567 | 1,2 | 0,3 | 8 | 1 | 4 | 1,14 | 45 | 13,6 | 5,99 | 8,5 | 8,91 | 9,27 | 9,62 | 10,37 | 4 | 1 |
| 8557568 | 1,2 | 0,3 | 10 | 1 | 4 | 1,14 | 45 | 15,6 | 5,22 | 10,6 | 11,08 | 11,5 | 11,92 | 12,86 | 4 | 1 |
| 8544851 | 1,5 | 0,05 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 8,88 | 3,2 | 3,41 | 3,6 | 3,8 | 4,18 | 4 | 1 |
| 8544852 | 1,5 | 0,05 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 7,91 | 4,27 | 4,52 | 4,76 | 4,99 | 5,43 | 4 | 1 |
| 8544853 | 1,5 | 0,05 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,49 | 6,39 | 6,73 | 7,04 | 7,33 | 7,92 | 4 | 1 |
| 8544854 | 1,5 | 0,05 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,5 | 8,5 | 8,91 | 9,28 | 9,63 | 10,4 | 4 | 1 |
| 8544855 | 1,5 | 0,05 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,77 | 10,6 | 11,08 | 11,5 | 11,93 | 12,89 | 4 | 1 |
| 8544856 | 1,5 | 0,05 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,21 | 12,7 | 13,23 | 13,71 | 14,23 | 15,38 | 4 | 1 |
| 8544857 | 1,5 | 0,05 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,41 | 16,87 | 17,52 | 18,15 | 18,83 | 20,35 | 4 | 1 |
| 8544858 | 1,5 | 0,1 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 7,95 | 4,26 | 4,52 | 4,75 | 4,98 | 5,42 | 4 | 1 |
| 8544859 | 1,5 | 0,1 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,52 | 6,38 | 6,72 | 7,03 | 7,32 | 7,91 | 4 | 1 |

* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

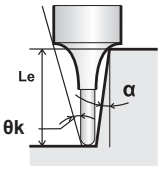
# AE-CPR4-H

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8544860 | 1,5 | 0,1 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,52 | 8,49 | 8,91 | 9,27 | 9,62 | 10,39 | 4 | 1 |
| 8544861 | 1,5 | 0,1 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,78 | 10,6 | 11,07 | 11,49 | 11,92 | 12,88 | 4 | 1 |
| 8544862 | 1,5 | 0,1 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,22 | 12,69 | 13,23 | 13,71 | 14,22 | 15,36 | 4 | 1 |
| 8544863 | 1,5 | 0,1 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,42 | 16,87 | 17,51 | 18,14 | 18,82 | 20,34 | 4 | 1 |
| 8544864 | 1,5 | 0,1 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 8,93 | 3,2 | 3,4 | 3,6 | 3,79 | 4,16 | 4 | 1 |
| 8544865 | 1,5 | 0,2 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,03 | 4,26 | 4,5 | 4,74 | 4,97 | 5,4 | 4 | 1 |
| 8544866 | 1,5 | 0,2 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,04 | 3,19 | 3,39 | 3,58 | 3,77 | 4,14 | 4 | 1 |
| 8544867 | 1,5 | 0,3 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,12 | 4,25 | 4,49 | 4,72 | 4,95 | 5,37 | 4 | 1 |
| 8544868 | 1,5 | 0,3 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,14 | 3,19 | 3,38 | 3,56 | 3,75 | 4,11 | 4 | 1 |
| 8544869 | 1,5 | 0,5 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,36 | 3,17 | 3,35 | 3,53 | 3,71 | 4,06 | 4 | 1 |
| 8544870 | 1,5 | 0,5 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,29 | 4,24 | 4,47 | 4,69 | 4,91 | 5,32 | 4 | 1 |
| 8544871 | 1,5 | 0,5 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,74 | 6,36 | 6,68 | 6,98 | 7,26 | 7,81 | 4 | 1 |
| 8544872 | 1,5 | 0,5 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,68 | 8,47 | 8,87 | 9,23 | 9,56 | 10,3 | 4 | 1 |
| 8544873 | 1,5 | 0,5 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,91 | 10,58 | 11,04 | 11,45 | 11,86 | 12,78 | 4 | 1 |
| 8544874 | 1,5 | 0,5 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,32 | 12,67 | 13,2 | 13,67 | 14,16 | 15,27 | 4 | 1 |
| 8544875 | 1,5 | 0,5 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,48 | 16,85 | 17,48 | 18,1 | 18,76 | 20,24 | 4 | 1 |
| 8557569 | 1,5 | 0,2 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,57 | 6,38 | 6,71 | 7,02 | 7,3 | 7,88 | 4 | 1 |
| 8557570 | 1,5 | 0,2 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,56 | 8,49 | 8,9 | 9,26 | 9,6 | 10,37 | 4 | 1 |
| 8557571 | 1,5 | 0,2 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,81 | 10,59 | 11,07 | 11,48 | 11,9 | 12,85 | 4 | 1 |
| 8557572 | 1,5 | 0,2 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,25 | 12,69 | 13,22 | 13,7 | 14,2 | 15,34 | 4 | 1 |
| 8557573 | 1,5 | 0,2 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,44 | 16,87 | 17,51 | 18,13 | 18,8 | 20,31 | 4 | 1 |
| 8557574 | 1,5 | 0,3 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,63 | 6,37 | 6,7 | 7,01 | 7,29 | 7,86 | 4 | 1 |
| 8557575 | 1,5 | 0,3 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,6 | 8,48 | 8,89 | 9,25 | 9,59 | 10,34 | 4 | 1 |
| 8557576 | 1,5 | 0,3 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,85 | 10,59 | 11,06 | 11,47 | 11,89 | 12,83 | 4 | 1 |
| 8557577 | 1,5 | 0,3 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,27 | 12,68 | 13,21 | 13,69 | 14,19 | 15,32 | 4 | 1 |
| 8557578 | 1,5 | 0,3 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,45 | 16,86 | 17,5 | 18,12 | 18,79 | 20,29 | 4 | 1 |
| 8544876 | 2 | 0,05 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,09 | 4,26 | 4,51 | 4,74 | 4,97 | 5,4 | 4 | 1 |
| 8544877 | 2 | 0,05 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,69 | 6,38 | 6,71 | 7,02 | 7,3 | 7,89 | 4 | 1 |
| 8544878 | 2 | 0,05 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,75 | 8,48 | 8,89 | 9,25 | 9,6 | 10,38 | 4 | 1 |
| 8544879 | 2 | 0,05 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,08 | 10,58 | 11,06 | 11,47 | 11,9 | 12,86 | 4 | 1 |
| 8544880 | 2 | 0,05 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,57 | 12,68 | 13,21 | 13,69 | 14,2 | 15,35 | 4 | 1 |
| 8544881 | 2 | 0,05 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,86 | 16,86 | 17,49 | 18,12 | 18,8 | - | 4 | 1 |
| 8544882 | 2 | 0,05 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,39 | 21,02 | 21,77 | 22,56 | 23,4 | - | 4 | 1 |
| 8544883 | 2 | 0,1 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,72 | 6,37 | 6,71 | 7,01 | 7,29 | 7,88 | 4 | 1 |
| 8544884 | 2 | 0,2 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,77 | 6,37 | 6,7 | 7 | 7,28 | 7,86 | 4 | 1 |
| 8544885 | 2 | 0,3 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,83 | 6,36 | 6,69 | 6,98 | 7,26 | 7,83 | 4 | 1 |
| 8544886 | 2 | 0,5 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,94 | 6,35 | 6,67 | 6,96 | 7,23 | 7,78 | 4 | 1 |
| 8544889 | 2 | 0,1 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,13 | 4,26 | 4,5 | 4,74 | 4,96 | 5,39 | 4 | 1 |
| 8544891 | 2 | 0,2 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,21 | 4,25 | 4,49 | 4,72 | 4,94 | 5,37 | 4 | 1 |
| 8544893 | 2 | 0,3 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,3 | 4,24 | 4,48 | 4,71 | 4,93 | 5,35 | 4 | 1 |
| 8544895 | 2 | 0,5 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,48 | 4,23 | 4,46 | 4,68 | 4,89 | 5,3 | 4 | 1 |
| 8557579 | 2 | 0,1 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,77 | 8,48 | 8,89 | 9,25 | 9,59 | 10,37 | 4 | 1 |
| 8557580 | 2 | 0,1 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,09 | 10,58 | 11,05 | 11,47 | 11,89 | 12,85 | 4 | 1 |
| 8557581 | 2 | 0,1 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,58 | 12,68 | 13,21 | 13,68 | 14,19 | 15,34 | 4 | 1 |
| 8557582 | 2 | 0,1 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,87 | 16,85 | 17,49 | 18,12 | 18,79 | - | 4 | 1 |
| 8557583 | 2 | 0,1 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,39 | 21,02 | 21,77 | 22,55 | 23,39 | - | 4 | 1 |

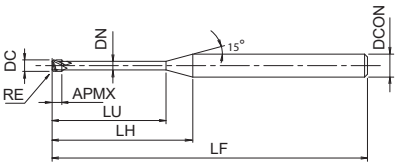
* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

# AE-CPR4-H

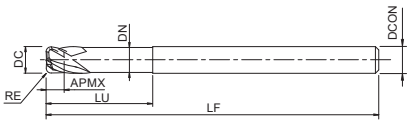
**Milling | Solid carbide**

INDEX

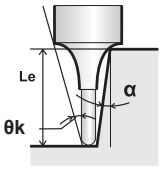
**Type 1**




**Type 2**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

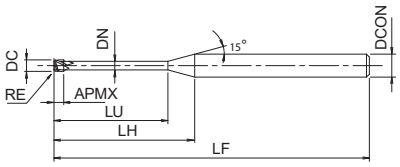
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557584 | 2 | 0,1 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 1,98 | 26,2 | 27,12 | 28,09 | - | - | 4 | 1 |
| 8557585 | 2 | 0,2 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,81 | 8,48 | 8,88 | 9,24 | 9,58 | 10,34 | 4 | 1 |
| 8557586 | 2 | 0,2 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,12 | 10,58 | 11,05 | 11,46 | 11,88 | 12,83 | 4 | 1 |
| 8557587 | 2 | 0,2 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,6 | 12,67 | 13,2 | 13,67 | 14,18 | 15,31 | 4 | 1 |
| 8557588 | 2 | 0,2 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,88 | 16,85 | 17,48 | 18,11 | 18,78 | - | 4 | 1 |
| 8557589 | 2 | 0,2 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,4 | 21,01 | 21,76 | 22,54 | 23,38 | - | 4 | 1 |
| 8557590 | 2 | 0,2 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 1,99 | 26,2 | 27,11 | 28,08 | - | - | 4 | 1 |
| 8557591 | 2 | 0,3 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,85 | 8,47 | 8,87 | 9,23 | 9,56 | 10,32 | 4 | 1 |
| 8557592 | 2 | 0,3 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,15 | 10,57 | 11,04 | 11,45 | 11,86 | 12,8 | 4 | 1 |
| 8557593 | 2 | 0,3 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,63 | 12,67 | 13,19 | 13,66 | 14,16 | 15,29 | 4 | 1 |
| 8557594 | 2 | 0,3 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,9 | 16,85 | 17,48 | 18,1 | 18,76 | - | 4 | 1 |
| 8557595 | 2 | 0,3 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,41 | 21,01 | 21,75 | 22,53 | 23,36 | - | 4 | 1 |
| 8557596 | 2 | 0,5 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,93 | 8,46 | 8,85 | 9,2 | 9,54 | 10,27 | 4 | 1 |
| 8557597 | 2 | 0,5 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,21 | 10,56 | 11,02 | 11,42 | 11,83 | 12,76 | 4 | 1 |
| 8557598 | 2 | 0,5 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,67 | 12,66 | 13,18 | 13,64 | 14,13 | 15,24 | 4 | 1 |
| 8557599 | 2 | 0,5 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,92 | 16,84 | 17,46 | 18,07 | 18,73 | - | 4 | 1 |
| 8557600 | 2 | 0,5 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,43 | 21 | 21,74 | 22,51 | 23,33 | - | 4 | 1 |
| 8557601 | 2 | 0,5 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 2,01 | 26,19 | 27,09 | 28,05 | 29,08 | - | 4 | 1 |
| 8544887 | 2,5 | 0,1 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,3 | 10,56 | 11,02 | 11,42 | 11,85 | 12,8 | 4 | 1 |
| 8544888 | 2,5 | 0,1 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,87 | 20,98 | 21,73 | 22,51 | - | - | 4 | 1 |
| 8544890 | 2,5 | 0,1 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,31 | 31,33 | 32,42 | - | - | - | 4 | 1 |
| 8544892 | 2,5 | 0,2 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,31 | 31,33 | 32,42 | - | - | - | 4 | 1 |
| 8544894 | 2,5 | 0,3 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,35 | 10,55 | 11 | 11,4 | 11,82 | 12,75 | 4 | 1 |
| 8544896 | 2,5 | 0,3 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,89 | 20,97 | 21,71 | 22,48 | - | - | 4 | 1 |
| 8544897 | 2,5 | 0,3 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,31 | 31,33 | 32,41 | - | - | - | 4 | 1 |
| 8544898 | 2,5 | 0,5 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,32 | 31,32 | 32,39 | - | - | - | 4 | 1 |
| 8557602 | 2,5 | 0,2 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,33 | 10,55 | 11,01 | 11,41 | 11,83 | 12,78 | 4 | 1 |
| 8557603 | 2,5 | 0,2 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,88 | 20,98 | 21,72 | 22,5 | - | - | 4 | 1 |
| 8557604 | 2,5 | 0,5 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,4 | 10,54 | 10,98 | 11,38 | 11,79 | 12,71 | 4 | 1 |
| 8557605 | 2,5 | 0,5 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,9 | 20,97 | 21,7 | 22,46 | - | - | 4 | 1 |
| 8544899 | 3 | 0,1 | 4 | 2,5 | 6 | 2,85 | 55 | 9,8 | 8,76 | 4,22 | 4,43 | 4,64 | 4,84 | 5,24 | 4 | 1 |
| 8544900 | 3 | 0,1 | 6 | 2,5 | 6 | 2,85 | 55 | 11,8 | 7,28 | 6,32 | 6,61 | 6,89 | 7,15 | 7,73 | 4 | 1 |
| 8544901 | 3 | 0,1 | 8 | 2,5 | 6 | 2,85 | 55 | 13,8 | 6,23 | 8,41 | 8,78 | 9,12 | 9,45 | 10,21 | 4 | 1 |
| 8544902 | 3 | 0,1 | 10 | 2,5 | 6 | 2,85 | 55 | 15,8 | 5,45 | 10,5 | 10,94 | 11,33 | 11,75 | 12,7 | 4 | 1 |
| 8544903 | 3 | 0,1 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,84 | 12,59 | 13,08 | 13,55 | 14,05 | 15,19 | 4 | 1 |
| 8544904 | 3 | 0,1 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 3,95 | 16,75 | 17,36 | 17,98 | 18,65 | 20,16 | 4 | 1 |
| 8544905 | 3 | 0,1 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,34 | 20,91 | 21,64 | 22,42 | 23,25 | 25,13 | 4 | 1 |
| 8544906 | 3 | 0,1 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,8 | 26,08 | 26,99 | 27,96 | 29 | - | 4 | 1 |
| 8544907 | 3 | 0,2 | 4 | 2,5 | 6 | 2,85 | 55 | 9,8 | 8,84 | 4,21 | 4,42 | 4,62 | 4,82 | 5,22 | 4 | 1 |
| 8544908 | 3 | 0,2 | 10 | 2,5 | 6 | 2,85 | 55 | 15,8 | 5,48 | 10,5 | 10,93 | 11,32 | 11,74 | 12,68 | 4 | 1 |
| 8544909 | 3 | 0,3 | 4 | 2,5 | 6 | 2,85 | 55 | 9,8 | 8,92 | 4,2 | 4,41 | 4,61 | 4,81 | 5,19 | 4 | 1 |
| 8544910 | 3 | 0,3 | 8 | 2,5 | 6 | 2,85 | 55 | 13,8 | 6,32 | 8,4 | 8,77 | 9,09 | 9,42 | 10,17 | 4 | 1 |
| 8544911 | 3 | 0,3 | 10 | 2,5 | 6 | 2,85 | 55 | 15,8 | 5,51 | 10,5 | 10,92 | 11,31 | 11,72 | 12,65 | 4 | 1 |
| 8544912 | 3 | 0,5 | 4 | 2,5 | 6 | 2,85 | 55 | 9,8 | 9,09 | 4,19 | 4,39 | 4,58 | 4,77 | 5,15 | 4 | 1 |
| 8544913 | 3 | 0,5 | 8 | 2,5 | 6 | 2,85 | 55 | 13,8 | 6,41 | 8,39 | 8,75 | 9,07 | 9,4 | 10,12 | 4 | 1 |
| 8544914 | 3 | 0,5 | 10 | 2,5 | 6 | 2,85 | 55 | 15,8 | 5,58 | 10,49 | 10,91 | 11,29 | 11,69 | 12,61 | 4 | 1 |

* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

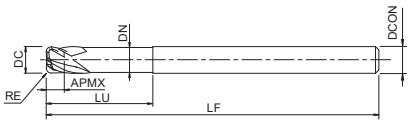
# AE-CPR4-H

**Milling | Solid carbide**

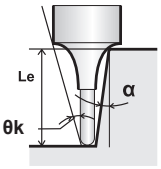
**Type 1**




**Type 2**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5≤DC

C.924

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8544921 | 3 | 0,2 | 6 | 2,5 | 6 | 2,85 | 55 | 11,8 | 7,34 | 6,31 | 6,6 | 6,88 | 7,14 | 7,7 | 4 | 1 |
| 8544924 | 3 | 0,3 | 6 | 2,5 | 6 | 2,85 | 55 | 11,8 | 6 | 6,31 | 6,6 | 6,87 | 7,12 | 7,68 | 4 | 1 |
| 8544928 | 3 | 0,5 | 6 | 2,5 | 6 | 2,85 | 55 | 11,8 | 6 | 6,3 | 6,58 | 6,84 | 7,1 | 7,63 | 4 | 1 |
| 8557606 | 3 | 0,2 | 8 | 2,5 | 6 | 2,85 | 55 | 13,8 | 6,28 | 8,41 | 8,77 | 9,11 | 9,44 | 10,19 | 4 | 1 |
| 8557607 | 3 | 0,2 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,86 | 12,59 | 13,07 | 13,54 | 14,04 | 15,16 | 4 | 1 |
| 8557608 | 3 | 0,2 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 3,97 | 16,75 | 17,35 | 17,97 | 18,64 | 20,14 | 4 | 1 |
| 8557609 | 3 | 0,2 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,35 | 20,9 | 21,63 | 22,4 | 23,24 | 25,11 | 4 | 1 |
| 8557610 | 3 | 0,2 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,81 | 26,08 | 26,98 | 27,95 | 28,99 | - | 4 | 1 |
| 8557611 | 3 | 0,2 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,41 | 31,25 | 32,33 | 33,49 | 34,74 | - | 4 | 1 |
| 8557612 | 3 | 0,2 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,12 | 36,41 | 37,68 | 39,03 | 40,49 | - | 4 | 1 |
| 8557613 | 3 | 0,3 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,89 | 12,58 | 13,07 | 13,53 | 14,02 | 15,14 | 4 | 1 |
| 8557614 | 3 | 0,3 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 3,99 | 16,75 | 17,34 | 17,96 | 18,62 | 20,11 | 4 | 1 |
| 8557615 | 3 | 0,3 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,37 | 20,9 | 21,62 | 22,39 | 23,22 | 25,08 | 4 | 1 |
| 8557616 | 3 | 0,3 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,82 | 26,07 | 26,97 | 27,94 | 28,97 | - | 4 | 1 |
| 8557617 | 3 | 0,3 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,42 | 31,24 | 32,32 | 33,48 | 34,72 | - | 4 | 1 |
| 8557618 | 3 | 0,3 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,12 | 36,41 | 37,67 | 39,02 | 40,47 | - | 4 | 1 |
| 8557619 | 3 | 0,5 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,94 | 12,57 | 13,05 | 13,51 | 13,99 | 15,09 | 4 | 1 |
| 8557620 | 3 | 0,5 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 4,02 | 16,74 | 17,33 | 17,94 | 18,59 | 20,06 | 4 | 1 |
| 8557621 | 3 | 0,5 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,39 | 20,89 | 21,61 | 22,37 | 23,19 | 25,04 | 4 | 1 |
| 8557622 | 3 | 0,5 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,83 | 26,07 | 26,96 | 27,91 | 28,94 | - | 4 | 1 |
| 8557623 | 3 | 0,5 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,43 | 31,24 | 32,31 | 33,46 | 34,69 | - | 4 | 1 |
| 8557624 | 3 | 0,5 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,13 | 36,4 | 37,66 | 39 | 40,44 | - | 4 | 1 |
| 8544915 | 4 | 0,1 | 8 | 3,2 | 6 | 3,84 | 60 | 12 | 4,82 | 8,41 | 8,77 | 9,1 | 9,44 | 10,2 | 4 | 1 |
| 8544916 | 4 | 0,1 | 12 | 3,2 | 6 | 3,84 | 60 | 16 | 3,61 | 12,58 | 13,07 | 13,53 | 14,04 | 15,17 | 4 | 1 |
| 8544917 | 4 | 0,1 | 16 | 3,2 | 6 | 3,84 | 60 | 20 | 2,89 | 16,74 | 17,34 | 17,97 | 18,64 | - | 4 | 1 |
| 8544918 | 4 | 0,1 | 20 | 3,2 | 6 | 3,84 | 60 | 24 | 2,41 | 20,89 | 21,62 | 22,4 | 23,24 | - | 4 | 1 |
| 8544919 | 4 | 0,1 | 25 | 3,2 | 6 | 3,84 | 60 | 29 | 1,99 | 26,07 | 26,97 | 27,94 | - | - | 4 | 1 |
| 8544920 | 4 | 0,1 | 30 | 3,2 | 6 | 3,84 | 75 | 34 | 1,7 | 31,23 | 32,32 | 33,48 | - | - | 4 | 1 |
| 8544943 | 4 | 0,2 | 8 | 3,2 | 6 | 3,84 | 60 | 12 | 8 | 8,4 | 8,76 | 9,09 | 9,42 | 10,17 | 4 | 1 |
| 8544944 | 4 | 0,2 | 12 | 3,2 | 6 | 3,84 | 60 | 16 | 12 | 12,58 | 13,06 | 13,52 | 14,02 | 15,15 | 4 | 1 |
| 8544945 | 4 | 0,3 | 8 | 3,2 | 6 | 3,84 | 60 | 12 | 8 | 8,4 | 8,75 | 9,08 | 9,41 | 10,15 | 4 | 1 |
| 8544946 | 4 | 0,3 | 12 | 3,2 | 6 | 3,84 | 60 | 16 | 12 | 12,57 | 13,05 | 13,51 | 14,01 | 15,12 | 4 | 1 |
| 8544947 | 4 | 0,5 | 8 | 3,2 | 6 | 3,84 | 60 | 12 | 8 | 8,39 | 8,74 | 9,06 | 9,38 | 10,1 | 4 | 1 |
| 8544948 | 4 | 0,5 | 12 | 3,2 | 6 | 3,84 | 60 | 16 | 12 | 12,56 | 13,04 | 13,49 | 13,98 | 15,07 | 4 | 1 |
| 8544949 | 4 | 1 | 8 | 3,2 | 6 | 3,84 | 60 | 12 | 8 | 8,36 | 8,7 | 9 | 9,31 | 9,98 | 4 | 1 |
| 8544950 | 4 | 1 | 12 | 3,2 | 6 | 3,84 | 60 | 16 | 12 | 12,54 | 13 | 13,44 | 13,9 | 14,96 | 4 | 1 |
| 8557625 | 4 | 0,2 | 16 | 3,2 | 6 | 3,84 | 60 | 20 | 2,9 | 16,74 | 17,34 | 17,96 | 18,62 | - | 4 | 1 |
| 8557626 | 4 | 0,2 | 20 | 3,2 | 6 | 3,84 | 60 | 24 | 2,41 | 20,89 | 21,62 | 22,39 | 23,22 | - | 4 | 1 |
| 8557627 | 4 | 0,2 | 25 | 3,2 | 6 | 3,84 | 60 | 29 | 2 | 26,06 | 26,96 | 27,93 | - | - | 4 | 1 |
| 8557628 | 4 | 0,2 | 30 | 3,2 | 6 | 3,84 | 75 | 34 | 1,7 | 31,23 | 32,31 | 33,47 | - | - | 4 | 1 |
| 8557629 | 4 | 0,2 | 40 | 3,2 | 6 | 3,84 | 75 | 44 | 1,31 | 41,57 | 43,01 | | - | - | 4 | 1 |
| 8557630 | 4 | 0,3 | 16 | 3,2 | 6 | 3,84 | 60 | 20 | 2,92 | 16,74 | 17,33 | 17,95 | 18,61 | - | 4 | 1 |
| 8557631 | 4 | 0,3 | 20 | 3,2 | 6 | 3,84 | 60 | 24 | 2,42 | 20,89 | 21,61 | 22,38 | 23,21 | - | 4 | 1 |
| 8557632 | 4 | 0,3 | 25 | 3,2 | 6 | 3,84 | 60 | 29 | 2 | 26,06 | 26,96 | 27,92 | - | - | 4 | 1 |
| 8557633 | 4 | 0,3 | 30 | 3,2 | 6 | 3,84 | 75 | 34 | 1,71 | 31,23 | 32,31 | 33,46 | - | - | 4 | 1 |
| 8557634 | 4 | 0,3 | 40 | 3,2 | 6 | 3,84 | 75 | 44 | 1,32 | 41,56 | 43 | - | - | - | 4 | 1 |

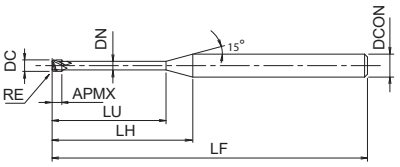
* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

# AE-CPR4-H

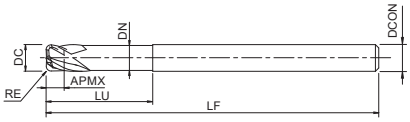
**Milling | Solid carbide**

INDEX

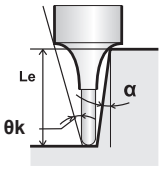
**Type 1**




**Type 2**




- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 4 flutes, unequal spacing. New spiral-shaped gash specification
- 312 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30° | 0,5 ≤ DC

C.924

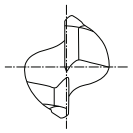
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557635 | 4 | 0,5 | 16 | 3,2 | 6 | 3,84 | 60 | 20 | 2,95 | 16,73 | 17,32 | 17,92 | 18,58 | - | 4 | 1 |
| 8557636 | 4 | 0,5 | 20 | 3,2 | 6 | 3,84 | 60 | 24 | 2,44 | 20,88 | 21,59 | 22,36 | 23,18 | - | 4 | 1 |
| 8557637 | 4 | 0,5 | 25 | 3,2 | 6 | 3,84 | 60 | 29 | 2,02 | 26,05 | 26,94 | 27,9 | 28,93 | | 4 | 1 |
| 8557638 | 4 | 0,5 | 30 | 3,2 | 6 | 3,84 | 75 | 34 | 1,72 | 31,22 | 32,29 | 33,44 | - | - | 4 | 1 |
| 8557639 | 4 | 0,5 | 40 | 3,2 | 6 | 3,84 | 75 | 44 | 1,32 | 41,56 | 42,99 | - | - | - | 4 | 1 |
| 8557640 | 4 | 0,5 | 50 | 3,2 | 6 | 3,84 | 90 | 54 | 1,08 | 51,89 | 53,69 | - | - | - | 4 | 1 |
| 8557641 | 4 | 1 | 16 | 3,2 | 6 | 3,84 | 60 | 20 | 3,02 | 16,71 | 17,28 | 17,87 | 18,5 | 19,93 | 4 | 1 |
| 8557642 | 4 | 1 | 20 | 3,2 | 6 | 3,84 | 60 | 24 | 2,5 | 20,86 | 21,56 | 22,3 | 23,1 | - | 4 | 1 |
| 8557643 | 4 | 1 | 25 | 3,2 | 6 | 3,84 | 60 | 29 | 2,05 | 26,04 | 26,91 | 27,85 | 28,85 | - | 4 | 1 |
| 8557644 | 4 | 1 | 30 | 3,2 | 6 | 3,84 | 75 | 34 | 1,74 | 31,2 | 32,26 | 33,39 | - | - | 4 | 1 |
| 8557645 | 4 | 1 | 40 | 3,2 | 6 | 3,84 | 75 | 44 | 1,34 | 41,54 | 42,95 | - | - | - | 4 | 1 |
| 8544922 | 6 | 0,1 | 12 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8544923 | 6 | 0,1 | 18 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544925 | 6 | 0,1 | 24 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544926 | 6 | 0,1 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544927 | 6 | 0,1 | 48 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 4 | 2 |
| 8544929 | 6 | 0,2 | 12 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8544930 | 6 | 0,2 | 18 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544931 | 6 | 0,2 | 24 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544932 | 6 | 0,2 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544933 | 6 | 0,2 | 48 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 4 | 2 |
| 8544934 | 6 | 0,3 | 12 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8544935 | 6 | 0,3 | 18 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544936 | 6 | 0,3 | 24 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544937 | 6 | 0,3 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544938 | 6 | 0,3 | 48 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 4 | 2 |
| 8544939 | 6 | 0,5 | 12 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8544940 | 6 | 0,5 | 18 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544941 | 6 | 0,5 | 24 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544942 | 6 | 0,5 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544951 | 6 | 0,5 | 48 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 4 | 2 |
| 8544952 | 6 | 1 | 12 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 4 | 2 |
| 8544953 | 6 | 1 | 18 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544954 | 6 | 1 | 24 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544955 | 6 | 1 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 4 | 2 |
| 8544956 | 6 | 1 | 48 | 4,8 | 6 | 5,85 | 120 | - | - | - | - | - | - | - | 4 | 2 |

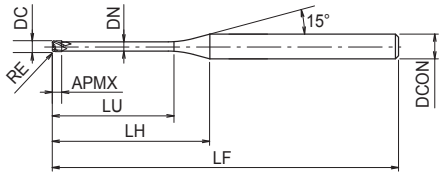
* If there is no value in the actual effective length (Le column) for the work gradient angle α, it indicates no interference.

# AE-CPR2-H

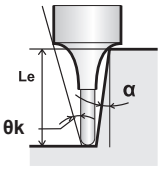
**Milling | Solid carbide**

INDEX






- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, corner radius
- 201 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30°

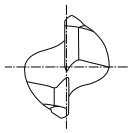
C.934

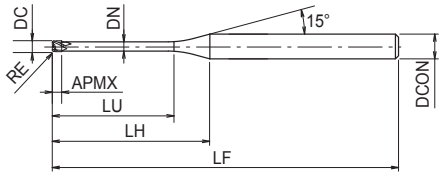
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8545245 | 0,2 | 0,02 | 0,5 | 0,15 | 4 | 0,18 | 45 | 7,7 | 13,88 | 0,53 | 0,57 | 0,61 | 0,65 | 0,73 | 2 |
| 8545246 | 0,2 | 0,02 | 1 | 0,15 | 4 | 0,18 | 45 | 8,2 | 13,07 | 1,06 | 1,13 | 1,2 | 1,26 | 1,38 | 2 |
| 8545247 | 0,2 | 0,02 | 1,5 | 0,15 | 4 | 0,18 | 45 | 8,7 | 12,34 | 1,6 | 1,69 | 1,77 | 1,85 | 2 | 2 |
| 8545248 | 0,2 | 0,02 | 2 | 0,15 | 4 | 0,18 | 45 | 9,2 | 11,69 | 2,12 | 2,24 | 2,33 | 2,43 | 2,62 | 2 |
| 8545249 | 0,2 | 0,05 | 0,5 | 0,15 | 4 | 0,18 | 45 | 7,7 | 13,93 | 0,53 | 0,56 | 0,6 | 0,64 | 0,72 | 2 |
| 8545250 | 0,2 | 0,05 | 1 | 0,15 | 4 | 0,18 | 45 | 8,2 | 13,11 | 1,06 | 1,13 | 1,19 | 1,25 | 1,37 | 2 |
| 8545251 | 0,2 | 0,05 | 1,5 | 0,15 | 4 | 0,18 | 45 | 8,7 | 12,37 | 1,59 | 1,68 | 1,77 | 1,84 | 1,99 | 2 |
| 8545252 | 0,2 | 0,05 | 2 | 0,15 | 4 | 0,18 | 45 | 9,2 | 11,72 | 2,12 | 2,23 | 2,33 | 2,42 | 2,61 | 2 |
| 8545253 | 0,3 | 0,02 | 1 | 0,25 | 4 | 0,28 | 45 | 8 | 13,02 | 1,06 | 1,13 | 1,2 | 1,26 | 1,38 | 2 |
| 8545254 | 0,3 | 0,02 | 1,5 | 0,25 | 4 | 0,28 | 45 | 8,5 | 12,28 | 1,6 | 1,69 | 1,77 | 1,85 | 2 | 2 |
| 8545255 | 0,3 | 0,02 | 2 | 0,25 | 4 | 0,28 | 45 | 9 | 11,62 | 2,12 | 2,24 | 2,33 | 2,43 | 2,62 | 2 |
| 8545256 | 0,3 | 0,02 | 2,5 | 0,25 | 4 | 0,28 | 45 | 9,5 | 11,02 | 2,65 | 2,78 | 2,89 | 3 | 3,24 | 2 |
| 8545257 | 0,3 | 0,02 | 3 | 0,25 | 4 | 0,28 | 45 | 10 | 10,48 | 3,18 | 3,32 | 3,45 | 3,58 | 3,87 | 2 |
| 8545258 | 0,3 | 0,05 | 1 | 0,25 | 4 | 0,28 | 45 | 8 | 13,06 | 1,06 | 1,13 | 1,19 | 1,25 | 1,37 | 2 |
| 8545259 | 0,3 | 0,05 | 1,5 | 0,25 | 4 | 0,28 | 45 | 8,5 | 12,32 | 1,59 | 1,68 | 1,77 | 1,84 | 1,99 | 2 |
| 8545260 | 0,3 | 0,05 | 2 | 0,25 | 4 | 0,28 | 45 | 9 | 11,65 | 2,12 | 2,23 | 2,33 | 2,42 | 2,61 | 2 |
| 8545261 | 0,3 | 0,05 | 2,5 | 0,25 | 4 | 0,28 | 45 | 9,5 | 11,05 | 2,65 | 2,78 | 2,89 | 3 | 3,24 | 2 |
| 8545262 | 0,3 | 0,05 | 3 | 0,25 | 4 | 0,28 | 45 | 10 | 10,51 | 3,18 | 3,32 | 3,44 | 3,57 | 3,86 | 2 |
| 8545263 | 0,4 | 0,02 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,41 | 1,08 | 1,17 | 1,28 | 1,38 | 1,62 | 2 |
| 8545264 | 0,4 | 0,02 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,7 | 11,71 | 1,62 | 1,76 | 1,89 | 2,03 | 2,32 | 2 |
| 8545265 | 0,4 | 0,02 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,09 | 2,16 | 2,33 | 2,5 | 2,67 | 3 | 2 |
| 8545266 | 0,4 | 0,02 | 2,5 | 0,3 | 4 | 0,37 | 45 | 9,7 | 10,53 | 2,7 | 2,9 | 3,1 | 3,29 | 3,66 | 2 |
| 8545267 | 0,4 | 0,02 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,03 | 3,24 | 3,47 | 3,69 | 3,9 | 4,31 | 2 |
| 8545268 | 0,4 | 0,02 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,15 | 4,31 | 4,59 | 4,85 | 5,1 | 5,57 | 2 |
| 8545269 | 0,4 | 0,05 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,45 | 1,08 | 1,17 | 1,27 | 1,37 | 1,6 | 2 |
| 8545270 | 0,4 | 0,05 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,7 | 11,75 | 1,62 | 1,75 | 1,89 | 2,03 | 2,31 | 2 |
| 8545271 | 0,4 | 0,05 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,12 | 2,16 | 2,33 | 2,49 | 2,66 | 2,99 | 2 |
| 8545272 | 0,4 | 0,05 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,05 | 3,24 | 3,46 | 3,68 | 3,89 | 4,3 | 2 |
| 8545273 | 0,4 | 0,05 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,17 | 4,31 | 4,59 | 4,85 | 5,1 | 5,56 | 2 |
| 8545274 | 0,4 | 0,1 | 1 | 0,3 | 4 | 0,37 | 45 | 8,2 | 12,51 | 1,07 | 1,16 | 1,26 | 1,36 | 1,58 | 2 |
| 8545275 | 0,4 | 0,1 | 2 | 0,3 | 4 | 0,37 | 45 | 9,2 | 11,18 | 2,16 | 2,32 | 2,48 | 2,65 | 2,98 | 2 |
| 8545276 | 0,4 | 0,1 | 3 | 0,3 | 4 | 0,37 | 45 | 10,2 | 10,1 | 3,23 | 3,46 | 3,67 | 3,88 | 4,29 | 2 |
| 8545277 | 0,4 | 0,1 | 4 | 0,3 | 4 | 0,37 | 45 | 11,2 | 9,21 | 4,3 | 4,58 | 4,84 | 5,09 | 5,55 | 2 |
| 8545278 | 0,5 | 0,02 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,39 | 1,08 | 1,17 | 1,26 | 1,37 | 1,59 | 2 |
| 8545279 | 0,5 | 0,02 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,04 | 2,16 | 2,32 | 2,48 | 2,64 | 2,97 | 2 |
| 8545280 | 0,5 | 0,02 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 9,96 | 3,23 | 3,45 | 3,67 | 3,87 | 4,27 | 2 |
| 8545281 | 0,5 | 0,02 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,07 | 4,3 | 4,57 | 4,83 | 5,07 | 5,53 | 2 |
| 8545282 | 0,5 | 0,02 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,32 | 5,36 | 5,68 | 5,98 | 6,25 | 6,77 | 2 |
| 8545283 | 0,5 | 0,02 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,69 | 6,42 | 6,79 | 7,11 | 7,41 | 8,02 | 2 |
| 8545284 | 0,5 | 0,05 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,43 | 1,08 | 1,16 | 1,26 | 1,36 | 1,58 | 2 |
| 8545285 | 0,5 | 0,05 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,08 | 2,15 | 2,31 | 2,47 | 2,64 | 2,96 | 2 |
| 8545286 | 0,5 | 0,05 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 9,99 | 3,23 | 3,45 | 3,66 | 3,87 | 4,27 | 2 |
| 8545287 | 0,5 | 0,05 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,09 | 4,3 | 4,57 | 4,82 | 5,07 | 5,52 | 2 |
| 8545288 | 0,5 | 0,05 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,34 | 5,36 | 5,68 | 5,97 | 6,25 | 6,77 | 2 |
| 8545289 | 0,5 | 0,05 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,71 | 6,42 | 6,79 | 7,11 | 7,41 | 8,01 | 2 |
| 8545290 | 0,5 | 0,1 | 1 | 0,4 | 4 | 0,46 | 45 | 8 | 12,5 | 1,07 | 1,15 | 1,24 | 1,34 | 1,55 | 2 |

# AE-CPR2-H

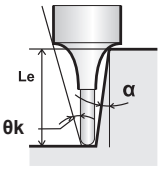
**Milling | Solid carbide**

INDEX






- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, corner radius
- 201 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30°

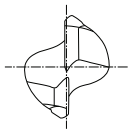
C.934

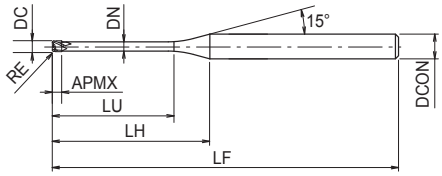
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8545291 | 0,5 | 0,1 | 2 | 0,4 | 4 | 0,46 | 45 | 9 | 11,13 | 2,15 | 2,31 | 2,46 | 2,62 | 2,95 | 2 |
| 8545292 | 0,5 | 0,1 | 3 | 0,4 | 4 | 0,46 | 45 | 10 | 10,03 | 3,22 | 3,44 | 3,65 | 3,86 | 4,25 | 2 |
| 8545293 | 0,5 | 0,1 | 4 | 0,4 | 4 | 0,46 | 45 | 11 | 9,13 | 4,29 | 4,56 | 4,82 | 5,06 | 5,51 | 2 |
| 8545294 | 0,5 | 0,1 | 5 | 0,4 | 4 | 0,46 | 45 | 12 | 8,37 | 5,36 | 5,68 | 5,97 | 6,24 | 6,76 | 2 |
| 8545295 | 0,5 | 0,1 | 6 | 0,4 | 4 | 0,46 | 45 | 13 | 7,73 | 6,42 | 6,78 | 7,1 | 7,4 | 8 | 2 |
| 8545296 | 0,6 | 0,05 | 2 | 0,48 | 4 | 0,55 | 45 | 8,8 | 11,02 | 2,15 | 2,3 | 2,46 | 2,62 | 2,93 | 2 |
| 8545297 | 0,6 | 0,05 | 4 | 0,48 | 4 | 0,55 | 45 | 10,8 | 9,01 | 4,28 | 4,55 | 4,8 | 5,04 | 5,49 | 2 |
| 8545298 | 0,6 | 0,05 | 6 | 0,48 | 4 | 0,55 | 45 | 12,8 | 7,61 | 6,41 | 6,76 | 7,08 | 7,38 | 7,98 | 2 |
| 8545299 | 0,6 | 0,1 | 1 | 0,48 | 4 | 0,55 | 45 | 7,8 | 12,48 | 1,07 | 1,15 | 1,23 | 1,33 | 1,53 | 2 |
| 8545300 | 0,6 | 0,1 | 2 | 0,48 | 4 | 0,55 | 45 | 8,8 | 11,08 | 2,14 | 2,29 | 2,45 | 2,6 | 2,92 | 2 |
| 8545301 | 0,6 | 0,1 | 4 | 0,48 | 4 | 0,55 | 45 | 10,8 | 9,05 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 2 |
| 8545302 | 0,6 | 0,1 | 6 | 0,48 | 4 | 0,55 | 45 | 12,8 | 7,64 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 2 |
| 8545303 | 0,8 | 0,05 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 10,84 | 2,15 | 2,3 | 2,46 | 2,62 | 2,93 | 2 |
| 8545304 | 0,8 | 0,05 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,79 | 4,28 | 4,55 | 4,8 | 5,04 | 5,49 | 2 |
| 8545305 | 0,8 | 0,05 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,38 | 6,41 | 6,76 | 7,08 | 7,38 | 7,98 | 2 |
| 8545306 | 0,8 | 0,1 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 10,9 | 2,14 | 2,29 | 2,45 | 2,6 | 2,92 | 2 |
| 8545307 | 0,8 | 0,1 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,83 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 2 |
| 8545308 | 0,8 | 0,1 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,41 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 2 |
| 8545309 | 0,8 | 0,2 | 2 | 0,65 | 4 | 0,75 | 45 | 8,4 | 11,02 | 2,14 | 2,28 | 2,43 | 2,58 | 2,88 | 2 |
| 8545310 | 0,8 | 0,2 | 4 | 0,65 | 4 | 0,75 | 45 | 10,4 | 8,9 | 4,28 | 4,53 | 4,78 | 5,01 | 5,46 | 2 |
| 8545311 | 0,8 | 0,2 | 6 | 0,65 | 4 | 0,75 | 45 | 12,4 | 7,47 | 6,4 | 6,75 | 7,06 | 7,36 | 7,94 | 2 |
| 8545312 | 0,8 | 0,2 | 8 | 0,65 | 4 | 0,75 | 45 | 14,4 | 6,43 | 8,52 | 8,94 | 9,31 | 9,66 | 10,43 | 2 |
| 8545313 | 1 | 0,05 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,68 | 2,14 | 2,29 | 2,44 | 2,6 | 2,91 | 2 |
| 8545314 | 1 | 0,05 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,51 | 3,21 | 3,42 | 3,62 | 3,82 | 4,21 | 2 |
| 8545315 | 1 | 0,05 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,57 | 4,28 | 4,54 | 4,78 | 5,02 | 5,46 | 2 |
| 8545316 | 1 | 0,05 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,16 | 6,4 | 6,75 | 7,06 | 7,35 | 7,95 | 2 |
| 8545317 | 1 | 0,05 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,14 | 8,51 | 8,93 | 9,3 | 9,65 | 10,43 | 2 |
| 8545318 | 1 | 0,05 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,38 | 10,61 | 11,1 | 11,52 | 11,95 | 12,92 | 2 |
| 8545319 | 1 | 0,05 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,78 | 12,71 | 13,26 | 13,74 | 14,25 | 15,41 | 2 |
| 8545320 | 1 | 0,1 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,74 | 2,14 | 2,28 | 2,43 | 2,58 | 2,89 | 2 |
| 8545321 | 1 | 0,1 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,56 | 3,21 | 3,41 | 3,61 | 3,81 | 4,19 | 2 |
| 8545322 | 1 | 0,1 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,61 | 4,27 | 4,53 | 4,77 | 5,01 | 5,45 | 2 |
| 8545323 | 1 | 0,1 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,18 | 6,39 | 6,74 | 7,05 | 7,34 | 7,93 | 2 |
| 8545324 | 1 | 0,1 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,16 | 8,51 | 8,93 | 9,3 | 9,65 | 10,42 | 2 |
| 8545325 | 1 | 0,1 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,39 | 10,61 | 11,1 | 11,52 | 11,95 | 12,91 | 2 |
| 8545326 | 1 | 0,1 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,79 | 12,71 | 13,25 | 13,73 | 14,25 | 15,39 | 2 |
| 8545327 | 1 | 0,2 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,86 | 2,13 | 2,27 | 2,41 | 2,56 | 2,86 | 2 |
| 8545328 | 1 | 0,2 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,66 | 3,2 | 3,4 | 3,6 | 3,79 | 4,17 | 2 |
| 8545329 | 1 | 0,2 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,69 | 4,27 | 4,52 | 4,76 | 4,99 | 5,42 | 2 |
| 8545330 | 1 | 0,2 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,24 | 6,39 | 6,73 | 7,04 | 7,33 | 7,91 | 2 |
| 8545331 | 1 | 0,2 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,2 | 8,5 | 8,92 | 9,29 | 9,63 | 10,4 | 2 |
| 8545332 | 1 | 0,2 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,42 | 10,61 | 11,09 | 11,51 | 11,93 | 12,88 | 2 |
| 8545333 | 1 | 0,2 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,82 | 12,7 | 13,24 | 13,72 | 14,23 | 15,37 | 2 |
| 8545334 | 1 | 0,2 | 16 | 0,8 | 4 | 0,94 | 55 | 22 | 3,94 | 16,89 | 17,53 | 18,16 | 18,83 | 20,34 | 2 |
| 8545335 | 1 | 0,2 | 20 | 0,8 | 4 | 0,94 | 55 | 26 | 3,33 | 21,05 | 21,81 | 22,59 | 23,43 | 25,32 | 2 |
| 8545336 | 1 | 0,3 | 2 | 0,8 | 4 | 0,94 | 45 | 8 | 10,98 | 2,12 | 2,26 | 2,39 | 2,54 | 2,83 | 2 |

# AE-CPR2-H

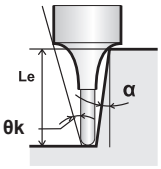
**Milling | Solid carbide**

INDEX






- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, corner radius
- 201 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30°

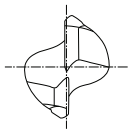
C.934

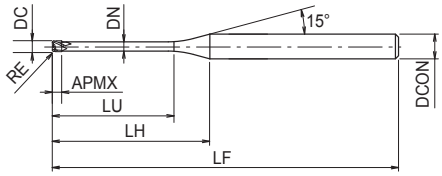
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8545337 | 1 | 0,3 | 3 | 0,8 | 4 | 0,94 | 45 | 9 | 9,75 | 3,19 | 3,39 | 3,58 | 3,77 | 4,14 | 2 |
| 8545338 | 1 | 0,3 | 4 | 0,8 | 4 | 0,94 | 45 | 10 | 8,77 | 4,26 | 4,51 | 4,74 | 4,97 | 5,4 | 2 |
| 8545339 | 1 | 0,3 | 6 | 0,8 | 4 | 0,94 | 45 | 12 | 7,3 | 6,38 | 6,72 | 7,03 | 7,31 | 7,89 | 2 |
| 8545340 | 1 | 0,3 | 8 | 0,8 | 4 | 0,94 | 45 | 14 | 6,24 | 8,5 | 8,91 | 9,27 | 9,62 | 10,37 | 2 |
| 8545341 | 1 | 0,3 | 10 | 0,8 | 4 | 0,94 | 45 | 16 | 5,46 | 10,6 | 11,08 | 11,5 | 11,92 | 12,86 | 2 |
| 8545342 | 1 | 0,3 | 12 | 0,8 | 4 | 0,94 | 45 | 18 | 4,84 | 12,7 | 13,24 | 13,71 | 14,22 | 15,35 | 2 |
| 8545343 | 1,2 | 0,2 | 6 | 1 | 4 | 1,14 | 45 | 11,6 | 6,98 | 6,39 | 6,73 | 7,04 | 7,33 | 7,91 | 2 |
| 8545344 | 1,2 | 0,2 | 8 | 1 | 4 | 1,14 | 45 | 13,6 | 5,95 | 8,5 | 8,92 | 9,29 | 9,63 | 10,4 | 2 |
| 8545345 | 1,2 | 0,2 | 10 | 1 | 4 | 1,14 | 45 | 15,6 | 5,19 | 10,61 | 11,09 | 11,51 | 11,93 | 12,88 | 2 |
| 8545346 | 1,2 | 0,3 | 6 | 1 | 4 | 1,14 | 45 | 11,6 | 7,04 | 6,38 | 6,72 | 7,03 | 7,31 | 7,89 | 2 |
| 8545347 | 1,2 | 0,3 | 8 | 1 | 4 | 1,14 | 45 | 13,6 | 5,99 | 8,5 | 8,91 | 9,27 | 9,62 | 10,37 | 2 |
| 8545348 | 1,2 | 0,3 | 10 | 1 | 4 | 1,14 | 45 | 15,6 | 5,22 | 10,6 | 11,08 | 11,5 | 11,92 | 12,86 | 2 |
| 8545349 | 1,5 | 0,05 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 8,88 | 3,2 | 3,41 | 3,6 | 3,8 | 4,18 | 2 |
| 8545350 | 1,5 | 0,05 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 7,91 | 4,27 | 4,52 | 4,76 | 4,99 | 5,43 | 2 |
| 8545351 | 1,5 | 0,05 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,49 | 6,39 | 6,73 | 7,04 | 7,33 | 7,92 | 2 |
| 8545352 | 1,5 | 0,05 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,5 | 8,5 | 8,91 | 9,28 | 9,63 | 10,4 | 2 |
| 8545353 | 1,5 | 0,05 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,77 | 10,6 | 11,08 | 11,5 | 11,93 | 12,89 | 2 |
| 8545354 | 1,5 | 0,05 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,21 | 12,7 | 13,23 | 13,71 | 14,23 | 15,38 | 2 |
| 8545355 | 1,5 | 0,1 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 8,93 | 3,2 | 3,4 | 3,6 | 3,79 | 4,16 | 2 |
| 8545356 | 1,5 | 0,1 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 7,95 | 4,26 | 4,52 | 4,75 | 4,98 | 5,42 | 2 |
| 8545357 | 1,5 | 0,1 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,52 | 6,38 | 6,72 | 7,03 | 7,32 | 7,91 | 2 |
| 8545358 | 1,5 | 0,1 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,52 | 8,49 | 8,91 | 9,27 | 9,62 | 10,39 | 2 |
| 8545359 | 1,5 | 0,1 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,78 | 10,6 | 11,07 | 11,49 | 11,92 | 12,88 | 2 |
| 8545360 | 1,5 | 0,1 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,22 | 12,69 | 13,23 | 13,71 | 14,22 | 15,36 | 2 |
| 8545361 | 1,5 | 0,2 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,04 | 3,19 | 3,39 | 3,58 | 3,77 | 4,14 | 2 |
| 8545362 | 1,5 | 0,2 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,03 | 4,26 | 4,5 | 4,74 | 4,97 | 5,4 | 2 |
| 8545363 | 1,5 | 0,2 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,57 | 6,38 | 6,71 | 7,02 | 7,3 | 7,88 | 2 |
| 8545364 | 1,5 | 0,2 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,56 | 8,49 | 8,9 | 9,26 | 9,6 | 10,37 | 2 |
| 8545365 | 1,5 | 0,2 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,81 | 10,59 | 11,07 | 11,48 | 11,9 | 12,85 | 2 |
| 8545366 | 1,5 | 0,2 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,25 | 12,69 | 13,22 | 13,7 | 14,2 | 15,34 | 2 |
| 8545367 | 1,5 | 0,2 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,44 | 16,87 | 17,51 | 18,13 | 18,8 | 20,31 | 2 |
| 8545368 | 1,5 | 0,3 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,14 | 3,19 | 3,38 | 3,56 | 3,75 | 4,11 | 2 |
| 8545369 | 1,5 | 0,3 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,12 | 4,25 | 4,49 | 4,72 | 4,95 | 5,37 | 2 |
| 8545370 | 1,5 | 0,3 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,63 | 6,37 | 6,7 | 7,01 | 7,29 | 7,86 | 2 |
| 8545371 | 1,5 | 0,3 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,6 | 8,48 | 8,89 | 9,25 | 9,59 | 10,34 | 2 |
| 8545372 | 1,5 | 0,3 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,85 | 10,59 | 11,06 | 11,47 | 11,89 | 12,83 | 2 |
| 8545373 | 1,5 | 0,3 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,27 | 12,68 | 13,21 | 13,69 | 14,19 | 15,32 | 2 |
| 8545374 | 1,5 | 0,3 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,45 | 16,86 | 17,5 | 18,12 | 18,79 | 20,29 | 2 |
| 8545375 | 1,5 | 0,5 | 3 | 1,2 | 4 | 1,43 | 45 | 8 | 9,36 | 3,17 | 3,35 | 3,53 | 3,71 | 4,06 | 2 |
| 8545376 | 1,5 | 0,5 | 4 | 1,2 | 4 | 1,43 | 45 | 9 | 8,29 | 4,24 | 4,47 | 4,69 | 4,91 | 5,32 | 2 |
| 8545377 | 1,5 | 0,5 | 6 | 1,2 | 4 | 1,43 | 45 | 11 | 6,74 | 6,36 | 6,68 | 6,98 | 7,26 | 7,81 | 2 |
| 8545378 | 1,5 | 0,5 | 8 | 1,2 | 4 | 1,43 | 45 | 13 | 5,68 | 8,47 | 8,87 | 9,23 | 9,56 | 10,3 | 2 |
| 8545379 | 1,5 | 0,5 | 10 | 1,2 | 4 | 1,43 | 45 | 15 | 4,91 | 10,58 | 11,04 | 11,45 | 11,86 | 12,78 | 2 |
| 8545380 | 1,5 | 0,5 | 12 | 1,2 | 4 | 1,43 | 45 | 17 | 4,32 | 12,67 | 13,2 | 13,67 | 14,16 | 15,27 | 2 |
| 8545381 | 1,5 | 0,5 | 16 | 1,2 | 4 | 1,43 | 50 | 21 | 3,48 | 16,85 | 17,48 | 18,1 | 18,76 | 20,24 | 2 |
| 8545382 | 2 | 0,05 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,09 | 4,26 | 4,51 | 4,74 | 4,97 | 5,4 | 2 |

# AE-CPR2-H

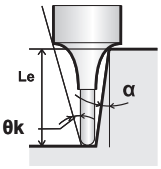
**Milling | Solid carbide**

INDEX






- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, corner radius
- 201 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30°

C.934

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8545383 | 2 | 0,05 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,69 | 6,38 | 6,71 | 7,02 | 7,3 | 7,89 | 2 |
| 8545384 | 2 | 0,05 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,75 | 8,48 | 8,89 | 9,25 | 9,6 | 10,38 | 2 |
| 8545385 | 2 | 0,05 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,08 | 10,58 | 11,06 | 11,47 | 11,9 | 12,86 | 2 |
| 8545386 | 2 | 0,05 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,57 | 12,68 | 13,21 | 13,69 | 14,2 | 15,35 | 2 |
| 8545387 | 2 | 0,05 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,86 | 16,86 | 17,49 | 18,12 | 18,8 | - | 2 |
| 8545388 | 2 | 0,05 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,39 | 21,02 | 21,77 | 22,56 | 23,4 | - | 2 |
| 8545389 | 2 | 0,1 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,13 | 4,26 | 4,5 | 4,74 | 4,96 | 5,39 | 2 |
| 8545390 | 2 | 0,1 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,72 | 6,37 | 6,71 | 7,01 | 7,29 | 7,88 | 2 |
| 8545391 | 2 | 0,1 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,77 | 8,48 | 8,89 | 9,25 | 9,59 | 10,37 | 2 |
| 8545392 | 2 | 0,1 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,09 | 10,58 | 11,05 | 11,47 | 11,89 | 12,85 | 2 |
| 8545393 | 2 | 0,1 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,58 | 12,68 | 13,21 | 13,68 | 14,19 | 15,34 | 2 |
| 8545394 | 2 | 0,1 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,87 | 16,85 | 17,49 | 18,12 | 18,79 | - | 2 |
| 8545395 | 2 | 0,1 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,39 | 21,02 | 21,77 | 22,55 | 23,39 | - | 2 |
| 8545396 | 2 | 0,1 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 1,98 | 26,2 | 27,12 | 28,09 | - | - | 2 |
| 8545397 | 2 | 0,2 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,21 | 4,25 | 4,49 | 4,72 | 4,94 | 5,37 | 2 |
| 8545398 | 2 | 0,2 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,77 | 6,37 | 6,7 | 7 | 7,28 | 7,86 | 2 |
| 8545399 | 2 | 0,2 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,81 | 8,48 | 8,88 | 9,24 | 9,58 | 10,34 | 2 |
| 8545400 | 2 | 0,2 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,12 | 10,58 | 11,05 | 11,46 | 11,88 | 12,83 | 2 |
| 8545401 | 2 | 0,2 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,6 | 12,67 | 13,2 | 13,67 | 14,18 | 15,31 | 2 |
| 8545402 | 2 | 0,2 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,88 | 16,85 | 17,48 | 18,11 | 18,78 | - | 2 |
| 8545403 | 2 | 0,2 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,4 | 21,01 | 21,76 | 22,54 | 23,38 | - | 2 |
| 8545404 | 2 | 0,2 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 1,99 | 26,2 | 27,11 | 28,08 | - | - | 2 |
| 8545405 | 2 | 0,3 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,3 | 4,24 | 4,48 | 4,71 | 4,93 | 5,35 | 2 |
| 8545406 | 2 | 0,3 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,83 | 6,36 | 6,69 | 6,98 | 7,26 | 7,83 | 2 |
| 8545407 | 2 | 0,3 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,85 | 8,47 | 8,87 | 9,23 | 9,56 | 10,32 | 2 |
| 8545408 | 2 | 0,3 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,15 | 10,57 | 11,04 | 11,45 | 11,86 | 12,8 | 2 |
| 8545409 | 2 | 0,3 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,63 | 12,67 | 13,19 | 13,66 | 14,16 | 15,29 | 2 |
| 8545410 | 2 | 0,3 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,9 | 16,85 | 17,48 | 18,1 | 18,76 | - | 2 |
| 8545411 | 2 | 0,3 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,41 | 21,01 | 21,75 | 22,53 | 23,36 | - | 2 |
| 8545412 | 2 | 0,3 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 1,99 | 26,2 | 27,1 | 28,07 | - | - | 2 |
| 8545413 | 2 | 0,5 | 4 | 1,6 | 4 | 1,92 | 50 | 8,1 | 7,48 | 4,23 | 4,46 | 4,68 | 4,89 | 5,3 | 2 |
| 8545414 | 2 | 0,5 | 6 | 1,6 | 4 | 1,92 | 50 | 10,1 | 5,94 | 6,35 | 6,67 | 6,96 | 7,23 | 7,78 | 2 |
| 8545415 | 2 | 0,5 | 8 | 1,6 | 4 | 1,92 | 50 | 12,1 | 4,93 | 8,46 | 8,85 | 9,2 | 9,54 | 10,27 | 2 |
| 8545416 | 2 | 0,5 | 10 | 1,6 | 4 | 1,92 | 50 | 14,1 | 4,21 | 10,56 | 11,02 | 11,42 | 11,83 | 12,76 | 2 |
| 8545417 | 2 | 0,5 | 12 | 1,6 | 4 | 1,92 | 50 | 16,1 | 3,67 | 12,66 | 13,18 | 13,64 | 14,13 | 15,24 | 2 |
| 8545418 | 2 | 0,5 | 16 | 1,6 | 4 | 1,92 | 50 | 20,1 | 2,92 | 16,84 | 17,46 | 18,07 | 18,73 | - | 2 |
| 8545419 | 2 | 0,5 | 20 | 1,6 | 4 | 1,92 | 60 | 24,1 | 2,43 | 21 | 21,74 | 22,51 | 23,33 | - | 2 |
| 8545420 | 2 | 0,5 | 25 | 1,6 | 4 | 1,92 | 60 | 29,1 | 2,01 | 26,19 | 27,09 | 28,05 | 29,08 | - | 2 |
| 8545421 | 2,5 | 0,2 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,33 | 10,55 | 11,01 | 11,41 | 11,83 | 12,78 | 2 |
| 8545422 | 2,5 | 0,2 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,88 | 20,98 | 21,72 | 22,5 | - | - | 2 |
| 8545423 | 2,5 | 0,2 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,31 | 31,33 | 32,42 | - | - | - | 2 |
| 8545424 | 2,5 | 0,5 | 10 | 2 | 4 | 2,4 | 55 | 13,1 | 3,4 | 10,54 | 10,98 | 11,38 | 11,79 | 12,71 | 2 |
| 8545425 | 2,5 | 0,5 | 20 | 2 | 4 | 2,4 | 55 | 23,1 | 1,9 | 20,97 | 21,7 | 22,46 | - | - | 2 |
| 8545426 | 2,5 | 0,5 | 30 | 2 | 4 | 2,4 | 70 | 33,1 | 1,32 | 31,32 | 32,39 | - | - | - | 2 |
| 8545427 | 3 | 0,2 | 8 | 2,5 | 6 | 2,85 | 55 | 13,8 | 6,28 | 8,41 | 8,77 | 9,11 | 9,44 | 10,19 | 2 |
| 8545429 | 3 | 0,2 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 3,97 | 16,75 | 17,35 | 17,97 | 18,64 | 20,14 | 2 |

# AE-CPR2-H

**Milling | Solid carbide**

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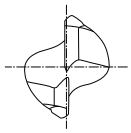
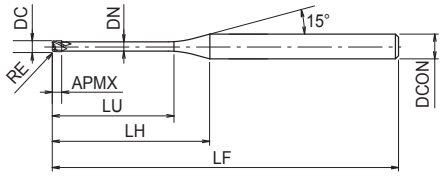
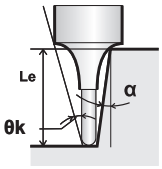





- First choice in quality and performance
- Carbide end mill with DUROREY coating
- For hardened materials up to 70HRC
- 2 flutes, long neck, corner radius
- 201 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC | H ~70 HRC

A | CARBIDE | DUROREY | R ± 0.005 | SHANK h4 | SHRINK FIT | 30°

C.934

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8545428 | 3 | 0,2 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,86 | 12,59 | 13,07 | 13,54 | 14,04 | 15,16 | 2 |
| 8545430 | 3 | 0,2 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,35 | 20,9 | 21,63 | 22,4 | 23,24 | 25,11 | 2 |
| 8545431 | 3 | 0,2 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,81 | 26,08 | 26,98 | 27,95 | 28,99 | - | 2 |
| 8545432 | 3 | 0,2 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,41 | 31,25 | 32,33 | 33,49 | 34,74 | - | 2 |
| 8545433 | 3 | 0,2 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,12 | 36,41 | 37,68 | 39,03 | 40,49 | - | 2 |
| 8545434 | 3 | 0,3 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,89 | 12,58 | 13,07 | 13,53 | 14,02 | 15,14 | 2 |
| 8545435 | 3 | 0,3 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 3,99 | 16,75 | 17,34 | 17,96 | 18,62 | 20,11 | 2 |
| 8545436 | 3 | 0,3 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,37 | 20,9 | 21,62 | 22,39 | 23,22 | 25,08 | 2 |
| 8545437 | 3 | 0,3 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,82 | 26,07 | 26,97 | 27,94 | 28,97 | - | 2 |
| 8545438 | 3 | 0,3 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,42 | 31,24 | 32,32 | 33,48 | 34,72 | - | 2 |
| 8545439 | 3 | 0,3 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,12 | 36,41 | 37,67 | 39,02 | 40,47 | - | 2 |
| 8545440 | 3 | 0,5 | 12 | 2,5 | 6 | 2,85 | 55 | 17,8 | 4,94 | 12,57 | 13,05 | 13,51 | 13,99 | 15,09 | 2 |
| 8545441 | 3 | 0,5 | 16 | 2,5 | 6 | 2,85 | 55 | 21,8 | 4,02 | 16,74 | 17,33 | 17,94 | 18,59 | 20,06 | 2 |
| 8545442 | 3 | 0,5 | 20 | 2,5 | 6 | 2,85 | 55 | 25,8 | 3,39 | 20,89 | 21,61 | 22,37 | 23,19 | 25,04 | 2 |
| 8545443 | 3 | 0,5 | 25 | 2,5 | 6 | 2,85 | 70 | 30,8 | 2,83 | 26,07 | 26,96 | 27,91 | 28,94 | - | 2 |
| 8545444 | 3 | 0,5 | 30 | 2,5 | 6 | 2,85 | 70 | 35,8 | 2,43 | 31,24 | 32,31 | 33,46 | 34,69 | - | 2 |
| 8545445 | 3 | 0,5 | 35 | 2,5 | 6 | 2,85 | 70 | 40,8 | 2,13 | 36,4 | 37,66 | 39 | 40,44 | - | 2 |

# WXS-HS-CRE

**Milling | Solid carbide**

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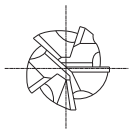
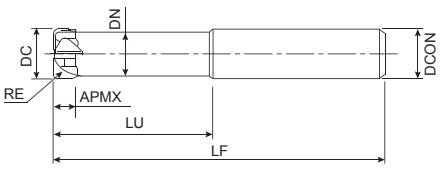




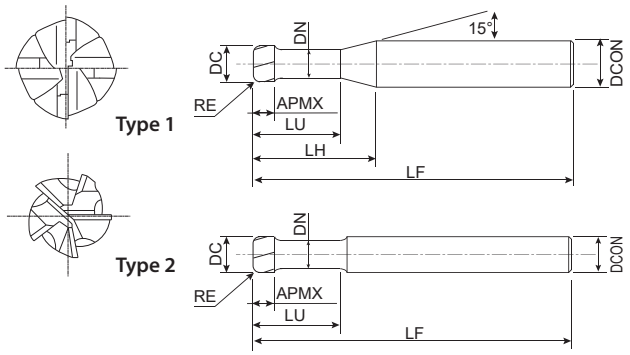

- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC
- 5 flutes, shorter overall length, super radius

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48107267 | 6 | 1,5 | 12 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48107367 | 6 | 1,5 | 18 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48107467 | 6 | 1,5 | 24 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48107289 | 8 | 2 | 16 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48107389 | 8 | 2 | 24 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48107489 | 8 | 2 | 32 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48107209 | 10 | 2 | 20 | 4 | 10 | 9 | 70 | 5 |
| 48107309 | 10 | 2 | 30 | 4 | 10 | 9 | 70 | 5 |
| 48107509 | 10 | 2 | 40 | 4 | 10 | 9 | 70 | 5 |
| 48107233 | 12 | 3 | 24 | 4,8 | 12 | 11 | 80 | 5 |
| 48107333 | 12 | 3 | 36 | 4,8 | 12 | 11 | 80 | 5 |
| 48107533 | 12 | 3 | 48 | 4,8 | 12 | 11 | 80 | 5 |

# WXS-CRE



**Milling | Solid carbide**




- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- Multi flute with super radius

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 48106421 | 2 | 0,5 | 8 | 0,8 | 6 | 1,8 | 50 | 15,8 | 4 | 1 |
| 48106433 | 3 | 0,75 | 12 | 1,3 | 6 | 2,7 | 55 | 17,9 | 5 | 1 |
| 48106445 | 4 | 1 | 12 | 1,6 | 6 | 3,6 | 55 | 16 | 5 | 1 |
| 48106467 | 6 | 1,5 | 12 | 2,4 | 6 | 5,4 | 90 | - | 5 | 2 |
| 48106489 | 8 | 2 | 16 | 3,2 | 8 | 7,2 | 100 | - | 5 | 2 |
| 48106509 | 10 | 2 | 20 | 4 | 10 | 9 | 100 | - | 5 | 2 |
| 48106533 | 12 | 3 | 24 | 4,8 | 12 | 11 | 110 | - | 5 | 2 |

# SX-CRE

**Milling | Solid carbide**

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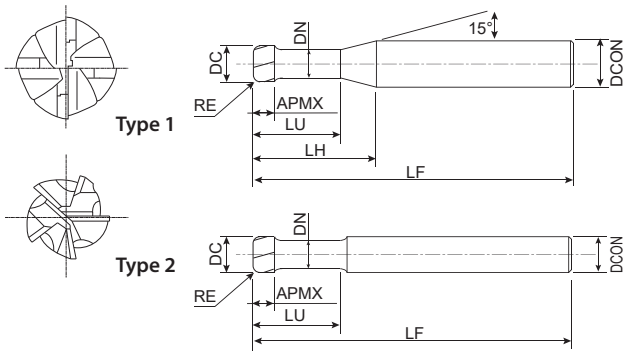
**NEW**




- Carbide end mill with Egias coating
- For steels, stainless steel and Titanium alloys
- Multi flute with super radius

P ~30 HRC | P ~45 HRC | M | S

CARBIDE | EgiAs | SHRINK FIT | 0~-0.03

C.941

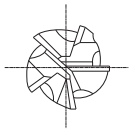
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 48451421 | 2 | 0,5 | 8 | 0,8 | 6 | 1,8 | 50 | 15,8 | 4 | 1 |
| 48451433 | 3 | 0,75 | 12 | 1,3 | 6 | 2,7 | 55 | 17,9 | 5 | 1 |
| 48451445 | 4 | 1 | 12 | 1,6 | 6 | 3,6 | 55 | 16 | 5 | 1 |
| 48451467 | 6 | 1,5 | 12 | 2,4 | 6 | 5,4 | 90 | - | 5 | 2 |
| 48451489 | 8 | 2 | 16 | 3,2 | 8 | 7,2 | 100 | - | 5 | 2 |
| 48451509 | 10 | 2 | 20 | 4 | 10 | 9 | 100 | - | 5 | 2 |
| 48451533 | 12 | 3 | 24 | 4,8 | 12 | 11 | 110 | - | 5 | 2 |

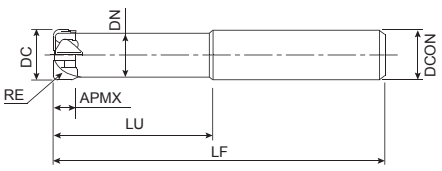
# SX-HS-CRE

**Milling | Solid carbide**

INDEX

**NEW**

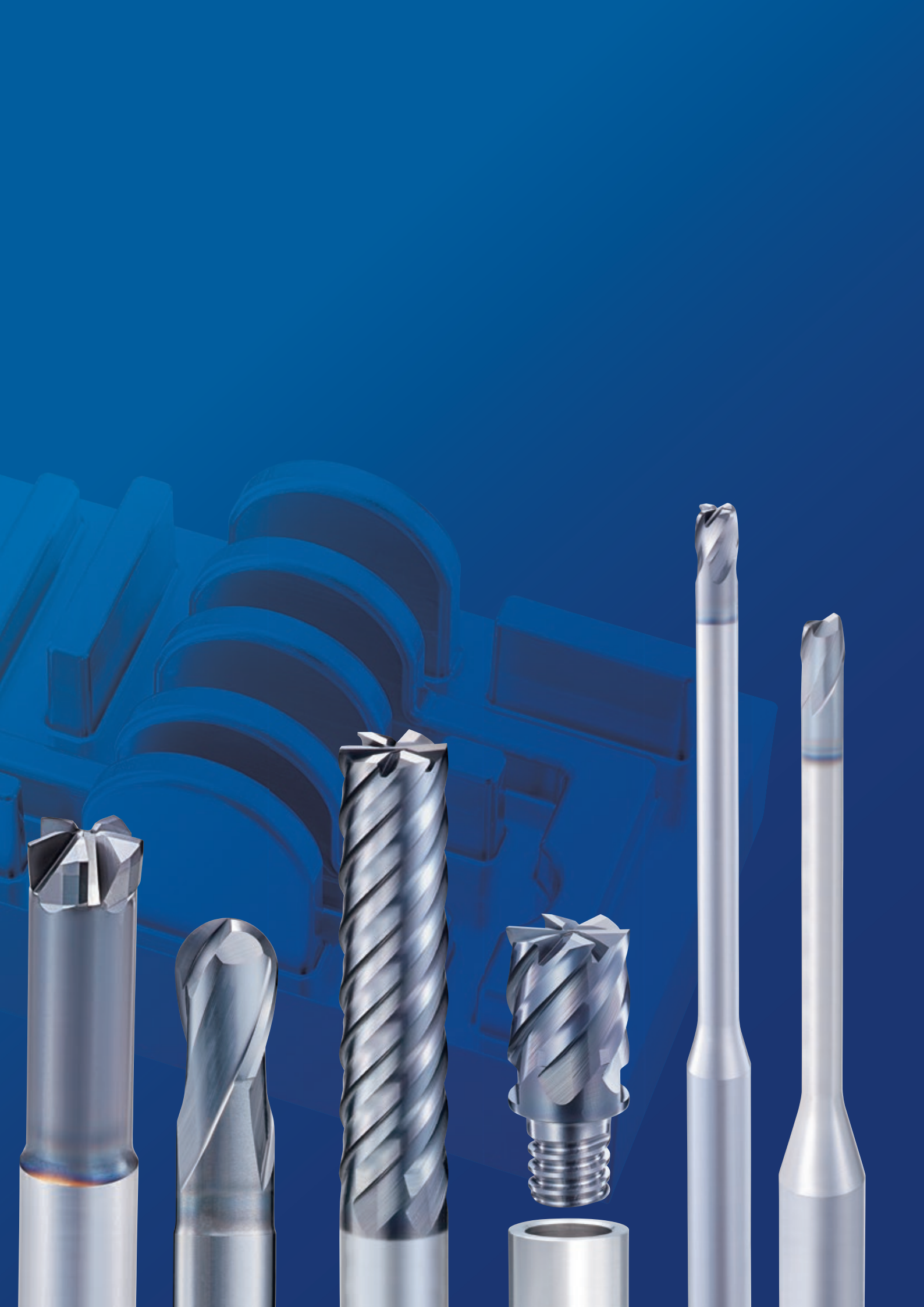





- Carbide end mill with Egias coating
- For steels, stainless steel and Titanium alloys
- Shorter overall length, super radius

C.941

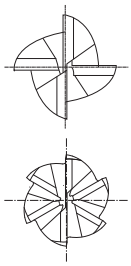
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48452467 | 6 | 1,5 | 24 | 2,4 | 6 | 5,4 | 50 | 5 |
| 48452489 | 8 | 2 | 32 | 3,2 | 8 | 7,2 | 60 | 5 |
| 48452509 | 10 | 2 | 40 | 4 | 10 | 9 | 70 | 5 |
| 48452533 | 12 | 3 | 48 | 4,8 | 12 | 11 | 80 | 5 |

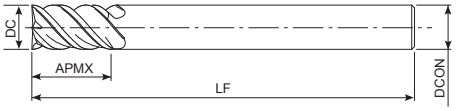


# WXS-EMS

**Milling | Solid carbide**

INDEX





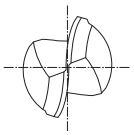

- Carbide end mill with WXS coating
- For hardened steels and stainless steels
- Multi flute, high speed machining

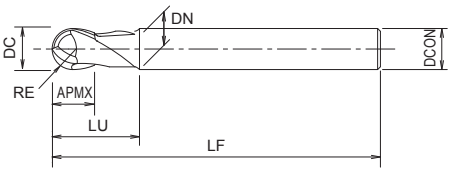
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3041010 | 1 | 2,5 | 6 | 60 | 4 |
| 3041015 | 1,5 | 4 | 6 | 60 | 4 |
| 3041020 | 2 | 6 | 6 | 60 | 4 |
| 3041025 | 2,5 | 8 | 6 | 60 | 4 |
| 3041030 | 3 | 8 | 6 | 60 | 4 |
| 3041035 | 3,5 | 10 | 6 | 60 | 4 |
| 3041040 | 4 | 11 | 6 | 60 | 4 |
| 3041045 | 4,5 | 11 | 6 | 60 | 4 |
| 3041050 | 5 | 13 | 6 | 60 | 4 |
| 3041055 | 5,5 | 13 | 6 | 60 | 4 |
| 3041060 | 6 | 13 | 6 | 60 | 6 |
| 3041080 | 8 | 19 | 8 | 70 | 6 |
| 3041100 | 10 | 22 | 10 | 80 | 6 |
| 3041120 | 12 | 26 | 12 | 90 | 6 |
| 3041140 | 14 | 26 | 16 | 100 | 6 |
| 3041160 | 16 | 32 | 16 | 105 | 6 |
| 3041180 | 18 | 32 | 16 | 110 | 6 |
| 3041200 | 20 | 38 | 20 | 110 | 6 |

# WXS-HS-EBD



**Milling | Solid carbide**






- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, shorter overall length, ball nose

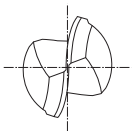
C.944

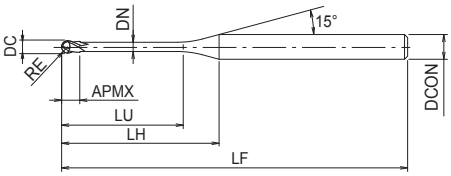
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 3041710 | 1 | 0,5 | 2 | 1 | 4 | 0,95 | 40 | 2 |
| 3041720 | 2 | 1 | 4 | 2 | 6 | 1,95 | 40 | 2 |
| 3041730 | 3 | 1,5 | 6 | 3 | 6 | 2,85 | 50 | 2 |
| 3041740 | 4 | 2 | 8 | 4 | 6 | 3,85 | 50 | 2 |
| 3041750 | 5 | 2,5 | 10 | 5 | 6 | 4,85 | 50 | 2 |
| 3041760 | 6 | 3 | - | 9 | 6 | - | 50 | 2 |
| 3041780 | 8 | 4 | - | 12 | 8 | - | 60 | 2 |
| 3041800 | 10 | 5 | - | 15 | 10 | - | 70 | 2 |
| 3041820 | 12 | 6 | - | 18 | 12 | - | 80 | 2 |

# WXS-LN-EBD

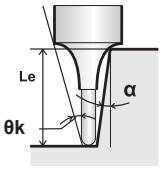


**Milling | Solid carbide**






- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 189 sizes

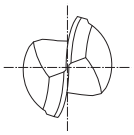


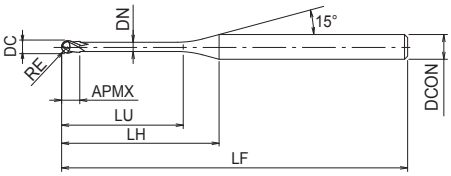
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3050100 | 0,1 | 0,05 | 0,3 | 0,08 | 4 | 0,09 | 45 | 7,5 | 14,51 | 0,31 | 0,32 | 0,33 | 0,34 | 0,35 | 0,36 | 2 |
| 3050101 | 0,1 | 0,05 | 0,5 | 0,08 | 4 | 0,09 | 45 | 7,7 | 14,31 | 0,42 | 0,44 | 0,45 | 0,47 | 0,48 | 0,5 | 2 |
| 3050201 | 0,2 | 0,1 | 0,5 | 0,16 | 4 | 0,18 | 45 | 7,5 | 14,16 | 0,53 | 0,55 | 0,57 | 0,59 | 0,61 | 0,63 | 2 |
| 3049921 | 0,2 | 0,1 | 0,75 | 0,16 | 4 | 0,18 | 45 | 7,8 | 13,72 | 0,79 | 0,82 | 0,85 | 0,88 | 0,91 | 0,94 | 2 |
| 3050202 | 0,2 | 0,1 | 1 | 0,16 | 4 | 0,18 | 45 | 8 | 13,31 | 1,05 | 1,09 | 1,13 | 1,17 | 1,21 | 1,26 | 2 |
| 3049922 | 0,2 | 0,1 | 1,25 | 0,16 | 4 | 0,18 | 45 | 8,3 | 12,92 | 1,31 | 1,36 | 1,41 | 1,46 | 1,51 | 1,57 | 2 |
| 3050203 | 0,2 | 0,1 | 1,5 | 0,16 | 4 | 0,18 | 45 | 8,5 | 12,56 | 1,57 | 1,63 | 1,68 | 1,74 | 1,81 | 1,88 | 2 |
| 3049923 | 0,2 | 0,1 | 1,75 | 0,16 | 4 | 0,18 | 45 | 8,8 | 12,21 | 1,83 | 1,9 | 1,96 | 2,03 | 2,11 | 2,19 | 2 |
| 3050204 | 0,2 | 0,1 | 2 | 0,16 | 4 | 0,18 | 45 | 9 | 11,88 | 2,09 | 2,16 | 2,24 | 2,32 | 2,4 | 2,5 | 2 |
| 3050205 | 0,2 | 0,1 | 2,5 | 0,16 | 4 | 0,18 | 45 | 9,5 | 11,28 | 2,61 | 2,7 | 2,79 | 2,89 | 3 | 3,12 | 2 |
| 3050206 | 0,2 | 0,1 | 3 | 0,16 | 4 | 0,18 | 45 | 10 | 10,73 | 3,13 | 3,23 | 3,35 | 3,47 | 3,6 | 3,74 | 2 |
| 3050301 | 0,3 | 0,15 | 0,6 | 0,24 | 4 | 0,28 | 45 | 7,4 | 14,03 | 0,63 | 0,65 | 0,68 | 0,7 | 0,72 | 0,75 | 2 |
| 3050302 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,28 | 45 | 7,8 | 13,34 | 1,05 | 1,09 | 1,12 | 1,16 | 1,2 | 1,24 | 2 |
| 3049932 | 0,3 | 0,15 | 1,25 | 0,24 | 4 | 0,28 | 45 | 8,1 | 12,94 | 1,31 | 1,36 | 1,4 | 1,45 | 1,5 | 1,55 | 2 |
| 3050303 | 0,3 | 0,15 | 1,5 | 0,24 | 4 | 0,28 | 45 | 8,3 | 12,57 | 1,57 | 1,63 | 1,68 | 1,74 | 1,8 | 1,87 | 2 |
| 3049933 | 0,3 | 0,15 | 1,75 | 0,24 | 4 | 0,28 | 45 | 8,6 | 12,21 | 1,83 | 1,89 | 1,96 | 2,02 | 2,1 | 2,18 | 2 |
| 3050304 | 0,3 | 0,15 | 2 | 0,24 | 4 | 0,28 | 45 | 8,8 | 11,87 | 2,09 | 2,16 | 2,23 | 2,31 | 2,4 | 2,49 | 2 |
| 3049934 | 0,3 | 0,15 | 2,25 | 0,24 | 4 | 0,28 | 45 | 9,1 | 11,56 | 2,35 | 2,43 | 2,51 | 2,6 | 2,69 | 2,8 | 2 |
| 3050305 | 0,3 | 0,15 | 2,5 | 0,24 | 4 | 0,28 | 45 | 9,3 | 11,25 | 2,61 | 2,69 | 2,79 | 2,89 | 2,99 | 3,11 | 2 |
| 3050306 | 0,3 | 0,15 | 3 | 0,24 | 4 | 0,28 | 45 | 9,8 | 10,69 | 3,13 | 3,23 | 3,34 | 3,46 | 3,59 | 3,73 | 2 |
| 3050307 | 0,3 | 0,15 | 3,5 | 0,24 | 4 | 0,28 | 45 | 10,3 | 10,19 | 3,64 | 3,76 | 3,9 | 4,04 | 4,19 | 4,35 | 2 |
| 3050308 | 0,3 | 0,15 | 4 | 0,24 | 4 | 0,28 | 45 | 10,8 | 9,72 | 4,16 | 4,3 | 4,45 | 4,61 | 4,78 | 4,97 | 2 |
| 3050309 | 0,3 | 0,15 | 4,5 | 0,24 | 4 | 0,28 | 45 | 11,3 | 9,3 | 4,68 | 4,83 | 5 | 5,19 | 5,38 | 5,59 | 2 |
| 3050310 | 0,3 | 0,15 | 5 | 0,24 | 4 | 0,28 | 45 | 11,8 | 8,91 | 5,19 | 5,37 | 5,56 | 5,76 | 5,98 | 6,22 | 2 |
| 3050401 | 0,4 | 0,2 | 0,8 | 0,3 | 4 | 0,37 | 45 | 7,4 | 13,74 | 0,83 | 0,86 | 0,88 | 0,91 | 0,94 | 0,97 | 2 |
| 3050402 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,37 | 45 | 7,6 | 13,39 | 1,04 | 1,07 | 1,11 | 1,14 | 1,18 | 1,22 | 2 |
| 3050403 | 0,4 | 0,2 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,1 | 12,59 | 1,56 | 1,61 | 1,66 | 1,72 | 1,77 | 1,84 | 2 |
| 3050404 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,37 | 45 | 8,6 | 11,88 | 2,08 | 2,14 | 2,21 | 2,29 | 2,37 | 2,46 | 2 |
| 3050405 | 0,4 | 0,2 | 2,5 | 0,3 | 4 | 0,37 | 45 | 9,1 | 11,24 | 2,6 | 2,68 | 2,77 | 2,87 | 2,97 | 3,08 | 2 |
| 3050406 | 0,4 | 0,2 | 3 | 0,3 | 4 | 0,37 | 45 | 9,6 | 10,67 | 3,11 | 3,21 | 3,32 | 3,44 | 3,57 | 3,7 | 2 |
| 3050407 | 0,4 | 0,2 | 3,5 | 0,3 | 4 | 0,37 | 45 | 10,1 | 10,15 | 3,63 | 3,75 | 3,88 | 4,02 | 4,16 | 4,33 | 2 |
| 3050408 | 0,4 | 0,2 | 4 | 0,3 | 4 | 0,37 | 45 | 10,6 | 9,68 | 4,15 | 4,28 | 4,43 | 4,59 | 4,76 | 4,95 | 2 |
| 3050409 | 0,4 | 0,2 | 4,5 | 0,3 | 4 | 0,37 | 45 | 11,1 | 9,25 | 4,66 | 4,82 | 4,99 | 5,17 | 5,36 | 5,57 | 2 |
| 3050410 | 0,4 | 0,2 | 5 | 0,3 | 4 | 0,37 | 45 | 11,6 | 8,86 | 5,18 | 5,35 | 5,54 | 5,74 | 5,96 | 6,19 | 2 |
| 3050411 | 0,4 | 0,2 | 5,5 | 0,3 | 4 | 0,37 | 45 | 12,1 | 8,5 | 5,7 | 5,89 | 6,09 | 6,32 | 6,55 | 6,81 | 2 |
| 3050412 | 0,4 | 0,2 | 6 | 0,3 | 4 | 0,37 | 45 | 12,6 | 8,16 | 6,21 | 6,42 | 6,65 | 6,89 | 7,15 | 7,43 | 2 |
| 3050500 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,45 | 45 | 7,6 | 13,45 | 1,03 | 1,06 | 1,09 | 1,12 | 1,15 | 1,19 | 2 |
| 3050501 | 0,5 | 0,25 | 1,5 | 0,4 | 4 | 0,45 | 45 | 8,1 | 12,62 | 1,55 | 1,59 | 1,64 | 1,69 | 1,75 | 1,81 | 2 |
| 3050502 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,45 | 45 | 8,6 | 11,89 | 2,06 | 2,13 | 2,2 | 2,27 | 2,35 | 2,43 | 2 |
| 3049952 | 0,5 | 0,25 | 2,5 | 0,4 | 4 | 0,45 | 45 | 9,1 | 11,23 | 2,58 | 2,66 | 2,75 | 2,84 | 2,94 | 3,05 | 2 |
| 3050503 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,45 | 45 | 9,6 | 10,65 | 3,1 | 3,2 | 3,3 | 3,42 | 3,54 | 3,68 | 2 |
| 3049953 | 0,5 | 0,25 | 3,5 | 0,4 | 4 | 0,45 | 45 | 10,1 | 10,12 | 3,61 | 3,73 | 3,86 | 3,99 | 4,14 | 4,3 | 2 |
| 3050504 | 0,5 | 0,25 | 4 | 0,4 | 4 | 0,45 | 45 | 10,6 | 9,64 | 4,13 | 4,27 | 4,41 | 4,57 | 4,74 | 4,92 | 2 |
| 3049954 | 0,5 | 0,25 | 4,5 | 0,4 | 4 | 0,45 | 45 | 11,1 | 9,2 | 4,65 | 4,8 | 4,97 | 5,14 | 5,33 | 5,54 | 2 |
| 3050505 | 0,5 | 0,25 | 5 | 0,4 | 4 | 0,45 | 45 | 11,6 | 8,8 | 5,17 | 5,34 | 5,52 | 5,72 | 5,93 | 6,16 | 2 |
| 3049955 | 0,5 | 0,25 | 5,5 | 0,4 | 4 | 0,45 | 45 | 12,1 | 8,43 | 5,68 | 5,87 | 6,07 | 6,29 | 6,53 | 6,78 | 2 |

# WXS-LN-EBD

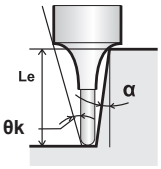
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 189 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005

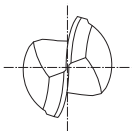
C.945

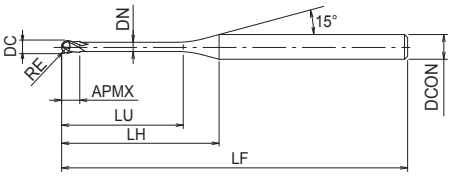
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3050506 | 0,5 | 0,25 | 6 | 0,4 | 4 | 0,45 | 45 | 12,6 | 8,1 | 6,2 | 6,41 | 6,63 | 6,87 | 7,13 | 7,41 | 2 |
| 3050507 | 0,5 | 0,25 | 7 | 0,4 | 4 | 0,45 | 45 | 13,6 | 7,49 | 7,23 | 7,48 | 7,74 | 8,02 | 8,32 | 8,65 | 2 |
| 3050508 | 0,5 | 0,25 | 8 | 0,4 | 4 | 0,45 | 45 | 14,6 | 6,98 | 8,27 | 8,55 | 8,85 | 9,17 | 9,52 | 9,89 | 2 |
| 3050509 | 0,5 | 0,25 | 9 | 0,4 | 4 | 0,45 | 45 | 15,6 | 6,52 | 9,3 | 9,62 | 9,95 | 10,32 | 10,71 | 11,14 | 2 |
| 3050510 | 0,5 | 0,25 | 10 | 0,4 | 4 | 0,45 | 45 | 16,6 | 6,13 | 10,33 | 10,68 | 11,06 | 11,47 | 11,9 | 12,38 | 2 |
| 3050601 | 0,6 | 0,3 | 1,2 | 0,5 | 4 | 0,55 | 45 | 7,6 | 13,14 | 1,24 | 1,27 | 1,3 | 1,34 | 1,38 | 1,43 | 2 |
| 3050602 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 8,4 | 11,88 | 2,06 | 2,12 | 2,19 | 2,26 | 2,34 | 2,42 | 2 |
| 3049962 | 0,6 | 0,3 | 2,5 | 0,5 | 4 | 0,55 | 45 | 8,9 | 11,21 | 2,58 | 2,66 | 2,74 | 2,84 | 2,94 | 3,04 | 2 |
| 3050603 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 9,4 | 10,61 | 3,1 | 3,19 | 3,3 | 3,41 | 3,53 | 3,66 | 2 |
| 3049963 | 0,6 | 0,3 | 3,5 | 0,5 | 4 | 0,55 | 45 | 9,9 | 10,07 | 3,61 | 3,73 | 3,85 | 3,99 | 4,13 | 4,29 | 2 |
| 3050604 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 10,4 | 9,58 | 4,13 | 4,26 | 4,41 | 4,56 | 4,73 | 4,91 | 2 |
| 3049964 | 0,6 | 0,3 | 4,5 | 0,5 | 4 | 0,55 | 45 | 10,9 | 9,13 | 4,65 | 4,8 | 4,96 | 5,14 | 5,32 | 5,53 | 2 |
| 3050605 | 0,6 | 0,3 | 5 | 0,5 | 4 | 0,55 | 45 | 11,4 | 8,73 | 5,16 | 5,33 | 5,51 | 5,71 | 5,92 | 6,15 | 2 |
| 3049965 | 0,6 | 0,3 | 5,5 | 0,5 | 4 | 0,55 | 45 | 11,9 | 8,36 | 5,68 | 5,87 | 6,07 | 6,29 | 6,52 | 6,77 | 2 |
| 3050606 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 12,4 | 8,02 | 6,2 | 6,4 | 6,62 | 6,86 | 7,12 | 7,39 | 2 |
| 3049966 | 0,6 | 0,3 | 6,5 | 0,5 | 4 | 0,55 | 45 | 12,9 | 7,7 | 6,71 | 6,94 | 7,18 | 7,44 | 7,71 | 8,02 | 2 |
| 3050607 | 0,6 | 0,3 | 7 | 0,5 | 4 | 0,55 | 45 | 13,4 | 7,41 | 7,23 | 7,47 | 7,73 | 8,01 | 8,31 | 8,64 | 2 |
| 3049967 | 0,6 | 0,3 | 7,5 | 0,5 | 4 | 0,55 | 45 | 13,9 | 7,14 | 7,75 | 8,01 | 8,29 | 8,59 | 8,91 | 9,26 | 2 |
| 3050608 | 0,6 | 0,3 | 8 | 0,5 | 4 | 0,55 | 45 | 14,4 | 6,89 | 8,26 | 8,54 | 8,84 | 9,16 | 9,51 | 9,88 | 2 |
| 3049968 | 0,6 | 0,3 | 8,5 | 0,5 | 4 | 0,55 | 45 | 14,9 | 6,66 | 8,78 | 9,08 | 9,39 | 9,74 | 10,1 | 10,5 | 2 |
| 3050609 | 0,6 | 0,3 | 9 | 0,5 | 4 | 0,55 | 45 | 15,4 | 6,44 | 9,3 | 9,61 | 9,95 | 10,31 | 10,7 | 11,12 | 2 |
| 3049969 | 0,6 | 0,3 | 9,5 | 0,5 | 4 | 0,55 | 45 | 15,9 | 6,23 | 9,81 | 10,15 | 10,5 | 10,89 | 11,3 | 11,75 | 2 |
| 3050610 | 0,6 | 0,3 | 10 | 0,5 | 4 | 0,55 | 45 | 16,4 | 6,04 | 10,33 | 10,68 | 11,06 | 11,46 | 11,9 | 12,37 | 2 |
| 3050611 | 0,6 | 0,3 | 11 | 0,5 | 4 | 0,55 | 50 | 17,4 | 5,69 | 11,37 | 11,75 | 12,16 | 12,61 | 13,09 | 13,61 | 2 |
| 3050612 | 0,6 | 0,3 | 12 | 0,5 | 4 | 0,55 | 50 | 18,4 | 5,38 | 12,4 | 12,82 | 13,27 | 13,76 | 14,28 | 14,85 | 2 |
| 3050802 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 8,1 | 11,86 | 2,06 | 2,12 | 2,18 | 2,25 | 2,32 | 2,4 | 2 |
| 3050803 | 0,8 | 0,4 | 3 | 0,6 | 4 | 0,75 | 45 | 9,1 | 10,52 | 3,09 | 3,19 | 3,29 | 3,4 | 3,51 | 3,64 | 2 |
| 3050804 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 10,1 | 9,45 | 4,13 | 4,26 | 4,4 | 4,55 | 4,71 | 4,88 | 2 |
| 3050805 | 0,8 | 0,4 | 5 | 0,6 | 4 | 0,75 | 45 | 11,1 | 8,58 | 5,16 | 5,33 | 5,5 | 5,7 | 5,9 | 6,13 | 2 |
| 3050806 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 12,1 | 7,85 | 6,19 | 6,4 | 6,61 | 6,85 | 7,1 | 7,37 | 2 |
| 3050807 | 0,8 | 0,4 | 7 | 0,6 | 4 | 0,75 | 45 | 13,1 | 7,24 | 7,23 | 7,47 | 7,72 | 8 | 8,29 | 8,61 | 2 |
| 3050808 | 0,8 | 0,4 | 8 | 0,6 | 4 | 0,75 | 45 | 14,1 | 6,71 | 8,26 | 8,54 | 8,83 | 9,15 | 9,49 | 9,86 | 2 |
| 3050810 | 0,8 | 0,4 | 10 | 0,6 | 4 | 0,75 | 45 | 16,1 | 5,86 | 10,33 | 10,67 | 11,05 | 11,45 | 11,88 | 12,34 | 2 |
| 3050812 | 0,8 | 0,4 | 12 | 0,6 | 4 | 0,75 | 50 | 18,1 | 5,2 | 12,4 | 12,81 | 13,26 | 13,75 | 14,27 | 14,83 | 2 |
| 3051002 | 1 | 0,5 | 2 | 0,8 | 4 | 0,95 | 45 | 7,7 | 11,84 | 2,06 | 2,11 | 2,17 | 2,23 | 2,3 | 2,37 | 2 |
| 3051003 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 8,7 | 10,43 | 3,09 | 3,18 | 3,28 | 3,38 | 3,49 | 3,62 | 2 |
| 3051004 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,7 | 9,32 | 4,12 | 4,25 | 4,39 | 4,53 | 4,69 | 4,86 | 2 |
| 3051005 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 10,7 | 8,41 | 5,16 | 5,32 | 5,49 | 5,68 | 5,88 | 6,1 | 2 |
| 3051006 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 11,7 | 7,67 | 6,19 | 6,39 | 6,6 | 6,83 | 7,08 | 7,35 | 2 |
| 3051007 | 1 | 0,5 | 7 | 0,8 | 4 | 0,95 | 45 | 12,7 | 7,05 | 7,22 | 7,46 | 7,71 | 7,98 | 8,27 | 8,59 | 2 |
| 3051008 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 13,7 | 6,52 | 8,26 | 8,53 | 8,82 | 9,13 | 9,47 | 9,83 | 2 |
| 3051009 | 1 | 0,5 | 9 | 0,8 | 4 | 0,95 | 45 | 14,7 | 6,06 | 9,29 | 9,6 | 9,93 | 10,28 | 10,66 | 11,08 | 2 |
| 3051010 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 15,7 | 5,66 | 10,33 | 10,67 | 11,04 | 11,43 | 11,86 | 12,32 | 2 |
| 3051012 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 17,7 | 5,01 | 12,39 | 12,81 | 13,25 | 13,73 | 14,25 | 14,81 | 2 |
| 3051014 | 1 | 0,5 | 14 | 0,8 | 4 | 0,95 | 50 | 19,7 | 4,49 | 14,46 | 14,95 | 15,47 | 16,03 | 16,64 | 17,29 | 2 |
| 3051016 | 1 | 0,5 | 16 | 0,8 | 4 | 0,95 | 50 | 21,7 | 4,06 | 16,53 | 17,09 | 17,69 | 18,33 | 19,03 | 19,78 | 2 |

# WXS-LN-EBD

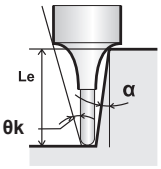
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 189 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005

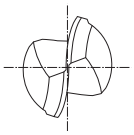
C.945

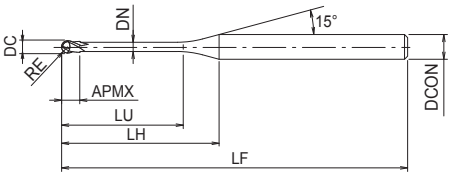
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3051018 | 1 | 0,5 | 18 | 0,8 | 4 | 0,95 | 55 | 23,7 | 3,71 | 18,59 | 19,23 | 19,9 | 20,63 | 21,41 | 22,26 | 2 |
| 3051020 | 1 | 0,5 | 20 | 0,8 | 4 | 0,95 | 55 | 25,7 | 3,42 | 20,66 | 21,36 | 22,12 | 22,93 | 23,8 | 24,75 | 2 |
| 3051022 | 1 | 0,5 | 22 | 0,8 | 4 | 0,95 | 60 | 27,7 | 3,17 | 22,73 | 23,5 | 24,33 | 25,23 | 26,19 | 27,24 | 2 |
| 3051202 | 1,2 | 0,6 | 2,4 | 1 | 4 | 1,15 | 45 | 7,8 | 11,03 | 2,51 | 2,61 | 2,7 | 2,78 | 2,87 | 2,96 | 2 |
| 3051204 | 1,2 | 0,6 | 4 | 1 | 4 | 1,15 | 45 | 9,4 | 9,07 | 4,19 | 4,34 | 4,48 | 4,62 | 4,78 | 4,95 | 2 |
| 3051206 | 1,2 | 0,6 | 6 | 1 | 4 | 1,15 | 45 | 11,4 | 7,41 | 6,27 | 6,48 | 6,69 | 6,92 | 7,17 | 7,44 | 2 |
| 3051208 | 1,2 | 0,6 | 8 | 1 | 4 | 1,15 | 45 | 13,4 | 6,26 | 8,35 | 8,62 | 8,91 | 9,22 | 9,56 | 9,93 | 2 |
| 3051210 | 1,2 | 0,6 | 10 | 1 | 4 | 1,15 | 45 | 15,4 | 5,42 | 10,42 | 10,76 | 11,13 | 11,52 | 11,95 | 12,41 | 2 |
| 3051212 | 1,2 | 0,6 | 12 | 1 | 4 | 1,15 | 45 | 17,4 | 4,78 | 12,49 | 12,9 | 13,34 | 13,82 | 14,34 | 14,9 | 2 |
| 3051214 | 1,2 | 0,6 | 14 | 1 | 4 | 1,15 | 50 | 19,4 | 4,27 | 14,55 | 15,04 | 15,56 | 16,12 | 16,73 | 17,38 | 2 |
| 3051216 | 1,2 | 0,6 | 16 | 1 | 4 | 1,15 | 50 | 21,4 | 3,86 | 16,62 | 17,18 | 17,78 | 18,42 | 19,12 | 19,87 | 2 |
| 3051218 | 1,2 | 0,6 | 18 | 1 | 4 | 1,15 | 55 | 23,4 | 3,52 | 18,69 | 19,32 | 19,99 | 20,72 | 21,51 | 22,36 | 2 |
| 3051220 | 1,2 | 0,6 | 20 | 1 | 4 | 1,15 | 55 | 25,4 | 3,24 | 20,75 | 21,46 | 22,21 | 23,02 | 23,9 | 24,84 | 2 |
| 3051503 | 1,5 | 0,75 | 3 | 1,2 | 4 | 1,45 | 45 | 7,9 | 10,01 | 3,13 | 3,25 | 3,35 | 3,45 | 3,56 | 3,67 | 2 |
| 3051504 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,9 | 8,8 | 4,18 | 4,33 | 4,46 | 4,6 | 4,75 | 4,92 | 2 |
| 3051506 | 1,5 | 0,75 | 6 | 1,2 | 4 | 1,45 | 45 | 10,9 | 7,08 | 6,27 | 6,47 | 6,68 | 6,9 | 7,14 | 7,4 | 2 |
| 3051508 | 1,5 | 0,75 | 8 | 1,2 | 4 | 1,45 | 45 | 12,9 | 5,92 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| 3051510 | 1,5 | 0,75 | 10 | 1,2 | 4 | 1,45 | 45 | 14,9 | 5,09 | 10,41 | 10,75 | 11,11 | 11,5 | 11,92 | 12,38 | 2 |
| 3051512 | 1,5 | 0,75 | 12 | 1,2 | 4 | 1,45 | 45 | 16,9 | 4,46 | 12,48 | 12,89 | 13,33 | 13,8 | 14,31 | 14,86 | 2 |
| 3051514 | 1,5 | 0,75 | 14 | 1,2 | 4 | 1,45 | 50 | 18,9 | 3,96 | 14,55 | 15,03 | 15,55 | 16,1 | 16,7 | 17,35 | 2 |
| 3051516 | 1,5 | 0,75 | 16 | 1,2 | 4 | 1,45 | 50 | 20,9 | 3,57 | 16,62 | 17,17 | 17,76 | 18,4 | 19,09 | 19,83 | 2 |
| 3051518 | 1,5 | 0,75 | 18 | 1,2 | 4 | 1,45 | 55 | 22,9 | 3,25 | 18,68 | 19,31 | 19,98 | 20,7 | 21,48 | 22,32 | 2 |
| 3051520 | 1,5 | 0,75 | 20 | 1,2 | 4 | 1,45 | 55 | 24,9 | 2,98 | 20,75 | 21,45 | 22,19 | 23 | 23,87 | - | 2 |
| 3051522 | 1,5 | 0,75 | 22 | 1,2 | 4 | 1,45 | 60 | 26,9 | 2,75 | 22,82 | 23,59 | 24,41 | 25,3 | 26,26 | - | 2 |
| 3051530 | 1,5 | 0,75 | 30 | 1,2 | 4 | 1,45 | 70 | 34,9 | 2,1 | 31,09 | 32,14 | 33,28 | 34,5 | - | - | 2 |
| 3051608 | 1,6 | 0,8 | 8 | 1,3 | 4 | 1,55 | 45 | 12,7 | 5,8 | 8,34 | 8,61 | 8,89 | 9,19 | 9,52 | 9,88 | 2 |
| 3051612 | 1,6 | 0,8 | 12 | 1,3 | 4 | 1,55 | 45 | 16,7 | 4,34 | 12,48 | 12,89 | 13,32 | 13,79 | 14,3 | 14,85 | 2 |
| 3051616 | 1,6 | 0,8 | 16 | 1,3 | 4 | 1,55 | 50 | 20,7 | 3,47 | 16,61 | 17,16 | 17,76 | 18,39 | 19,08 | 19,82 | 2 |
| 3051620 | 1,6 | 0,8 | 20 | 1,3 | 4 | 1,55 | 55 | 24,7 | 2,89 | 20,75 | 21,44 | 22,19 | 22,99 | 23,86 | - | 2 |
| 3052004 | 2 | 1 | 4 | 1,6 | 4 | 1,95 | 45 | 8,3 | 7,87 | 4,23 | 4,44 | 4,66 | 4,86 | 5,06 | 5,26 | 2 |
| 3052006 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 45 | 10,3 | 6,19 | 6,36 | 6,67 | 6,96 | 7,23 | 7,49 | 7,76 | 2 |
| 3052008 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 45 | 12,3 | 5,1 | 8,48 | 8,87 | 9,22 | 9,55 | 9,88 | 10,24 | 2 |
| 3052010 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 45 | 14,3 | 4,33 | 10,59 | 11,05 | 11,45 | 11,85 | 12,27 | 12,73 | 2 |
| 3052012 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 45 | 16,3 | 3,77 | 12,69 | 13,21 | 13,67 | 14,15 | 14,66 | 15,22 | 2 |
| 3052014 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 18,3 | 3,33 | 14,78 | 15,36 | 15,89 | 16,45 | 17,05 | 17,7 | 2 |
| 3052016 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 20,3 | 2,98 | 16,88 | 17,51 | 18,1 | 18,75 | 19,44 | - | 2 |
| 3052018 | 2 | 1 | 18 | 1,6 | 4 | 1,95 | 55 | 22,3 | 2,7 | 18,96 | 19,65 | 20,32 | 21,04 | 21,83 | - | 2 |
| 3052020 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 55 | 24,3 | 2,47 | 21,05 | 21,78 | 22,54 | 23,34 | - | - | 2 |
| 3052022 | 2 | 1 | 22 | 1,6 | 4 | 1,95 | 60 | 26,3 | 2,27 | 23,13 | 23,92 | 24,75 | 25,64 | - | - | 2 |
| 3052025 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 65 | 29,3 | 2,03 | 26,24 | 27,13 | 28,08 | 29,09 | - | - | 2 |
| 3052030 | 2 | 1 | 30 | 1,6 | 4 | 1,95 | 70 | 34,3 | 1,73 | 31,42 | 32,48 | 33,62 | - | - | - | 2 |
| 3052035 | 2 | 1 | 35 | 1,6 | 4 | 1,95 | 70 | 39,3 | 1,5 | 36,59 | 37,83 | 39,16 | - | - | - | 2 |
| 3052040 | 2 | 1 | 40 | 1,6 | 4 | 1,95 | 80 | 44,3 | 1,33 | 41,76 | 43,18 | - | - | - | - | 2 |
| 3052510 | 2,5 | 1,25 | 10 | 2 | 4 | 2,35 | 45 | 13,1 | 3,63 | 10,46 | 10,85 | 11,21 | 11,59 | 11,99 | 12,43 | 2 |
| 3052515 | 2,5 | 1,25 | 15 | 2 | 4 | 2,35 | 50 | 18,1 | 2,55 | 15,67 | 16,21 | 16,75 | 17,34 | 17,96 | - | 2 |
| 3052520 | 2,5 | 1,25 | 20 | 2 | 4 | 2,35 | 55 | 23,1 | 1,97 | 20,87 | 21,56 | 22,3 | - | - | - | 2 |

# WXS-LN-EBD

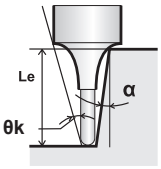


**Milling | Solid carbide**






- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 189 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005

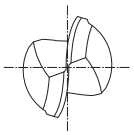
C.945

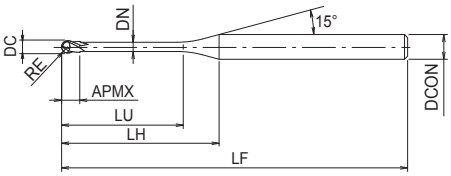
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3052525 | 2,5 | 1,25 | 25 | 2 | 4 | 2,35 | 65 | 28,1 | 1,6 | 26,04 | 26,91 | 27,84 | - | - | - | 2 |
| 3052530 | 2,5 | 1,25 | 30 | 2 | 4 | 2,35 | 70 | 33,1 | 1,35 | 31,21 | 32,26 | - | - | - | - | 2 |
| 3052535 | 2,5 | 1,25 | 35 | 2 | 4 | 2,35 | 70 | 38,1 | 1,17 | 36,38 | 37,61 | - | - | - | - | 2 |
| 3053006 | 3 | 1,5 | 6 | 2,4 | 6 | 2,85 | 50 | 11,9 | 8,17 | 6,25 | 6,49 | 6,72 | 6,95 | 7,17 | 7,4 | 2 |
| 3053008 | 3 | 1,5 | 8 | 2,4 | 6 | 2,85 | 50 | 13,9 | 6,88 | 8,35 | 8,67 | 8,97 | 9,25 | 9,55 | 9,88 | 2 |
| 3053010 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 50 | 15,9 | 5,94 | 10,44 | 10,83 | 11,19 | 11,55 | 11,94 | 12,37 | 2 |
| 3053012 | 3 | 1,5 | 12 | 2,4 | 6 | 2,85 | 55 | 17,9 | 5,22 | 12,53 | 12,98 | 13,4 | 13,85 | 14,33 | 14,86 | 2 |
| 3053014 | 3 | 1,5 | 14 | 2,4 | 6 | 2,85 | 55 | 19,9 | 4,66 | 14,62 | 15,13 | 15,62 | 16,15 | 16,72 | 17,34 | 2 |
| 3053015 | 3 | 1,5 | 15 | 2,4 | 6 | 2,85 | 55 | 20,9 | 4,42 | 15,66 | 16,2 | 16,73 | 17,3 | 17,92 | 18,59 | 2 |
| 3053016 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 21,9 | 4,21 | 16,7 | 17,26 | 17,84 | 18,45 | 19,11 | 19,83 | 2 |
| 3053020 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 60 | 25,9 | 3,52 | 20,86 | 21,54 | 22,27 | 23,05 | 23,89 | 24,8 | 2 |
| 3053025 | 3 | 1,5 | 25 | 2,4 | 6 | 2,85 | 65 | 30,9 | 2,92 | 26,04 | 26,89 | 27,81 | 28,8 | 29,86 | - | 2 |
| 3053030 | 3 | 1,5 | 30 | 2,4 | 6 | 2,85 | 70 | 35,9 | 2,5 | 31,2 | 32,24 | 33,35 | 34,55 | - | - | 2 |
| 3053035 | 3 | 1,5 | 35 | 2,4 | 6 | 2,85 | 80 | 40,9 | 2,18 | 36,37 | 37,59 | 38,89 | 40,3 | - | - | 2 |
| 3053040 | 3 | 1,5 | 40 | 2,4 | 6 | 2,85 | 90 | 45,9 | 1,94 | 41,54 | 42,94 | 44,43 | - | - | - | 2 |
| 3053515 | 3,5 | 1,75 | 15 | 2,8 | 6 | 3,35 | 55 | 20 | 3,93 | 15,65 | 16,18 | 16,7 | 17,26 | 17,87 | 18,53 | 2 |
| 3053520 | 3,5 | 1,75 | 20 | 2,8 | 6 | 3,35 | 60 | 25 | 3,08 | 20,85 | 21,53 | 22,24 | 23,01 | 23,84 | 24,74 | 2 |
| 3053525 | 3,5 | 1,75 | 25 | 2,8 | 6 | 3,35 | 65 | 30 | 2,54 | 26,03 | 26,87 | 27,78 | 28,76 | 29,82 | - | 2 |
| 3053530 | 3,5 | 1,75 | 30 | 2,8 | 6 | 3,35 | 70 | 35 | 2,16 | 31,2 | 32,22 | 33,32 | 34,51 | - | - | 2 |
| 3053535 | 3,5 | 1,75 | 35 | 2,8 | 6 | 3,35 | 80 | 40 | 1,88 | 36,36 | 37,57 | 38,87 | - | - | - | 2 |
| 3053540 | 3,5 | 1,75 | 40 | 2,8 | 6 | 3,35 | 90 | 45 | 1,66 | 41,53 | 42,92 | 44,41 | - | - | - | 2 |
| 3053545 | 3,5 | 1,75 | 45 | 2,8 | 6 | 3,35 | 90 | 50 | 1,49 | 46,7 | 48,27 | - | - | - | - | 2 |
| 3054008 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 55 | 12,1 | 5,67 | 8,33 | 8,63 | 8,91 | 9,18 | 9,46 | 9,77 | 2 |
| 3054010 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 14,1 | 4,74 | 10,42 | 10,79 | 11,13 | 11,48 | 11,85 | 12,25 | 2 |
| 3054012 | 4 | 2 | 12 | 3,2 | 6 | 3,85 | 60 | 16,1 | 4,07 | 12,51 | 12,95 | 13,35 | 13,78 | 14,24 | 14,74 | 2 |
| 3054015 | 4 | 2 | 15 | 3,2 | 6 | 3,85 | 60 | 19,1 | 3,36 | 15,64 | 16,16 | 16,67 | 17,23 | 17,82 | 18,47 | 2 |
| 3054016 | 4 | 2 | 16 | 3,2 | 6 | 3,85 | 60 | 20,1 | 3,18 | 16,68 | 17,23 | 17,78 | 18,38 | 19,02 | 19,71 | 2 |
| 3054020 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 24,1 | 2,6 | 20,84 | 21,51 | 22,22 | 22,98 | 23,8 | - | 2 |
| 3054025 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 70 | 29,1 | 2,12 | 26,02 | 26,86 | 27,76 | 28,72 | - | - | 2 |
| 3054030 | 4 | 2 | 30 | 3,2 | 6 | 3,85 | 80 | 34,1 | 1,79 | 31,19 | 32,21 | 33,3 | - | - | - | 2 |
| 3054035 | 4 | 2 | 35 | 3,2 | 6 | 3,85 | 80 | 39,1 | 1,55 | 36,36 | 37,55 | 38,84 | - | - | - | 2 |
| 3054040 | 4 | 2 | 40 | 3,2 | 6 | 3,85 | 90 | 44,1 | 1,36 | 41,52 | 42,9 | - | - | - | - | 2 |
| 3054045 | 4 | 2 | 45 | 3,2 | 6 | 3,85 | 90 | 49,1 | 1,22 | 46,69 | 48,25 | - | - | - | - | 2 |
| 3054050 | 4 | 2 | 50 | 3,2 | 6 | 3,85 | 100 | 54,1 | 1,1 | 51,86 | 53,6 | - | - | - | - | 2 |
| 3055010 | 5 | 2,5 | 10 | 4 | 6 | 4,85 | 60 | 12,2 | 2,96 | 10,4 | 10,75 | 11,08 | 11,4 | 11,75 | - | 2 |
| 3055015 | 5 | 2,5 | 15 | 4 | 6 | 4,85 | 60 | 17,2 | 1,96 | 15,62 | 16,13 | 16,62 | - | - | - | 2 |
| 3055020 | 5 | 2,5 | 20 | 4 | 6 | 4,85 | 70 | 22,2 | 1,46 | 20,82 | 21,47 | - | - | - | - | 2 |
| 3055025 | 5 | 2,5 | 25 | 4 | 6 | 4,85 | 70 | 27,2 | 1,16 | 26 | 26,82 | - | - | - | - | 2 |
| 3055030 | 5 | 2,5 | 30 | 4 | 6 | 4,85 | 80 | 32,2 | 0,97 | 31,17 | - | - | - | - | - | 2 |
| 3055035 | 5 | 2,5 | 35 | 4 | 6 | 4,85 | 80 | 37,2 | 0,83 | 36,34 | - | - | - | - | - | 2 |
| 3055040 | 5 | 2,5 | 40 | 4 | 6 | 4,85 | 90 | 42,2 | 0,72 | 41,51 | - | - | - | - | - | 2 |
| 3055045 | 5 | 2,5 | 45 | 4 | 6 | 4,85 | 100 | 47,2 | 0,64 | 46,68 | - | - | - | - | - | 2 |
| 3055050 | 5 | 2,5 | 50 | 4 | 6 | 4,85 | 100 | 52,2 | 0,58 | 51,84 | - | - | - | - | - | 2 |
| 3056012 | 6 | 3 | 12 | 4,8 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | - | 2 |
| 3056020 | 6 | 3 | 20 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | - | 2 |
| 3056025 | 6 | 3 | 25 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | - | 2 |

# WXS-LN-EBD

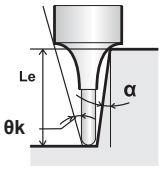
INDEX

**Milling | Solid carbide**





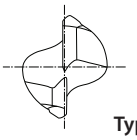

- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 189 sizes



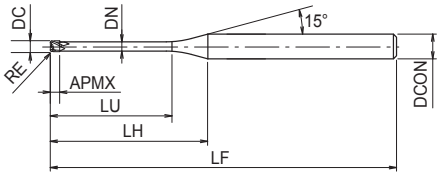
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 3056030 | 6 | 3 | 30 | 4,8 | 6 | 5,85 | 80 | 2 |
| 3056035 | 6 | 3 | 35 | 4,8 | 6 | 5,85 | 80 | 2 |
| 3056040 | 6 | 3 | 40 | 4,8 | 6 | 5,85 | 90 | 2 |
| 3056045 | 6 | 3 | 45 | 4,8 | 6 | 5,85 | 100 | 2 |
| 3056050 | 6 | 3 | 50 | 4,8 | 6 | 5,85 | 120 | 2 |

# WXS-CPR

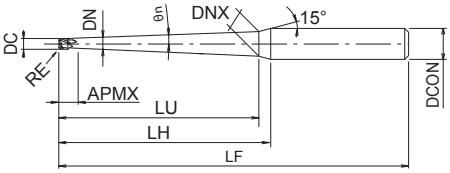
**Milling | Solid carbide**



Type 1




Type 2




- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, corner radius, for mould & die
- 247 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

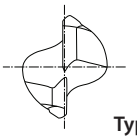
C.951

| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3100201 | 0,2 | 0,05 | 0 | 0,5 | 0,15 | 4 | 0,18 | - | 50 | 7,6 | 2 | 1 |
| 3100202 | 0,2 | 0,05 | 0 | 1 | 0,15 | 4 | 0,18 | - | 50 | 8,1 | 2 | 1 |
| 3100203 | 0,2 | 0,05 | 1 | 1 | 0,15 | 4 | 0,18 | 0,22 | 50 | 8,2 | 2 | 2 |
| 3100204 | 0,2 | 0,05 | 1 | 2 | 0,15 | 4 | 0,18 | 0,26 | 50 | 9,1 | 2 | 2 |
| 3100301 | 0,3 | 0,05 | 0 | 1 | 0,25 | 4 | 0,28 | - | 50 | 7,9 | 2 | 1 |
| 3100302 | 0,3 | 0,05 | 0 | 2 | 0,25 | 4 | 0,28 | - | 50 | 8,9 | 2 | 1 |
| 3100303 | 0,3 | 0,05 | 1 | 2 | 0,25 | 4 | 0,28 | 0,35 | 50 | 9 | 2 | 2 |
| 3100304 | 0,3 | 0,05 | 1 | 3 | 0,25 | 4 | 0,28 | 0,39 | 50 | 9,9 | 2 | 2 |
| 3100401 | 0,4 | 0,05 | 0 | 1 | 0,3 | 4 | 0,37 | - | 50 | 8,1 | 2 | 1 |
| 3100402 | 0,4 | 0,05 | 0 | 1,5 | 0,3 | 4 | 0,37 | - | 50 | 8,6 | 2 | 1 |
| 3100403 | 0,4 | 0,05 | 0 | 2 | 0,3 | 4 | 0,37 | - | 50 | 9,1 | 2 | 1 |
| 3100404 | 0,4 | 0,05 | 0 | 3 | 0,3 | 4 | 0,37 | - | 50 | 10,1 | 2 | 1 |
| 3100409 | 0,4 | 0,05 | 1 | 3 | 0,3 | 4 | 0,37 | 0,48 | 50 | 9,7 | 2 | 2 |
| 3100405 | 0,4 | 0,05 | 0 | 4 | 0,3 | 4 | 0,37 | - | 50 | 11,1 | 2 | 1 |
| 3100410 | 0,4 | 0,05 | 1 | 4 | 0,3 | 4 | 0,37 | 0,51 | 50 | 10,7 | 2 | 2 |
| 3100406 | 0,4 | 0,1 | 0 | 2 | 0,3 | 4 | 0,37 | - | 50 | 9,1 | 2 | 1 |
| 3100407 | 0,4 | 0,1 | 0 | 3 | 0,3 | 4 | 0,37 | - | 50 | 10,1 | 2 | 1 |
| 3100415 | 0,4 | 0,1 | 1 | 3 | 0,3 | 4 | 0,37 | 0,48 | 50 | 9,7 | 2 | 2 |
| 3100408 | 0,4 | 0,1 | 0 | 4 | 0,3 | 4 | 0,37 | - | 50 | 11,1 | 2 | 1 |
| 3100416 | 0,4 | 0,1 | 1 | 4 | 0,3 | 4 | 0,37 | 0,51 | 50 | 10,7 | 2 | 2 |
| 3100501 | 0,5 | 0,05 | 0 | 1 | 0,4 | 4 | 0,46 | - | 50 | 8,1 | 2 | 1 |
| 3100502 | 0,5 | 0,05 | 0 | 2 | 0,4 | 4 | 0,46 | - | 50 | 9,1 | 2 | 1 |
| 3100503 | 0,5 | 0,05 | 0 | 3 | 0,4 | 4 | 0,46 | - | 50 | 10,1 | 2 | 1 |
| 3100513 | 0,5 | 0,05 | 1 | 3 | 0,4 | 4 | 0,46 | 0,58 | 50 | 9,5 | 2 | 2 |
| 3100504 | 0,5 | 0,05 | 0 | 4 | 0,4 | 4 | 0,46 | - | 50 | 11,1 | 2 | 1 |
| 3100505 | 0,5 | 0,05 | 0 | 5 | 0,4 | 4 | 0,46 | - | 50 | 12,1 | 2 | 1 |
| 3100514 | 0,5 | 0,05 | 1 | 5 | 0,4 | 4 | 0,46 | 0,64 | 50 | 11,4 | 2 | 2 |
| 3100506 | 0,5 | 0,05 | 0 | 6 | 0,4 | 4 | 0,46 | - | 50 | 13,1 | 2 | 1 |
| 3100515 | 0,5 | 0,05 | 1 | 8 | 0,4 | 4 | 0,46 | 0,75 | 50 | 14,2 | 2 | 2 |
| 3100516 | 0,5 | 0,05 | 1 | 10 | 0,4 | 4 | 0,46 | 0,81 | 50 | 16,1 | 2 | 2 |
| 3100517 | 0,5 | 0,05 | 1 | 12 | 0,4 | 4 | 0,46 | 0,88 | 50 | 18 | 2 | 2 |
| 3100507 | 0,5 | 0,1 | 0 | 1 | 0,4 | 4 | 0,46 | - | 50 | 8,1 | 2 | 1 |
| 3100508 | 0,5 | 0,1 | 0 | 2 | 0,4 | 4 | 0,46 | - | 50 | 9,1 | 2 | 1 |
| 3100509 | 0,5 | 0,1 | 0 | 3 | 0,4 | 4 | 0,46 | - | 50 | 10,1 | 2 | 1 |
| 3100527 | 0,5 | 0,1 | 1 | 3 | 0,4 | 4 | 0,46 | 0,58 | 50 | 9,5 | 2 | 2 |
| 3100510 | 0,5 | 0,1 | 0 | 4 | 0,4 | 4 | 0,46 | - | 50 | 11,1 | 2 | 1 |
| 3100511 | 0,5 | 0,1 | 0 | 5 | 0,4 | 4 | 0,46 | - | 50 | 12,1 | 2 | 1 |
| 3100528 | 0,5 | 0,1 | 1 | 5 | 0,4 | 4 | 0,46 | 0,64 | 50 | 11,4 | 2 | 2 |
| 3100512 | 0,5 | 0,1 | 0 | 6 | 0,4 | 4 | 0,46 | - | 50 | 13,1 | 2 | 1 |
| 3100529 | 0,5 | 0,1 | 1 | 8 | 0,4 | 4 | 0,46 | 0,75 | 50 | 14,2 | 2 | 2 |
| 3100530 | 0,5 | 0,1 | 1 | 10 | 0,4 | 4 | 0,46 | 0,81 | 50 | 16,1 | 2 | 2 |
| 3100531 | 0,5 | 0,1 | 1 | 12 | 0,4 | 4 | 0,46 | 0,88 | 50 | 18 | 2 | 2 |
| 3100601 | 0,6 | 0,1 | 0 | 2 | 0,48 | 4 | 0,55 | - | 50 | 8,9 | 2 | 1 |
| 3100602 | 0,6 | 0,1 | 0 | 4 | 0,48 | 4 | 0,55 | - | 50 | 10,9 | 2 | 1 |
| 3100603 | 0,6 | 0,1 | 0 | 6 | 0,48 | 4 | 0,55 | - | 50 | 12,9 | 2 | 1 |
| 3100806 | 0,8 | 0,05 | 1 | 5 | 0,65 | 4 | 0,75 | 0,93 | 50 | 11,2 | 2 | 2 |

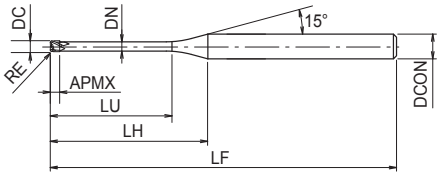
# WXS-CPR

**Milling | Solid carbide**

INDEX



Type 1

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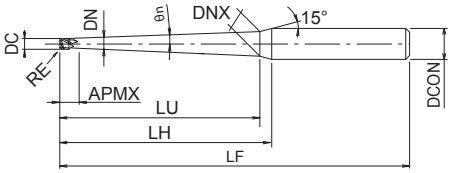



- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, corner radius, for mould & die
- 247 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

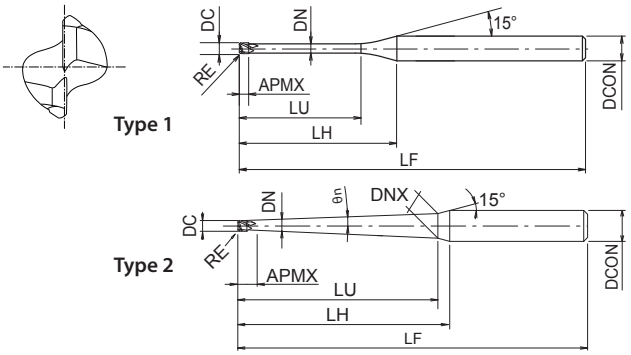
CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

C.951

| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3100807 | 0,8 | 0,05 | 1 | 8 | 0,65 | 4 | 0,75 | 1,04 | 50 | 14 | 2 | 2 |
| 3100801 | 0,8 | 0,1 | 0 | 4 | 0,65 | 4 | 0,75 | - | 50 | 10,5 | 2 | 1 |
| 3100810 | 0,8 | 0,1 | 1 | 5 | 0,65 | 4 | 0,75 | 0,93 | 50 | 11,2 | 2 | 2 |
| 3100802 | 0,8 | 0,1 | 0 | 6 | 0,65 | 4 | 0,75 | - | 50 | 12,5 | 2 | 1 |
| 3100811 | 0,8 | 0,1 | 1 | 8 | 0,65 | 4 | 0,75 | 1,04 | 50 | 14 | 2 | 2 |
| 3100803 | 0,8 | 0,2 | 0 | 4 | 0,65 | 4 | 0,75 | - | 50 | 10,5 | 2 | 1 |
| 3100814 | 0,8 | 0,2 | 1 | 5 | 0,65 | 4 | 0,75 | 0,93 | 50 | 11,2 | 2 | 2 |
| 3100804 | 0,8 | 0,2 | 0 | 6 | 0,65 | 4 | 0,75 | - | 50 | 12,5 | 2 | 1 |
| 3100805 | 0,8 | 0,2 | 0 | 8 | 0,65 | 4 | 0,75 | - | 50 | 14,5 | 2 | 1 |
| 3100815 | 0,8 | 0,2 | 1 | 8 | 0,65 | 4 | 0,75 | 1,04 | 50 | 14 | 2 | 2 |
| 3101001 | 1 | 0,05 | 0 | 4 | 0,8 | 4 | 0,94 | - | 50 | 10,1 | 2 | 1 |
| 3101002 | 1 | 0,05 | 0 | 6 | 0,8 | 4 | 0,94 | - | 50 | 12,1 | 2 | 1 |
| 3101023 | 1 | 0,05 | 1 | 6 | 0,8 | 4 | 0,94 | 1,16 | 50 | 11,8 | 2 | 2 |
| 3101003 | 1 | 0,05 | 0 | 8 | 0,8 | 4 | 0,94 | - | 50 | 14,1 | 2 | 1 |
| 3101004 | 1 | 0,05 | 0 | 10 | 0,8 | 4 | 0,94 | - | 50 | 16,1 | 2 | 1 |
| 3101024 | 1 | 0,05 | 1 | 10 | 0,8 | 4 | 0,94 | 1,29 | 60 | 15,5 | 2 | 2 |
| 3101005 | 1 | 0,05 | 0 | 12 | 0,8 | 4 | 0,94 | - | 50 | 18,1 | 2 | 1 |
| 3101025 | 1 | 0,05 | 1 | 15 | 0,8 | 4 | 0,94 | 1,46 | 60 | 20,2 | 2 | 2 |
| 3101026 | 1 | 0,05 | 1 | 20 | 0,8 | 4 | 0,94 | 1,61 | 60 | 24,9 | 2 | 2 |
| 3101027 | 1 | 0,05 | 1 | 25 | 0,8 | 4 | 0,94 | 1,79 | 70 | 29,6 | 2 | 2 |
| 3101028 | 1 | 0,05 | 1 | 30 | 0,8 | 4 | 0,94 | 1,96 | 80 | 34,3 | 2 | 2 |
| 3101029 | 1 | 0,05 | 1 | 35 | 0,8 | 4 | 0,94 | 2,13 | 80 | 39 | 2 | 2 |
| 3101006 | 1 | 0,1 | 0 | 4 | 0,8 | 4 | 0,94 | - | 50 | 10,1 | 2 | 1 |
| 3101007 | 1 | 0,1 | 0 | 6 | 0,8 | 4 | 0,94 | - | 50 | 12,1 | 2 | 1 |
| 3101032 | 1 | 0,1 | 1 | 6 | 0,8 | 4 | 0,94 | 1,16 | 50 | 11,8 | 2 | 2 |
| 3101008 | 1 | 0,1 | 0 | 8 | 0,8 | 4 | 0,94 | - | 50 | 14,1 | 2 | 1 |
| 3101009 | 1 | 0,1 | 0 | 10 | 0,8 | 4 | 0,94 | - | 50 | 16,1 | 2 | 1 |
| 3101033 | 1 | 0,1 | 1 | 10 | 0,8 | 4 | 0,94 | 1,29 | 60 | 15,5 | 2 | 2 |
| 3101010 | 1 | 0,1 | 0 | 12 | 0,8 | 4 | 0,94 | - | 50 | 18,1 | 2 | 1 |
| 3101034 | 1 | 0,1 | 1 | 15 | 0,8 | 4 | 0,94 | 1,46 | 60 | 20,2 | 2 | 2 |
| 3101035 | 1 | 0,1 | 1 | 20 | 0,8 | 4 | 0,94 | 1,61 | 60 | 24,9 | 2 | 2 |
| 3101036 | 1 | 0,1 | 1 | 25 | 0,8 | 4 | 0,94 | 1,79 | 70 | 29,6 | 2 | 2 |
| 3101037 | 1 | 0,1 | 1 | 30 | 0,8 | 4 | 0,94 | 1,96 | 80 | 34,3 | 2 | 2 |
| 3101038 | 1 | 0,1 | 1 | 35 | 0,8 | 4 | 0,94 | 2,13 | 80 | 39 | 2 | 2 |
| 3101011 | 1 | 0,2 | 0 | 4 | 0,8 | 4 | 0,94 | - | 50 | 10,1 | 2 | 1 |
| 3101012 | 1 | 0,2 | 0 | 6 | 0,8 | 4 | 0,94 | - | 50 | 12,1 | 2 | 1 |
| 3101041 | 1 | 0,2 | 1 | 6 | 0,8 | 4 | 0,94 | 1,16 | 50 | 11,8 | 2 | 2 |
| 3101013 | 1 | 0,2 | 0 | 8 | 0,8 | 4 | 0,94 | - | 50 | 14,1 | 2 | 1 |
| 48253108 | 1 | 0,2 | 0 | 8 | 0,8 | 6 | 0,94 | - | 50 | 17,9 | 2 | 1 |
| 3101014 | 1 | 0,2 | 0 | 10 | 0,8 | 4 | 0,94 | - | 50 | 16,1 | 2 | 1 |
| 3101042 | 1 | 0,2 | 1 | 10 | 0,8 | 4 | 0,94 | 1,29 | 60 | 15,5 | 2 | 2 |
| 3101015 | 1 | 0,2 | 0 | 12 | 0,8 | 4 | 0,94 | - | 50 | 18,1 | 2 | 1 |
| 3101043 | 1 | 0,2 | 1 | 15 | 0,8 | 4 | 0,94 | 1,46 | 60 | 20,2 | 2 | 2 |
| 3101016 | 1 | 0,2 | 0 | 16 | 0,8 | 4 | 0,94 | - | 60 | 22,1 | 2 | 1 |
| 3101017 | 1 | 0,2 | 0 | 20 | 0,8 | 4 | 0,94 | - | 60 | 26,1 | 2 | 1 |
| 3101044 | 1 | 0,2 | 1 | 20 | 0,8 | 4 | 0,94 | 1,61 | 60 | 24,9 | 2 | 2 |

# WXS-CPR

**Milling | Solid carbide**




- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, corner radius, for mould & die
- 247 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

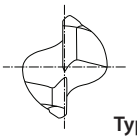
CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

C.951

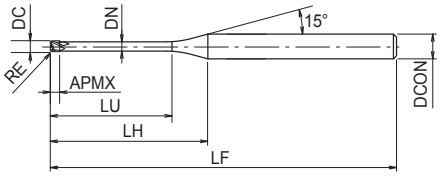
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3101045 | 1 | 0,2 | 1 | 25 | 0,8 | 4 | 0,94 | 1,79 | 70 | 29,6 | 2 | 2 |
| 3101046 | 1 | 0,2 | 1 | 30 | 0,8 | 4 | 0,94 | 1,96 | 80 | 34,3 | 2 | 2 |
| 3101047 | 1 | 0,2 | 1 | 35 | 0,8 | 4 | 0,94 | 2,13 | 80 | 39 | 2 | 2 |
| 3101018 | 1 | 0,3 | 0 | 4 | 0,8 | 4 | 0,94 | - | 50 | 10,1 | 2 | 1 |
| 3101019 | 1 | 0,3 | 0 | 6 | 0,8 | 4 | 0,94 | - | 50 | 12,1 | 2 | 1 |
| 3101050 | 1 | 0,3 | 1 | 6 | 0,8 | 4 | 0,94 | 1,16 | 50 | 11,8 | 2 | 2 |
| 3101020 | 1 | 0,3 | 0 | 8 | 0,8 | 4 | 0,94 | - | 50 | 14,1 | 2 | 1 |
| 3101021 | 1 | 0,3 | 0 | 10 | 0,8 | 4 | 0,94 | - | 50 | 16,1 | 2 | 1 |
| 3101051 | 1 | 0,3 | 1 | 10 | 0,8 | 4 | 0,94 | 1,29 | 60 | 15,5 | 2 | 2 |
| 3101022 | 1 | 0,3 | 0 | 12 | 0,8 | 4 | 0,94 | - | 50 | 18,1 | 2 | 1 |
| 3101052 | 1 | 0,3 | 1 | 15 | 0,8 | 4 | 0,94 | 1,46 | 60 | 20,2 | 2 | 2 |
| 3101053 | 1 | 0,3 | 1 | 20 | 0,8 | 4 | 0,94 | 1,61 | 60 | 24,9 | 2 | 2 |
| 3101054 | 1 | 0,3 | 1 | 25 | 0,8 | 4 | 0,94 | 1,79 | 70 | 29,6 | 2 | 2 |
| 3101055 | 1 | 0,3 | 1 | 30 | 0,8 | 4 | 0,94 | 1,96 | 80 | 34,3 | 2 | 2 |
| 3101056 | 1 | 0,3 | 1 | 35 | 0,8 | 4 | 0,94 | 2,13 | 80 | 39 | 2 | 2 |
| 3101201 | 1,2 | 0,2 | 0 | 6 | 1 | 4 | 1,14 | - | 50 | 11,7 | 2 | 1 |
| 3101202 | 1,2 | 0,2 | 0 | 8 | 1 | 4 | 1,14 | - | 50 | 13,7 | 2 | 1 |
| 3101203 | 1,2 | 0,2 | 0 | 10 | 1 | 4 | 1,14 | - | 50 | 15,7 | 2 | 1 |
| 3101204 | 1,2 | 0,3 | 0 | 6 | 1 | 4 | 1,14 | - | 50 | 11,7 | 2 | 1 |
| 3101205 | 1,2 | 0,3 | 0 | 8 | 1 | 4 | 1,14 | - | 50 | 13,7 | 2 | 1 |
| 3101206 | 1,2 | 0,3 | 0 | 10 | 1 | 4 | 1,14 | - | 50 | 15,7 | 2 | 1 |
| 3101511 | 1,5 | 0,1 | 1 | 10 | 1,2 | 4 | 1,43 | 1,78 | 60 | 14,6 | 2 | 2 |
| 3101512 | 1,5 | 0,1 | 1 | 15 | 1,2 | 4 | 1,43 | 1,94 | 60 | 19,3 | 2 | 2 |
| 3101513 | 1,5 | 0,1 | 1 | 20 | 1,2 | 4 | 1,43 | 2,1 | 60 | 24 | 2 | 2 |
| 3101514 | 1,5 | 0,1 | 1 | 25 | 1,2 | 4 | 1,43 | 2,27 | 70 | 28,7 | 2 | 2 |
| 3101515 | 1,5 | 0,1 | 1 | 30 | 1,2 | 4 | 1,43 | 2,45 | 80 | 33,4 | 2 | 2 |
| 3101501 | 1,5 | 0,2 | 0 | 6 | 1,2 | 4 | 1,43 | - | 50 | 11,1 | 2 | 1 |
| 3101502 | 1,5 | 0,2 | 0 | 8 | 1,2 | 4 | 1,43 | - | 50 | 13,1 | 2 | 1 |
| 3101503 | 1,5 | 0,2 | 0 | 10 | 1,2 | 4 | 1,43 | - | 50 | 15,1 | 2 | 1 |
| 3101518 | 1,5 | 0,2 | 1 | 10 | 1,2 | 4 | 1,43 | 1,78 | 60 | 14,6 | 2 | 2 |
| 3101504 | 1,5 | 0,2 | 0 | 12 | 1,2 | 4 | 1,43 | - | 50 | 17,1 | 2 | 1 |
| 3101519 | 1,5 | 0,2 | 1 | 15 | 1,2 | 4 | 1,43 | 1,94 | 60 | 19,3 | 2 | 2 |
| 3101505 | 1,5 | 0,2 | 0 | 16 | 1,2 | 4 | 1,43 | - | 50 | 21,1 | 2 | 1 |
| 3101520 | 1,5 | 0,2 | 1 | 20 | 1,2 | 4 | 1,43 | 2,1 | 60 | 24 | 2 | 2 |
| 3101521 | 1,5 | 0,2 | 1 | 25 | 1,2 | 4 | 1,43 | 2,27 | 70 | 28,7 | 2 | 2 |
| 3101522 | 1,5 | 0,2 | 1 | 30 | 1,2 | 4 | 1,43 | 2,45 | 80 | 33,4 | 2 | 2 |
| 3101506 | 1,5 | 0,3 | 0 | 6 | 1,2 | 4 | 1,43 | - | 50 | 11,1 | 2 | 1 |
| 3101507 | 1,5 | 0,3 | 0 | 8 | 1,2 | 4 | 1,43 | - | 50 | 13,1 | 2 | 1 |
| 3101508 | 1,5 | 0,3 | 0 | 10 | 1,2 | 4 | 1,43 | - | 50 | 15,1 | 2 | 1 |
| 3101525 | 1,5 | 0,3 | 1 | 10 | 1,2 | 4 | 1,43 | 1,78 | 60 | 14,6 | 2 | 2 |
| 3101509 | 1,5 | 0,3 | 0 | 12 | 1,2 | 4 | 1,43 | - | 50 | 17,1 | 2 | 1 |
| 3101526 | 1,5 | 0,3 | 1 | 15 | 1,2 | 4 | 1,43 | 1,94 | 60 | 19,3 | 2 | 2 |
| 3101510 | 1,5 | 0,3 | 0 | 16 | 1,2 | 4 | 1,43 | - | 50 | 21,1 | 2 | 1 |
| 3101527 | 1,5 | 0,3 | 1 | 20 | 1,2 | 4 | 1,43 | 2,1 | 60 | 24 | 2 | 2 |
| 3101528 | 1,5 | 0,3 | 1 | 25 | 1,2 | 4 | 1,43 | 2,27 | 70 | 28,7 | 2 | 2 |
| 3101529 | 1,5 | 0,3 | 1 | 30 | 1,2 | 4 | 1,43 | 2,45 | 80 | 33,4 | 2 | 2 |

# WXS-CPR

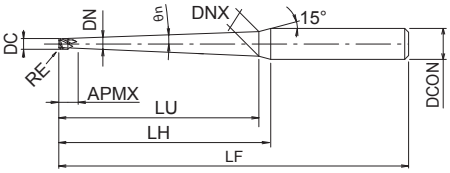
**Milling | Solid carbide**



Type 1




Type 2

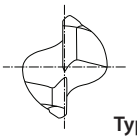



- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, corner radius, for mould & die
- 247 sizes

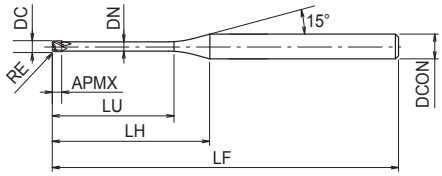
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3102001 | 2 | 0,1 | 0 | 8 | 1,6 | 4 | 1,92 | - | 50 | 12,22 | 2 | 1 |
| 3102002 | 2 | 0,1 | 0 | 10 | 1,6 | 4 | 1,92 | - | 50 | 14,2 | 2 | 1 |
| 3102003 | 2 | 0,1 | 0 | 12 | 1,6 | 4 | 1,92 | - | 50 | 16,2 | 2 | 1 |
| 3102025 | 2 | 0,1 | 1 | 15 | 1,6 | 4 | 1,92 | 2,43 | 60 | 18,4 | 2 | 2 |
| 3102004 | 2 | 0,1 | 0 | 16 | 1,6 | 4 | 1,92 | - | 60 | 20,2 | 2 | 1 |
| 3102005 | 2 | 0,1 | 0 | 20 | 1,6 | 4 | 1,92 | - | 60 | 24,2 | 2 | 1 |
| 3102026 | 2 | 0,1 | 1 | 20 | 1,6 | 4 | 1,92 | 2,58 | 60 | 23,1 | 2 | 2 |
| 3102006 | 2 | 0,1 | 0 | 25 | 1,6 | 4 | 1,92 | - | 70 | 29,2 | 2 | 1 |
| 3102027 | 2 | 0,1 | 1 | 25 | 1,6 | 4 | 1,92 | 2,76 | 70 | 27,8 | 2 | 2 |
| 3102028 | 2 | 0,1 | 1 | 30 | 1,6 | 4 | 1,92 | 2,93 | 80 | 32,5 | 2 | 2 |
| 3102029 | 2 | 0,1 | 1 | 40 | 1,6 | 4 | 1,92 | 3,27 | 80 | 41,8 | 2 | 2 |
| 3102030 | 2 | 0,1 | 1 | 50 | 1,6 | 4 | 1,92 | 3,62 | 100 | 51,1 | 2 | 2 |
| 3102007 | 2 | 0,2 | 0 | 8 | 1,6 | 4 | 1,92 | - | 50 | 12,2 | 2 | 1 |
| 3102008 | 2 | 0,2 | 0 | 10 | 1,6 | 4 | 1,92 | - | 50 | 14,2 | 2 | 1 |
| 3102009 | 2 | 0,2 | 0 | 12 | 1,6 | 4 | 1,92 | - | 50 | 16,2 | 2 | 1 |
| 3102033 | 2 | 0,2 | 1 | 15 | 1,6 | 4 | 1,92 | 2,43 | 60 | 18,4 | 2 | 2 |
| 3102010 | 2 | 0,2 | 0 | 16 | 1,6 | 4 | 1,92 | - | 60 | 20,2 | 2 | 1 |
| 3102011 | 2 | 0,2 | 0 | 20 | 1,6 | 4 | 1,92 | - | 60 | 24,2 | 2 | 1 |
| 3102034 | 2 | 0,2 | 1 | 20 | 1,6 | 4 | 1,92 | 2,58 | 60 | 23,1 | 2 | 2 |
| 3102012 | 2 | 0,2 | 0 | 25 | 1,6 | 4 | 1,92 | - | 70 | 29,2 | 2 | 1 |
| 3102035 | 2 | 0,2 | 1 | 25 | 1,6 | 4 | 1,92 | 2,76 | 70 | 27,8 | 2 | 2 |
| 3102036 | 2 | 0,2 | 1 | 30 | 1,6 | 4 | 1,92 | 2,93 | 80 | 32,5 | 2 | 2 |
| 3102037 | 2 | 0,2 | 1 | 40 | 1,6 | 4 | 1,92 | 3,27 | 80 | 41,8 | 2 | 2 |
| 3102038 | 2 | 0,2 | 1 | 50 | 1,6 | 4 | 1,92 | 3,62 | 100 | 51,1 | 2 | 2 |
| 3102013 | 2 | 0,3 | 0 | 8 | 1,6 | 4 | 1,92 | - | 50 | 12,2 | 2 | 1 |
| 3102014 | 2 | 0,3 | 0 | 10 | 1,6 | 4 | 1,92 | - | 50 | 14,2 | 2 | 1 |
| 3102015 | 2 | 0,3 | 0 | 12 | 1,6 | 4 | 1,92 | - | 50 | 16,2 | 2 | 1 |
| 3102041 | 2 | 0,3 | 1 | 15 | 1,6 | 4 | 1,92 | 2,43 | 60 | 18,4 | 2 | 2 |
| 3102016 | 2 | 0,3 | 0 | 16 | 1,6 | 4 | 1,92 | - | 60 | 20,2 | 2 | 1 |
| 3102017 | 2 | 0,3 | 0 | 20 | 1,6 | 4 | 1,92 | - | 60 | 24,2 | 2 | 1 |
| 3102042 | 2 | 0,3 | 1 | 20 | 1,6 | 4 | 1,92 | 2,58 | 60 | 23,1 | 2 | 2 |
| 3102018 | 2 | 0,3 | 0 | 25 | 1,6 | 4 | 1,92 | - | 70 | 29,2 | 2 | 1 |
| 3102043 | 2 | 0,3 | 1 | 25 | 1,6 | 4 | 1,92 | 2,76 | 70 | 27,8 | 2 | 2 |
| 3102044 | 2 | 0,3 | 1 | 30 | 1,6 | 4 | 1,92 | 2,93 | 80 | 32,5 | 2 | 2 |
| 3102045 | 2 | 0,3 | 1 | 40 | 1,6 | 4 | 1,92 | 3,27 | 80 | 41,8 | 2 | 2 |
| 3102046 | 2 | 0,3 | 1 | 50 | 1,6 | 4 | 1,92 | 3,62 | 100 | 51,1 | 2 | 2 |
| 3102019 | 2 | 0,5 | 0 | 8 | 1,6 | 4 | 1,92 | - | 50 | 12,2 | 2 | 1 |
| 3102020 | 2 | 0,5 | 0 | 10 | 1,6 | 4 | 1,92 | - | 50 | 14,2 | 2 | 1 |
| 3102021 | 2 | 0,5 | 0 | 12 | 1,6 | 4 | 1,92 | - | 50 | 16,2 | 2 | 1 |
| 3102049 | 2 | 0,5 | 1 | 15 | 1,6 | 4 | 1,92 | 2,43 | 60 | 18,4 | 2 | 2 |
| 3102022 | 2 | 0,5 | 0 | 16 | 1,6 | 4 | 1,92 | - | 60 | 20,2 | 2 | 1 |
| 3102023 | 2 | 0,5 | 0 | 20 | 1,6 | 4 | 1,92 | - | 60 | 24,2 | 2 | 1 |
| 3102050 | 2 | 0,5 | 1 | 20 | 1,6 | 4 | 1,92 | 2,58 | 60 | 23,1 | 2 | 2 |
| 3102024 | 2 | 0,5 | 0 | 25 | 1,6 | 4 | 1,92 | - | 70 | 29,2 | 2 | 1 |
| 3102051 | 2 | 0,5 | 1 | 25 | 1,6 | 4 | 1,92 | 2,76 | 70 | 27,8 | 2 | 2 |
| 3102052 | 2 | 0,5 | 1 | 30 | 1,6 | 4 | 1,92 | 2,93 | 80 | 32,5 | 2 | 2 |

# WXS-CPR

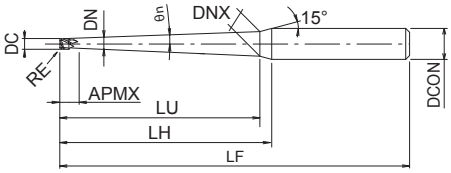
**Milling | Solid carbide**



Type 1




Type 2




- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, corner radius, for mould & die
- 247 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

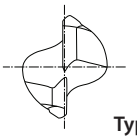
C.951

| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3102053 | 2 | 0,5 | 1 | 40 | 1,6 | 4 | 1,92 | 3,27 | 80 | 41,8 | 2 | 2 |
| 3102054 | 2 | 0,5 | 1 | 50 | 1,6 | 4 | 1,92 | 3,62 | 100 | 51,1 | 2 | 2 |
| 3102501 | 2,5 | 0,2 | 0 | 10 | 2,2 | 4 | 2,4 | - | 50 | 13,2 | 2 | 1 |
| 3102502 | 2,5 | 0,2 | 0 | 20 | 2,2 | 4 | 2,4 | - | 60 | 23,2 | 2 | 1 |
| 3102503 | 2,5 | 0,2 | 0 | 30 | 2,2 | 4 | 2,4 | - | 70 | 33,2 | 2 | 1 |
| 3102504 | 2,5 | 0,5 | 0 | 10 | 2,2 | 4 | 2,4 | - | 50 | 13,2 | 2 | 1 |
| 3102505 | 2,5 | 0,5 | 0 | 20 | 2,2 | 4 | 2,4 | - | 60 | 23,2 | 2 | 1 |
| 3102506 | 2,5 | 0,5 | 0 | 30 | 2,2 | 4 | 2,4 | - | 70 | 33,2 | 2 | 1 |
| 3103001 | 3 | 0,2 | 0 | 8 | 2,5 | 6 | 2,85 | - | 60 | 13,9 | 2 | 1 |
| 3103002 | 3 | 0,2 | 0 | 12 | 2,5 | 6 | 2,85 | - | 60 | 17,9 | 2 | 1 |
| 3103020 | 3 | 0,2 | 1 | 15 | 2,5 | 6 | 2,85 | 3,4 | 60 | 20,3 | 2 | 2 |
| 3103003 | 3 | 0,2 | 0 | 16 | 2,5 | 6 | 2,85 | - | 60 | 21,9 | 2 | 1 |
| 3103004 | 3 | 0,2 | 0 | 20 | 2,5 | 6 | 2,85 | - | 70 | 25,9 | 2 | 1 |
| 3103021 | 3 | 0,2 | 1 | 20 | 2,5 | 6 | 2,85 | 3,55 | 60 | 25 | 2 | 2 |
| 3103005 | 3 | 0,2 | 0 | 25 | 2,5 | 6 | 2,85 | - | 70 | 30,9 | 2 | 1 |
| 3103006 | 3 | 0,2 | 0 | 30 | 2,5 | 6 | 2,85 | - | 70 | 35,9 | 2 | 1 |
| 3103022 | 3 | 0,2 | 1 | 30 | 2,5 | 6 | 2,85 | 3,9 | 80 | 34,4 | 2 | 2 |
| 3103007 | 3 | 0,2 | 0 | 35 | 2,5 | 6 | 2,85 | - | 80 | 40,9 | 2 | 1 |
| 3103023 | 3 | 0,2 | 1 | 40 | 2,5 | 6 | 2,85 | 4,24 | 80 | 43,8 | 2 | 2 |
| 3103024 | 3 | 0,2 | 1 | 50 | 2,5 | 6 | 2,85 | 4,59 | 100 | 53,1 | 2 | 2 |
| 3103025 | 3 | 0,2 | 1 | 60 | 2,5 | 6 | 2,85 | 4,94 | 110 | 62,5 | 2 | 2 |
| 3103008 | 3 | 0,3 | 0 | 12 | 2,5 | 6 | 2,85 | - | 60 | 17,9 | 2 | 1 |
| 3103009 | 3 | 0,3 | 0 | 16 | 2,5 | 6 | 2,85 | - | 60 | 21,9 | 2 | 1 |
| 3103010 | 3 | 0,3 | 0 | 20 | 2,5 | 6 | 2,85 | - | 70 | 25,9 | 2 | 1 |
| 3103011 | 3 | 0,3 | 0 | 25 | 2,5 | 6 | 2,85 | - | 70 | 30,9 | 2 | 1 |
| 3103012 | 3 | 0,3 | 0 | 30 | 2,5 | 6 | 2,85 | - | 70 | 35,9 | 2 | 1 |
| 3103013 | 3 | 0,3 | 0 | 35 | 2,5 | 6 | 2,85 | - | 80 | 40,9 | 2 | 1 |
| 3103014 | 3 | 0,5 | 0 | 12 | 2,5 | 6 | 2,85 | - | 60 | 17,9 | 2 | 1 |
| 3103026 | 3 | 0,5 | 1 | 15 | 2,5 | 6 | 2,85 | 3,4 | 60 | 20,3 | 2 | 2 |
| 3103015 | 3 | 0,5 | 0 | 16 | 2,5 | 6 | 2,85 | - | 60 | 21,9 | 2 | 1 |
| 3103016 | 3 | 0,5 | 0 | 20 | 2,5 | 6 | 2,85 | - | 70 | 25,9 | 2 | 1 |
| 3103027 | 3 | 0,5 | 1 | 20 | 2,5 | 6 | 2,85 | 3,55 | 60 | 25 | 2 | 2 |
| 3103017 | 3 | 0,5 | 0 | 25 | 2,5 | 6 | 2,85 | - | 70 | 30,9 | 2 | 1 |
| 3103018 | 3 | 0,5 | 0 | 30 | 2,5 | 6 | 2,85 | - | 70 | 35,9 | 2 | 1 |
| 3103028 | 3 | 0,5 | 1 | 30 | 2,5 | 6 | 2,85 | 3,9 | 80 | 34,4 | 2 | 2 |
| 3103019 | 3 | 0,5 | 0 | 35 | 2,5 | 6 | 2,85 | - | 80 | 40,9 | 2 | 1 |
| 3103029 | 3 | 0,5 | 1 | 40 | 2,5 | 6 | 2,85 | 4,24 | 80 | 43,8 | 2 | 2 |
| 3103030 | 3 | 0,5 | 1 | 50 | 2,5 | 6 | 2,85 | 4,59 | 100 | 53,1 | 2 | 2 |
| 3103031 | 3 | 0,5 | 1 | 60 | 2,5 | 6 | 2,85 | 4,94 | 110 | 62,5 | 2 | 2 |
| 3104001 | 4 | 0,2 | 0 | 16 | 4 | 6 | 3,84 | - | 60 | 20,1 | 4 | 1 |
| 3104002 | 4 | 0,2 | 0 | 20 | 4 | 6 | 3,84 | - | 60 | 24,1 | 4 | 1 |
| 3104003 | 4 | 0,2 | 0 | 25 | 4 | 6 | 3,84 | - | 70 | 29,1 | 4 | 1 |
| 3104004 | 4 | 0,2 | 0 | 30 | 4 | 6 | 3,84 | - | 70 | 34,1 | 4 | 1 |
| 3104005 | 4 | 0,2 | 0 | 40 | 4 | 6 | 3,84 | - | 90 | 44,1 | 4 | 1 |
| 3104006 | 4 | 0,2 | 0 | 50 | 4 | 6 | 3,84 | - | 100 | 54,1 | 4 | 1 |
| 3104007 | 4 | 0,3 | 0 | 16 | 4 | 6 | 3,84 | - | 60 | 20,1 | 4 | 1 |

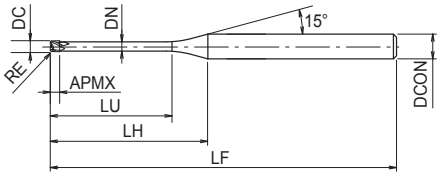
# WXS-CPR

**Milling | Solid carbide**

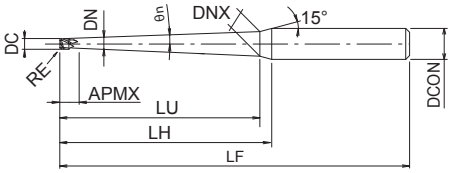
INDEX



**Type 1**




**Type 2**




- Carbide end mill with WXS coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long and pencil neck, for mould & die
- 247 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

C.951

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 3104008 | 4 | 0,3 | 20 | 4 | 6 | 3,84 | 60 | 24,1 | 4 | 1 |
| 3104009 | 4 | 0,3 | 25 | 4 | 6 | 3,84 | 70 | 29,1 | 4 | 1 |
| 3104010 | 4 | 0,3 | 30 | 4 | 6 | 3,84 | 70 | 34,1 | 4 | 1 |
| 3104011 | 4 | 0,3 | 40 | 4 | 6 | 3,84 | 90 | 44,1 | 4 | 1 |
| 3104012 | 4 | 0,3 | 50 | 4 | 6 | 3,84 | 100 | 54,1 | 4 | 1 |
| 3104013 | 4 | 0,5 | 16 | 4 | 6 | 3,84 | 60 | 20,1 | 4 | 1 |
| 3104014 | 4 | 0,5 | 20 | 4 | 6 | 3,84 | 60 | 24,1 | 4 | 1 |
| 3104015 | 4 | 0,5 | 25 | 4 | 6 | 3,84 | 70 | 29,1 | 4 | 1 |
| 3104016 | 4 | 0,5 | 30 | 4 | 6 | 3,84 | 70 | 34,1 | 4 | 1 |
| 3104017 | 4 | 0,5 | 40 | 4 | 6 | 3,84 | 90 | 44,1 | 4 | 1 |
| 3104018 | 4 | 0,5 | 50 | 4 | 6 | 3,84 | 100 | 54,1 | 4 | 1 |
| 3104019 | 4 | 1 | 16 | 4 | 6 | 3,84 | 60 | 20,1 | 4 | 1 |
| 3104020 | 4 | 1 | 20 | 4 | 6 | 3,84 | 60 | 24,1 | 4 | 1 |
| 3104021 | 4 | 1 | 25 | 4 | 6 | 3,84 | 70 | 29,1 | 4 | 1 |
| 3104022 | 4 | 1 | 30 | 4 | 6 | 3,84 | 70 | 34,1 | 4 | 1 |
| 3104023 | 4 | 1 | 40 | 4 | 6 | 3,84 | 90 | 44,1 | 4 | 1 |
| 3104024 | 4 | 1 | 50 | 4 | 6 | 3,84 | 100 | 54,1 | 4 | 1 |

# WXL-1,5D-DE

**Milling | Solid carbide**

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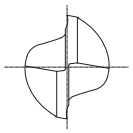
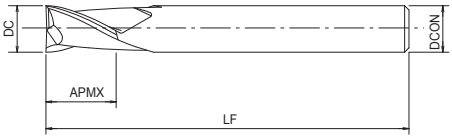
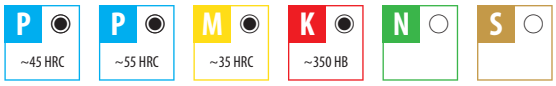





- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 1.5xD applications, square

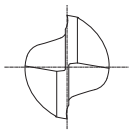


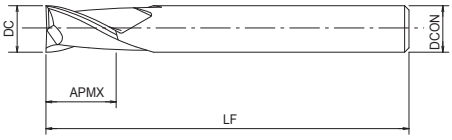
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3181801 | 0,1 | 0,15 | 4 | 45 | 2 |
| 3181802 | 0,2 | 0,3 | 4 | 45 | 2 |
| 3181803 | 0,3 | 0,45 | 4 | 45 | 2 |
| 3181804 | 0,4 | 0,6 | 4 | 45 | 2 |
| 3181805 | 0,5 | 0,75 | 4 | 45 | 2 |
| 3181806 | 0,6 | 0,9 | 4 | 45 | 2 |
| 3181807 | 0,7 | 1,1 | 4 | 45 | 2 |
| 3181808 | 0,8 | 1,2 | 4 | 45 | 2 |
| 3181809 | 0,9 | 1,4 | 4 | 45 | 2 |
| 3181810 | 1 | 1,5 | 4 | 45 | 2 |
| 3181811 | 1,1 | 1,7 | 4 | 45 | 2 |
| 3181812 | 1,2 | 1,8 | 4 | 45 | 2 |
| 3181813 | 1,3 | 2 | 4 | 45 | 2 |
| 3181814 | 1,4 | 2,1 | 4 | 45 | 2 |
| 3181815 | 1,5 | 2,3 | 4 | 45 | 2 |
| 3181816 | 1,6 | 2,4 | 4 | 45 | 2 |
| 3181817 | 1,7 | 2,6 | 4 | 45 | 2 |
| 3181818 | 1,8 | 2,7 | 4 | 45 | 2 |
| 3181819 | 1,9 | 2,9 | 4 | 45 | 2 |
| 3181820 | 2 | 3 | 4 | 45 | 2 |
| 3181821 | 2,1 | 3,2 | 4 | 45 | 2 |
| 3181822 | 2,2 | 3,3 | 4 | 45 | 2 |
| 3181823 | 2,3 | 3,5 | 4 | 45 | 2 |
| 3181824 | 2,4 | 3,6 | 4 | 45 | 2 |
| 3181825 | 2,5 | 3,8 | 4 | 45 | 2 |
| 3181826 | 2,6 | 3,9 | 4 | 45 | 2 |
| 3181827 | 2,7 | 4,1 | 4 | 45 | 2 |
| 3181828 | 2,8 | 4,2 | 4 | 45 | 2 |
| 3181829 | 2,9 | 4,4 | 4 | 45 | 2 |
| 3181830 | 3 | 4,5 | 6 | 45 | 2 |
| 3181831 | 3,1 | 4,7 | 6 | 45 | 2 |
| 3181832 | 3,2 | 4,8 | 6 | 45 | 2 |
| 3181833 | 3,3 | 5 | 6 | 45 | 2 |
| 3181834 | 3,4 | 5,1 | 6 | 45 | 2 |
| 3181835 | 3,5 | 5,3 | 6 | 45 | 2 |
| 3181836 | 3,6 | 5,4 | 6 | 45 | 2 |
| 3181837 | 3,7 | 5,6 | 6 | 45 | 2 |
| 3181838 | 3,8 | 5,7 | 6 | 45 | 2 |
| 3181839 | 3,9 | 5,9 | 6 | 45 | 2 |
| 3181840 | 4 | 6 | 6 | 45 | 2 |
| 3181841 | 4,1 | 6,2 | 6 | 50 | 2 |
| 3181842 | 4,2 | 6,3 | 6 | 50 | 2 |
| 3181843 | 4,3 | 6,5 | 6 | 50 | 2 |
| 3181844 | 4,4 | 6,6 | 6 | 50 | 2 |
| 3181845 | 4,5 | 6,8 | 6 | 50 | 2 |
| 3181846 | 4,6 | 6,9 | 6 | 50 | 2 |

# WXL-1,5D-DE

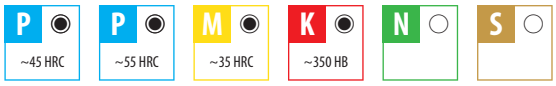
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 1.5xD applications, square

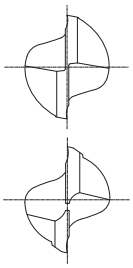


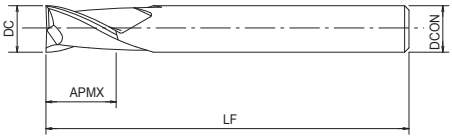
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3181847 | 4,7 | 7,1 | 6 | 50 | 2 |
| 3181848 | 4,8 | 7,2 | 6 | 50 | 2 |
| 3181849 | 4,9 | 7,4 | 6 | 50 | 2 |
| 3181850 | 5 | 7,5 | 6 | 50 | 2 |
| 3181851 | 5,1 | 7,7 | 6 | 50 | 2 |
| 3181852 | 5,2 | 7,8 | 6 | 50 | 2 |
| 3181853 | 5,3 | 8 | 6 | 50 | 2 |
| 3181854 | 5,4 | 8,1 | 6 | 50 | 2 |
| 3181855 | 5,5 | 8,3 | 6 | 50 | 2 |
| 3181856 | 5,6 | 8,4 | 6 | 50 | 2 |
| 3181857 | 5,7 | 8,6 | 6 | 50 | 2 |
| 3181858 | 5,8 | 8,7 | 6 | 50 | 2 |
| 3181859 | 5,9 | 8,9 | 6 | 50 | 2 |
| 3181860 | 6 | 9 | 6 | 50 | 2 |
| 3181880 | 8 | 12 | 8 | 60 | 2 |
| 3181900 | 10 | 15 | 10 | 70 | 2 |
| 3181920 | 12 | 18 | 12 | 75 | 2 |

# WXL-2D-DE

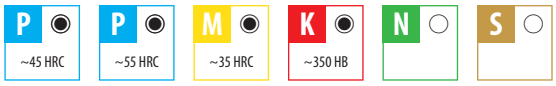


**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 2xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182001 | 0,1 | 0,2 | 4 | 45 | 2 |
| 3182002 | 0,2 | 0,4 | 4 | 45 | 2 |
| 3182003 | 0,3 | 0,6 | 4 | 45 | 2 |
| 3182004 | 0,4 | 0,8 | 4 | 45 | 2 |
| 3182005 | 0,5 | 1 | 4 | 45 | 2 |
| 3182006 | 0,6 | 1,2 | 4 | 45 | 2 |
| 3182007 | 0,7 | 1,4 | 4 | 45 | 2 |
| 3182008 | 0,8 | 1,6 | 4 | 45 | 2 |
| 3182009 | 0,9 | 1,8 | 4 | 45 | 2 |
| 3182010 | 1 | 2 | 4 | 45 | 2 |
| 3182011 | 1,1 | 2,2 | 4 | 45 | 2 |
| 3182012 | 1,2 | 2,4 | 4 | 45 | 2 |
| 3182013 | 1,3 | 2,6 | 4 | 45 | 2 |
| 3182014 | 1,4 | 2,8 | 4 | 45 | 2 |
| 3182015 | 1,5 | 3 | 4 | 45 | 2 |
| 3182016 | 1,6 | 3,2 | 4 | 45 | 2 |
| 3182017 | 1,7 | 3,4 | 4 | 45 | 2 |
| 3182018 | 1,8 | 3,6 | 4 | 45 | 2 |
| 3182019 | 1,9 | 3,8 | 4 | 45 | 2 |
| 3182020 | 2 | 4 | 4 | 45 | 2 |
| 3182021 | 2,1 | 4,2 | 4 | 45 | 2 |
| 3182022 | 2,2 | 4,4 | 4 | 45 | 2 |
| 3182023 | 2,3 | 4,6 | 4 | 45 | 2 |
| 3182024 | 2,4 | 4,8 | 4 | 45 | 2 |
| 3182025 | 2,5 | 5 | 4 | 45 | 2 |
| 3182026 | 2,6 | 5,2 | 4 | 45 | 2 |
| 3182027 | 2,7 | 5,4 | 4 | 45 | 2 |
| 3182028 | 2,8 | 5,6 | 4 | 45 | 2 |
| 3182029 | 2,9 | 5,8 | 4 | 45 | 2 |
| 3182030 | 3 | 6 | 6 | 45 | 2 |
| 3182031 | 3,1 | 6,2 | 6 | 45 | 2 |
| 3182032 | 3,2 | 6,4 | 6 | 45 | 2 |
| 3182033 | 3,3 | 6,6 | 6 | 45 | 2 |
| 3182034 | 3,4 | 6,8 | 6 | 45 | 2 |
| 3182035 | 3,5 | 7 | 6 | 45 | 2 |
| 3182036 | 3,6 | 7,2 | 6 | 45 | 2 |
| 3182037 | 3,7 | 7,4 | 6 | 45 | 2 |
| 3182038 | 3,8 | 7,6 | 6 | 45 | 2 |
| 3182039 | 3,9 | 7,8 | 6 | 45 | 2 |
| 3182040 | 4 | 8 | 6 | 45 | 2 |
| 3182041 | 4,1 | 8,2 | 6 | 50 | 2 |
| 3182042 | 4,2 | 8,4 | 6 | 50 | 2 |
| 3182043 | 4,3 | 8,6 | 6 | 50 | 2 |
| 3182044 | 4,4 | 8,8 | 6 | 50 | 2 |
| 3182045 | 4,5 | 9 | 6 | 50 | 2 |
| 3182046 | 4,6 | 9,2 | 6 | 50 | 2 |

# WXL-2D-DE

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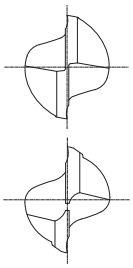
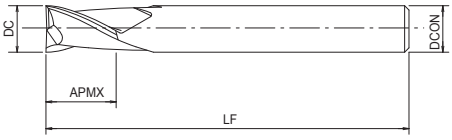
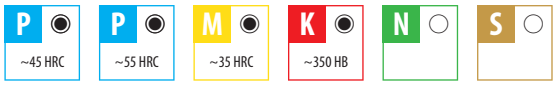
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 2xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182047 | 4,7 | 9,4 | 6 | 50 | 2 |
| 3182048 | 4,8 | 9,6 | 6 | 50 | 2 |
| 3182049 | 4,9 | 9,8 | 6 | 50 | 2 |
| 3182050 | 5 | 10 | 6 | 50 | 2 |
| 3182051 | 5,1 | 10,2 | 6 | 50 | 2 |
| 3182052 | 5,2 | 10,4 | 6 | 50 | 2 |
| 3182053 | 5,3 | 10,6 | 6 | 50 | 2 |
| 3182054 | 5,4 | 10,8 | 6 | 50 | 2 |
| 3182055 | 5,5 | 11 | 6 | 50 | 2 |
| 3182056 | 5,6 | 11,2 | 6 | 50 | 2 |
| 3182057 | 5,7 | 11,4 | 6 | 50 | 2 |
| 3182058 | 5,8 | 11,6 | 6 | 50 | 2 |
| 3182059 | 5,9 | 11,8 | 6 | 50 | 2 |
| 3182060 | 6 | 12 | 6 | 50 | 2 |
| 3182061 | 6,1 | 12,2 | 8 | 60 | 2 |
| 3182062 | 6,2 | 12,4 | 8 | 60 | 2 |
| 3182063 | 6,3 | 12,6 | 8 | 60 | 2 |
| 3182064 | 6,4 | 12,8 | 8 | 60 | 2 |
| 3182065 | 6,5 | 13 | 8 | 60 | 2 |
| 3182066 | 6,6 | 13,2 | 8 | 60 | 2 |
| 3182067 | 6,7 | 13,4 | 8 | 60 | 2 |
| 3182068 | 6,8 | 13,6 | 8 | 60 | 2 |
| 3182069 | 6,9 | 13,8 | 8 | 60 | 2 |
| 3182070 | 7 | 14 | 8 | 60 | 2 |
| 3182071 | 7,1 | 14,2 | 8 | 60 | 2 |
| 3182072 | 7,2 | 14,4 | 8 | 60 | 2 |
| 3182073 | 7,3 | 14,6 | 8 | 60 | 2 |
| 3182074 | 7,4 | 14,8 | 8 | 60 | 2 |
| 3182075 | 7,5 | 15 | 8 | 60 | 2 |
| 3182076 | 7,6 | 15,2 | 8 | 60 | 2 |
| 3182077 | 7,7 | 15,4 | 8 | 60 | 2 |
| 3182078 | 7,8 | 15,6 | 8 | 60 | 2 |
| 3182079 | 7,9 | 15,8 | 8 | 60 | 2 |
| 3182080 | 8 | 16 | 8 | 60 | 2 |
| 3182081 | 8,1 | 16,2 | 10 | 70 | 2 |
| 3182082 | 8,2 | 16,4 | 10 | 70 | 2 |
| 3182083 | 8,3 | 16,6 | 10 | 70 | 2 |
| 3182084 | 8,4 | 16,8 | 10 | 70 | 2 |
| 3182085 | 8,5 | 17 | 10 | 70 | 2 |
| 3182086 | 8,6 | 17,2 | 10 | 70 | 2 |
| 3182087 | 8,7 | 17,4 | 10 | 70 | 2 |
| 3182088 | 8,8 | 17,6 | 10 | 70 | 2 |
| 3182089 | 8,9 | 17,8 | 10 | 70 | 2 |
| 3182090 | 9 | 18 | 10 | 70 | 2 |
| 3182091 | 9,1 | 18,2 | 10 | 70 | 2 |
| 3182092 | 9,2 | 18,4 | 10 | 70 | 2 |

# WXL-2D-DE

**Milling | Solid carbide**

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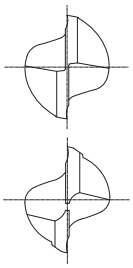
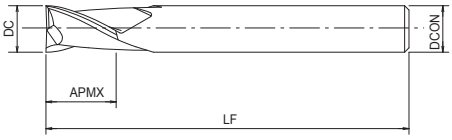
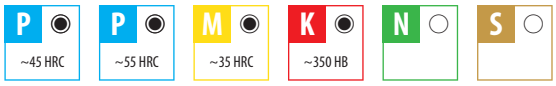





- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 2xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182093 | 9,3 | 18,6 | 10 | 70 | 2 |
| 3182094 | 9,4 | 18,8 | 10 | 70 | 2 |
| 3182095 | 9,5 | 19 | 10 | 70 | 2 |
| 3182096 | 9,6 | 19,2 | 10 | 70 | 2 |
| 3182097 | 9,7 | 19,4 | 10 | 70 | 2 |
| 3182098 | 9,8 | 19,6 | 10 | 70 | 2 |
| 3182099 | 9,9 | 19,8 | 10 | 70 | 2 |
| 3182100 | 10 | 20 | 10 | 70 | 2 |
| 3182101 | 10,1 | 20,2 | 12 | 75 | 2 |
| 3182102 | 10,2 | 20,4 | 12 | 75 | 2 |
| 3182103 | 10,3 | 20,6 | 12 | 75 | 2 |
| 3182104 | 10,4 | 20,8 | 12 | 75 | 2 |
| 3182105 | 10,5 | 21 | 12 | 75 | 2 |
| 3182106 | 10,6 | 21,2 | 12 | 75 | 2 |
| 3182107 | 10,7 | 21,4 | 12 | 75 | 2 |
| 3182108 | 10,8 | 21,6 | 12 | 75 | 2 |
| 3182109 | 10,9 | 21,8 | 12 | 75 | 2 |
| 3182110 | 11 | 22 | 12 | 75 | 2 |
| 3182111 | 11,1 | 22,2 | 12 | 75 | 2 |
| 3182112 | 11,2 | 22,4 | 12 | 75 | 2 |
| 3182113 | 11,3 | 22,6 | 12 | 75 | 2 |
| 3182114 | 11,4 | 22,8 | 12 | 75 | 2 |
| 3182115 | 11,5 | 23 | 12 | 75 | 2 |
| 3182116 | 11,6 | 23,2 | 12 | 75 | 2 |
| 3182117 | 11,7 | 23,4 | 12 | 75 | 2 |
| 3182118 | 11,8 | 23,6 | 12 | 75 | 2 |
| 3182119 | 11,9 | 23,8 | 12 | 75 | 2 |
| 3182120 | 12 | 24 | 12 | 75 | 2 |
| 3182121 | 12,1 | 24,2 | 12 | 85 | 2 |
| 3182122 | 12,2 | 24,4 | 12 | 85 | 2 |
| 3182123 | 12,3 | 24,6 | 12 | 85 | 2 |
| 3182124 | 12,4 | 24,8 | 12 | 85 | 2 |
| 3182125 | 12,5 | 25 | 12 | 85 | 2 |
| 3182126 | 12,6 | 25,2 | 12 | 85 | 2 |
| 3182127 | 12,7 | 25,4 | 12 | 85 | 2 |
| 3182128 | 12,8 | 25,6 | 12 | 85 | 2 |
| 3182129 | 12,9 | 25,8 | 12 | 85 | 2 |
| 3182130 | 13 | 26 | 12 | 85 | 2 |
| 3182131 | 13,1 | 26,2 | 12 | 85 | 2 |
| 3182132 | 13,2 | 26,4 | 12 | 85 | 2 |
| 3182133 | 13,3 | 26,6 | 12 | 85 | 2 |
| 3182134 | 13,4 | 26,8 | 12 | 85 | 2 |
| 3182135 | 13,5 | 27 | 12 | 85 | 2 |
| 3182136 | 13,6 | 27,2 | 12 | 85 | 2 |
| 3182137 | 13,7 | 27,4 | 12 | 85 | 2 |
| 3182138 | 13,8 | 27,6 | 12 | 85 | 2 |

# WXL-2D-DE

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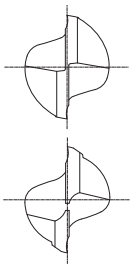
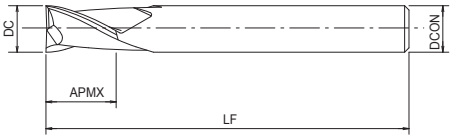
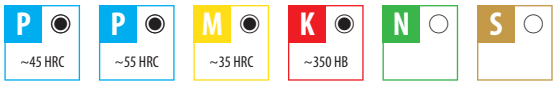
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 2xD applications, square

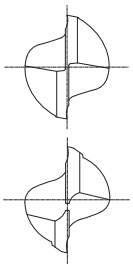


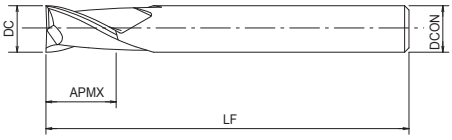
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182139 | 13,9 | 27,8 | 12 | 85 | 2 |
| 3182140 | 14 | 28 | 12 | 85 | 2 |
| 3182145 | 14,5 | 29 | 16 | 90 | 2 |
| 3182150 | 15 | 30 | 16 | 90 | 2 |
| 3182155 | 15,5 | 31 | 16 | 90 | 2 |
| 3182160 | 16 | 32 | 16 | 90 | 2 |
| 3182165 | 16,5 | 33 | 16 | 90 | 2 |
| 3182170 | 17 | 34 | 16 | 90 | 2 |
| 3182175 | 17,5 | 35 | 16 | 90 | 2 |
| 3182180 | 18 | 36 | 16 | 90 | 2 |
| 3182185 | 18,5 | 37 | 20 | 100 | 2 |
| 3182190 | 19 | 38 | 20 | 100 | 2 |
| 3182195 | 19,5 | 39 | 20 | 100 | 2 |
| 3182200 | 20 | 40 | 20 | 100 | 2 |
| 3182210 | 21 | 42 | 20 | 105 | 2 |
| 3182220 | 22 | 44 | 20 | 105 | 2 |
| 3182230 | 23 | 46 | 25 | 120 | 2 |
| 3182240 | 24 | 48 | 25 | 120 | 2 |
| 3182250 | 25 | 50 | 25 | 125 | 2 |
| 3182300 | 30 | 60 | 32 | 140 | 2 |

# WXL-3D-DE

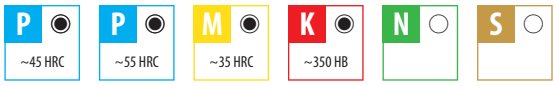


**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 3xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182401 | 0,1 | 0,3 | 4 | 45 | 2 |
| 3182402 | 0,2 | 0,6 | 4 | 45 | 2 |
| 3182403 | 0,3 | 0,9 | 4 | 45 | 2 |
| 3182404 | 0,4 | 1,2 | 4 | 45 | 2 |
| 3182405 | 0,5 | 1,5 | 4 | 45 | 2 |
| 3182406 | 0,6 | 1,8 | 4 | 45 | 2 |
| 3182407 | 0,7 | 2,1 | 4 | 45 | 2 |
| 3182408 | 0,8 | 2,4 | 4 | 45 | 2 |
| 3182409 | 0,9 | 2,7 | 4 | 45 | 2 |
| 3182410 | 1 | 3 | 4 | 45 | 2 |
| 3182411 | 1,1 | 3,3 | 4 | 45 | 2 |
| 3182412 | 1,2 | 3,6 | 4 | 45 | 2 |
| 3182413 | 1,3 | 3,9 | 4 | 45 | 2 |
| 3182414 | 1,4 | 4,2 | 4 | 45 | 2 |
| 3182415 | 1,5 | 4,5 | 4 | 45 | 2 |
| 3182416 | 1,6 | 4,8 | 4 | 45 | 2 |
| 3182417 | 1,7 | 5,1 | 4 | 45 | 2 |
| 3182418 | 1,8 | 5,4 | 4 | 45 | 2 |
| 3182419 | 1,9 | 5,7 | 4 | 45 | 2 |
| 3182420 | 2 | 6 | 4 | 45 | 2 |
| 3182421 | 2,1 | 6,3 | 4 | 45 | 2 |
| 3182422 | 2,2 | 6,6 | 4 | 45 | 2 |
| 3182423 | 2,3 | 6,9 | 4 | 45 | 2 |
| 3182424 | 2,4 | 7,2 | 4 | 45 | 2 |
| 3182425 | 2,5 | 7,5 | 4 | 45 | 2 |
| 3182426 | 2,6 | 7,8 | 4 | 45 | 2 |
| 3182427 | 2,7 | 8,1 | 4 | 45 | 2 |
| 3182428 | 2,8 | 8,4 | 4 | 45 | 2 |
| 3182429 | 2,9 | 8,7 | 4 | 45 | 2 |
| 3182430 | 3 | 9 | 6 | 45 | 2 |
| 3182431 | 3,1 | 9,3 | 6 | 45 | 2 |
| 3182432 | 3,2 | 9,6 | 6 | 45 | 2 |
| 3182433 | 3,3 | 9,9 | 6 | 45 | 2 |
| 3182434 | 3,4 | 10,2 | 6 | 45 | 2 |
| 3182435 | 3,5 | 10,5 | 6 | 45 | 2 |
| 3182436 | 3,6 | 10,8 | 6 | 45 | 2 |
| 3182437 | 3,7 | 11,1 | 6 | 45 | 2 |
| 3182438 | 3,8 | 11,4 | 6 | 45 | 2 |
| 3182439 | 3,9 | 11,7 | 6 | 45 | 2 |
| 3182440 | 4 | 12 | 6 | 50 | 2 |
| 3182441 | 4,1 | 12,3 | 6 | 50 | 2 |
| 3182442 | 4,2 | 12,6 | 6 | 50 | 2 |
| 3182443 | 4,3 | 12,9 | 6 | 50 | 2 |
| 3182444 | 4,4 | 13,2 | 6 | 50 | 2 |
| 3182445 | 4,5 | 13,5 | 6 | 50 | 2 |
| 3182446 | 4,6 | 13,8 | 6 | 55 | 2 |

# WXL-3D-DE

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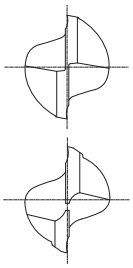
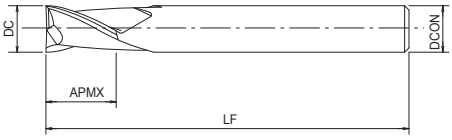
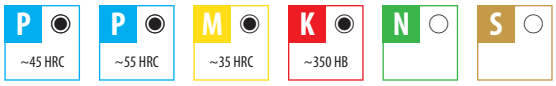
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 3xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182447 | 4,7 | 14,1 | 6 | 55 | 2 |
| 3182448 | 4,8 | 14,4 | 6 | 55 | 2 |
| 3182449 | 4,9 | 14,7 | 6 | 55 | 2 |
| 3182450 | 5 | 15 | 6 | 55 | 2 |
| 3182451 | 5,1 | 15,3 | 6 | 55 | 2 |
| 3182452 | 5,2 | 15,6 | 6 | 55 | 2 |
| 3182453 | 5,3 | 15,9 | 6 | 55 | 2 |
| 3182454 | 5,4 | 16,2 | 6 | 55 | 2 |
| 3182455 | 5,5 | 16,5 | 6 | 60 | 2 |
| 3182456 | 5,6 | 16,8 | 6 | 60 | 2 |
| 3182457 | 5,7 | 17,1 | 6 | 60 | 2 |
| 3182458 | 5,8 | 17,4 | 6 | 60 | 2 |
| 3182459 | 5,9 | 17,7 | 6 | 60 | 2 |
| 3182460 | 6 | 18 | 6 | 60 | 2 |
| 3182465 | 6,5 | 19,5 | 8 | 65 | 2 |
| 3182470 | 7 | 21 | 8 | 65 | 2 |
| 3182475 | 7,5 | 22,5 | 8 | 70 | 2 |
| 3182480 | 8 | 24 | 8 | 70 | 2 |
| 3182485 | 8,5 | 25,5 | 10 | 70 | 2 |
| 3182490 | 9 | 27 | 10 | 75 | 2 |
| 3182495 | 9,5 | 28,5 | 10 | 75 | 2 |
| 3182500 | 10 | 30 | 10 | 80 | 2 |
| 3182510 | 11 | 33 | 12 | 80 | 2 |
| 3182520 | 12 | 36 | 12 | 90 | 2 |
| 3182560 | 16 | 48 | 16 | 110 | 2 |
| 3182580 | 18 | 54 | 16 | 130 | 2 |
| 3182600 | 20 | 60 | 20 | 130 | 2 |

# WXL-4D-DE

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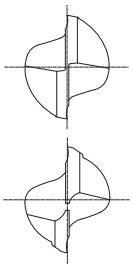
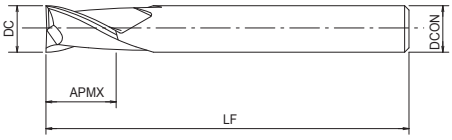
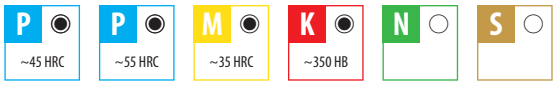
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 4xD applications, square



| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182602 | 0,2 | 0,8 | 4 | 45 | 2 |
| 3182603 | 0,3 | 1,2 | 4 | 45 | 2 |
| 3182604 | 0,4 | 1,6 | 4 | 45 | 2 |
| 3182605 | 0,5 | 2 | 4 | 45 | 2 |
| 3182606 | 0,6 | 2,4 | 4 | 45 | 2 |
| 3182607 | 0,7 | 2,8 | 4 | 45 | 2 |
| 3182608 | 0,8 | 3,2 | 4 | 45 | 2 |
| 3182609 | 0,9 | 3,6 | 4 | 45 | 2 |
| 3182610 | 1 | 4 | 4 | 45 | 2 |
| 3182611 | 1,1 | 4,4 | 4 | 45 | 2 |
| 3182612 | 1,2 | 4,8 | 4 | 45 | 2 |
| 3182613 | 1,3 | 5,2 | 4 | 45 | 2 |
| 3182614 | 1,4 | 5,6 | 4 | 45 | 2 |
| 3182615 | 1,5 | 6 | 4 | 45 | 2 |
| 3182616 | 1,6 | 6,4 | 4 | 45 | 2 |
| 3182617 | 1,7 | 6,8 | 4 | 45 | 2 |
| 3182618 | 1,8 | 7,2 | 4 | 45 | 2 |
| 3182619 | 1,9 | 7,6 | 4 | 45 | 2 |
| 3182620 | 2 | 8 | 4 | 45 | 2 |
| 3182621 | 2,1 | 8,4 | 4 | 45 | 2 |
| 3182622 | 2,2 | 8,8 | 4 | 45 | 2 |
| 3182623 | 2,3 | 9,2 | 4 | 45 | 2 |
| 3182624 | 2,4 | 9,6 | 4 | 45 | 2 |
| 3182625 | 2,5 | 10 | 4 | 45 | 2 |
| 3182626 | 2,6 | 10,4 | 4 | 50 | 2 |
| 3182627 | 2,7 | 10,8 | 4 | 50 | 2 |
| 3182628 | 2,8 | 11,2 | 4 | 50 | 2 |
| 3182629 | 2,9 | 11,6 | 4 | 50 | 2 |
| 3182630 | 3 | 12 | 6 | 50 | 2 |
| 3182631 | 3,1 | 12,4 | 6 | 50 | 2 |
| 3182632 | 3,2 | 12,8 | 6 | 50 | 2 |
| 3182633 | 3,3 | 13,2 | 6 | 50 | 2 |
| 3182634 | 3,4 | 13,6 | 6 | 50 | 2 |
| 3182635 | 3,5 | 14 | 6 | 50 | 2 |
| 3182636 | 3,6 | 14,4 | 6 | 50 | 2 |
| 3182637 | 3,7 | 14,8 | 6 | 50 | 2 |
| 3182638 | 3,8 | 15,2 | 6 | 50 | 2 |
| 3182639 | 3,9 | 15,6 | 6 | 50 | 2 |
| 3182640 | 4 | 16 | 6 | 55 | 2 |
| 3182641 | 4,1 | 16,4 | 6 | 55 | 2 |
| 3182642 | 4,2 | 16,8 | 6 | 55 | 2 |
| 3182643 | 4,3 | 17,2 | 6 | 55 | 2 |
| 3182644 | 4,4 | 17,6 | 6 | 55 | 2 |
| 3182645 | 4,5 | 18 | 6 | 55 | 2 |
| 3182646 | 4,6 | 18,4 | 6 | 55 | 2 |
| 3182647 | 4,7 | 18,8 | 6 | 55 | 2 |

# WXL-4D-DE

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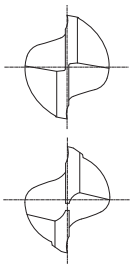
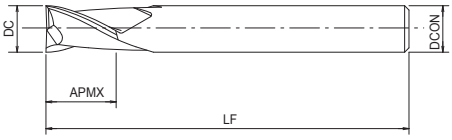
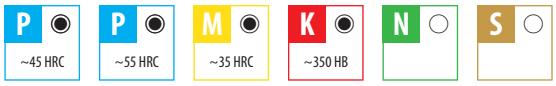
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For steels, stainless, copper
- 2 flutes, 4xD applications, square

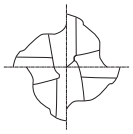


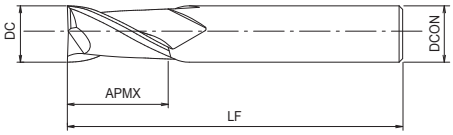
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3182648 | 4,8 | 19,2 | 6 | 55 | 2 |
| 3182649 | 4,9 | 19,6 | 6 | 55 | 2 |
| 3182650 | 5 | 20 | 6 | 60 | 2 |
| 3182651 | 5,1 | 20,4 | 6 | 60 | 2 |
| 3182652 | 5,2 | 20,8 | 6 | 60 | 2 |
| 3182653 | 5,3 | 21,2 | 6 | 60 | 2 |
| 3182654 | 5,4 | 21,6 | 6 | 60 | 2 |
| 3182655 | 5,5 | 22 | 6 | 65 | 2 |
| 3182656 | 5,6 | 22,4 | 6 | 65 | 2 |
| 3182657 | 5,7 | 22,8 | 6 | 65 | 2 |
| 3182658 | 5,8 | 23,2 | 6 | 65 | 2 |
| 3182659 | 5,9 | 23,6 | 6 | 65 | 2 |
| 3182660 | 6 | 24 | 6 | 65 | 2 |
| 3182680 | 8 | 32 | 8 | 80 | 2 |
| 3182700 | 10 | 40 | 10 | 90 | 2 |
| 3182720 | 12 | 48 | 12 | 100 | 2 |

# WXL-EMS



**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For high speed milling in steels, stainless and cast iron
- 4 flutes, square

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | D≤12 | D>12 0~-0.03 | D≤12 0~-0.02

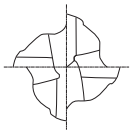
C.959

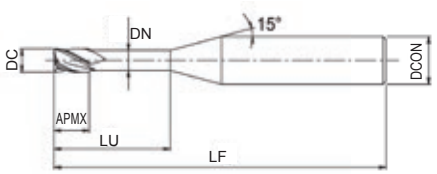
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 3130510 | 1 | 2,5 | 4 | 40 | 4 |
| 3130515 | 1,5 | 4 | 4 | 40 | 4 |
| 3130520 | 2 | 6 | 4 | 40 | 4 |
| 3130525 | 2,5 | 8 | 4 | 40 | 4 |
| 3130530 | 3 | 8 | 6 | 45 | 4 |
| 3130535 | 3,5 | 10 | 6 | 45 | 4 |
| 3130540 | 4 | 11 | 6 | 45 | 4 |
| 3130545 | 4,5 | 11 | 6 | 45 | 4 |
| 3130550 | 5 | 13 | 6 | 50 | 4 |
| 3130555 | 5,5 | 13 | 6 | 50 | 4 |
| 3130560 | 6 | 13 | 6 | 50 | 4 |
| 3130565 | 6,5 | 16 | 8 | 60 | 4 |
| 3130570 | 7 | 16 | 8 | 60 | 4 |
| 3130575 | 7,5 | 16 | 8 | 60 | 4 |
| 3130580 | 8 | 19 | 8 | 60 | 4 |
| 3130585 | 8,5 | 19 | 10 | 70 | 4 |
| 3130590 | 9 | 19 | 10 | 70 | 4 |
| 3130595 | 9,5 | 19 | 10 | 70 | 4 |
| 3130600 | 10 | 22 | 10 | 70 | 4 |
| 3130605 | 10,5 | 22 | 12 | 75 | 4 |
| 3130610 | 11 | 22 | 12 | 75 | 4 |
| 3130615 | 11,5 | 22 | 12 | 75 | 4 |
| 3130620 | 12 | 26 | 12 | 75 | 4 |
| 3130625 | 12,5 | 26 | 12 | 85 | 4 |
| 3130630 | 13 | 26 | 12 | 85 | 4 |
| 3130640 | 14 | 26 | 12 | 85 | 4 |
| 3130650 | 15 | 26 | 16 | 90 | 4 |
| 3130660 | 16 | 32 | 16 | 100 | 4 |
| 3130670 | 17 | 32 | 16 | 100 | 4 |
| 3130680 | 18 | 32 | 16 | 100 | 4 |
| 3130690 | 19 | 32 | 20 | 100 | 4 |
| 3130700 | 20 | 38 | 20 | 105 | 4 |
| 3130710 | 21 | 38 | 20 | 105 | 4 |
| 3130720 | 22 | 38 | 20 | 105 | 4 |
| 3130730 | 23 | 45 | 25 | 120 | 4 |
| 3130740 | 24 | 45 | 25 | 120 | 4 |
| 3130750 | 25 | 45 | 25 | 120 | 4 |
| 3130800 | 30 | 45 | 32 | 125 | 4 |

# WXL-LN-EMS-6

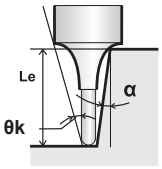
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 4 flutes, long neck
- Shank diameter 6

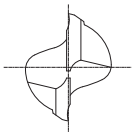


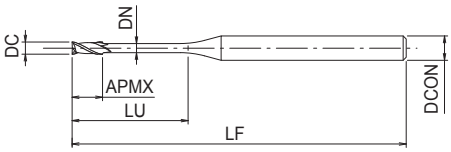
| EDP | DC | LU | APMX | DCON | DN | LF | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48142010 | 1 | 5 | 1,5 | 6 | 0,95 | 60 | 5,16 | 5,34 | 5,54 | 5,74 | 5,97 | 6,21 | 4 |
| 48142015 | 1,5 | 7,5 | 2,3 | 6 | 1,45 | 60 | 7,75 | 8,02 | 8,31 | 8,62 | 8,96 | 9,32 | 4 |
| 48142020 | 2 | 10 | 3 | 6 | 1,95 | 60 | 10,34 | 10,7 | 11,08 | 11,5 | 11,95 | 12,43 | 4 |
| 48142025 | 2,5 | 12,5 | 3,7 | 6 | 2,4 | 60 | 12,92 | 13,37 | 13,85 | 14,37 | 14,93 | 15,54 | 4 |
| 48142030 | 3 | 15 | 4,5 | 6 | 2,85 | 70 | 15,5 | 16,05 | 16,62 | 17,25 | 17,92 | 18,65 | 4 |
| 48142035 | 3,5 | 17,5 | 5,3 | 6 | 3,35 | 70 | 18,09 | 18,72 | 19,4 | 20,12 | 20,91 | 21,76 | 4 |
| 48142040 | 4 | 20 | 6 | 6 | 3,85 | 70 | 20,67 | 21,39 | 22,17 | 23 | - | - | 4 |
| 48142050 | 5 | 25 | 7,5 | 6 | 4,85 | 80 | 25,84 | 26,74 | - | - | - | - | 4 |
| 48142060 | 6 | 30 | 9 | 6 | 5,85 | 90 | - | - | - | - | - | - | 4 |

# WXL-LN-EDS

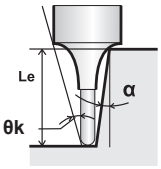
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, long neck, square
- 199 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | 0~-0.015 | Ø2<D

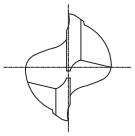
C.961

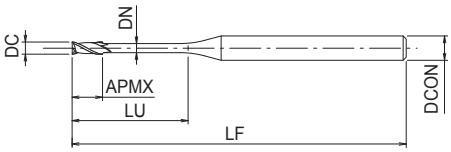
| EDP | DC | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3131100 | 0,1 | 0,3 | 0,15 | 4 | 0,09 | 45 | 14,61 | 0,31 | 0,32 | 0,33 | 0,34 | 0,37 | - | 2 |
| 3131101 | 0,1 | 0,5 | 0,15 | 4 | 0,09 | 45 | 14,04 | 0,53 | 0,56 | 0,58 | 0,61 | 0,66 | - | 2 |
| 3131102 | 0,1 | 1 | 0,15 | 4 | 0,09 | 45 | 13,22 | 1,05 | 1,1 | 1,14 | 1,18 | 1,28 | - | 2 |
| 3131201 | 0,2 | 0,5 | 0,3 | 4 | 0,18 | 45 | 14,02 | 0,52 | 0,55 | 0,57 | 0,6 | 0,62 | 0,64 | 2 |
| 3131202 | 0,2 | 1 | 0,3 | 4 | 0,18 | 45 | 13,19 | 1,05 | 1,09 | 1,13 | 1,17 | 1,22 | 1,27 | 2 |
| 3131203 | 0,2 | 1,5 | 0,3 | 4 | 0,18 | 45 | 12,45 | 1,57 | 1,62 | 1,68 | 1,75 | 1,81 | 1,89 | 2 |
| 3131204 | 0,2 | 2 | 0,3 | 4 | 0,18 | 45 | 11,78 | 2,09 | 2,16 | 2,24 | 2,32 | 2,41 | 2,51 | 2 |
| 3131205 | 0,2 | 2,5 | 0,3 | 4 | 0,18 | 45 | 11,18 | 2,6 | 2,69 | 2,79 | 2,9 | 3,01 | 3,13 | 2 |
| 3131206 | 0,2 | 3 | 0,3 | 4 | 0,18 | 45 | 10,64 | 3,12 | 3,23 | 3,35 | 3,47 | 3,61 | 3,75 | 2 |
| 3131207 | 0,2 | 3,5 | 0,3 | 4 | 0,18 | 45 | 10,15 | 3,64 | 3,76 | 3,9 | 4,05 | 4,2 | 4,37 | 2 |
| 3131208 | 0,2 | 4 | 0,3 | 4 | 0,18 | 45 | 9,71 | 4,15 | 4,3 | 4,45 | 4,62 | 4,8 | 5 | 2 |
| 3131302 | 0,3 | 1 | 0,45 | 4 | 0,28 | 45 | 13,16 | 1,03 | 1,08 | 1,12 | 1,16 | 1,21 | 1,25 | 2 |
| 3131303 | 0,3 | 1,5 | 0,45 | 4 | 0,28 | 45 | 12,4 | 1,56 | 1,61 | 1,67 | 1,74 | 1,8 | 1,88 | 2 |
| 3131304 | 0,3 | 2 | 0,45 | 4 | 0,28 | 45 | 11,73 | 2,08 | 2,15 | 2,23 | 2,31 | 2,4 | 2,5 | 2 |
| 3131305 | 0,3 | 2,5 | 0,45 | 4 | 0,28 | 45 | 11,12 | 2,59 | 2,68 | 2,78 | 2,88 | 3 | 3,12 | 2 |
| 3131306 | 0,3 | 3 | 0,45 | 4 | 0,28 | 45 | 10,57 | 3,11 | 3,22 | 3,33 | 3,46 | 3,59 | 3,74 | 2 |
| 3131308 | 0,3 | 4 | 0,45 | 4 | 0,28 | 45 | 9,62 | 4,14 | 4,29 | 4,44 | 4,61 | 4,79 | 4,98 | 2 |
| 3131310 | 0,3 | 5 | 0,45 | 4 | 0,28 | 45 | 8,83 | 5,18 | 5,36 | 5,55 | 5,76 | 5,98 | 6,23 | 2 |
| 3131312 | 0,3 | 6 | 0,45 | 4 | 0,28 | 45 | 8,15 | 6,21 | 6,43 | 6,66 | 6,91 | 7,18 | 7,47 | 2 |
| 3131318 | 0,3 | 9 | 0,45 | 4 | 0,28 | 45 | 6,63 | 9,31 | 9,64 | 9,98 | 10,36 | 10,76 | 11,2 | 2 |
| 3131403 | 0,4 | 1,5 | 0,6 | 4 | 0,37 | 45 | 12,4 | 1,52 | 1,57 | 1,63 | 1,69 | 1,75 | 1,82 | 2 |
| 3131404 | 0,4 | 2 | 0,6 | 4 | 0,37 | 45 | 11,71 | 2,03 | 2,1 | 2,18 | 2,26 | 2,35 | 2,45 | 2 |
| 3131406 | 0,4 | 3 | 0,6 | 4 | 0,37 | 45 | 10,53 | 3,07 | 3,17 | 3,29 | 3,41 | 3,55 | 3,69 | 2 |
| 3131408 | 0,4 | 4 | 0,6 | 4 | 0,37 | 45 | 9,56 | 4,1 | 4,24 | 4,4 | 4,56 | 4,74 | 4,93 | 2 |
| 3131410 | 0,4 | 5 | 0,6 | 4 | 0,37 | 45 | 8,76 | 5,13 | 5,31 | 5,51 | 5,71 | 5,93 | 6,18 | 2 |
| 3131412 | 0,4 | 6 | 0,6 | 4 | 0,37 | 45 | 8,08 | 6,17 | 6,38 | 6,61 | 6,86 | 7,13 | 7,42 | 2 |
| 3131414 | 0,4 | 7 | 0,6 | 4 | 0,37 | 45 | 7,49 | 7,2 | 7,45 | 7,72 | 8,01 | 8,32 | 8,66 | 2 |
| 3131416 | 0,4 | 8 | 0,6 | 4 | 0,37 | 45 | 6,99 | 8,24 | 8,52 | 8,83 | 9,16 | 9,52 | 9,9 | 2 |
| 3131418 | 0,4 | 9 | 0,6 | 4 | 0,37 | 45 | 6,55 | 9,27 | 9,59 | 9,94 | 10,31 | 10,71 | 11,15 | 2 |
| 3131420 | 0,4 | 10 | 0,6 | 4 | 0,37 | 45 | 6,16 | 10,3 | 10,66 | 11,05 | 11,46 | 11,91 | 12,39 | 2 |
| 3131424 | 0,4 | 12 | 0,6 | 4 | 0,37 | 45 | 5,5 | 12,37 | 12,8 | 13,26 | 13,76 | 14,3 | 14,88 | 2 |
| 3131501 | 0,5 | 1,5 | 0,7 | 4 | 0,45 | 45 | 12,29 | 1,56 | 1,61 | 1,67 | 1,73 | 1,8 | 1,87 | 2 |
| 3131502 | 0,5 | 2 | 0,7 | 4 | 0,45 | 45 | 11,59 | 2,07 | 2,14 | 2,22 | 2,31 | 2,4 | 2,49 | 2 |
| 3131503 | 0,5 | 3 | 0,7 | 4 | 0,45 | 45 | 10,4 | 3,11 | 3,21 | 3,33 | 3,46 | 3,59 | 3,74 | 2 |
| 3131504 | 0,5 | 4 | 0,7 | 4 | 0,45 | 45 | 9,43 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |
| 3131505 | 0,5 | 5 | 0,7 | 4 | 0,45 | 45 | 8,63 | 5,17 | 5,35 | 5,55 | 5,75 | 5,98 | 6,22 | 2 |
| 3131506 | 0,5 | 6 | 0,7 | 4 | 0,45 | 45 | 7,95 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3131507 | 0,5 | 7 | 0,7 | 4 | 0,45 | 45 | 7,37 | 7,24 | 7,49 | 7,76 | 8,05 | 8,37 | 8,71 | 2 |
| 3131508 | 0,5 | 8 | 0,7 | 4 | 0,45 | 45 | 6,86 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3131509 | 0,5 | 9 | 0,7 | 4 | 0,45 | 45 | 6,43 | 9,31 | 9,63 | 9,98 | 10,35 | 10,76 | 11,19 | 2 |
| 3131510 | 0,5 | 10 | 0,7 | 4 | 0,45 | 45 | 6,04 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3131512 | 0,5 | 12 | 0,7 | 4 | 0,45 | 45 | 5,39 | 12,41 | 12,84 | 13,31 | 13,8 | 14,34 | 14,92 | 2 |
| 3131515 | 0,5 | 15 | 0,7 | 4 | 0,45 | 50 | 4,65 | 15,51 | 16,05 | 16,63 | 17,25 | 17,93 | 18,65 | 2 |
| 3131602 | 0,6 | 2 | 0,9 | 4 | 0,55 | 45 | 11,51 | 2,07 | 2,14 | 2,22 | 2,31 | 2,4 | 2,49 | 2 |
| 3131603 | 0,6 | 3 | 0,9 | 4 | 0,55 | 45 | 10,31 | 3,11 | 3,21 | 3,33 | 3,46 | 3,59 | 3,74 | 2 |
| 3131604 | 0,6 | 4 | 0,9 | 4 | 0,55 | 45 | 9,33 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |

# WXL-LN-EDS

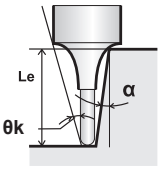
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, long neck, square
- 199 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | 0~-0.015 | Ø2<D

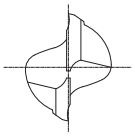
C.961

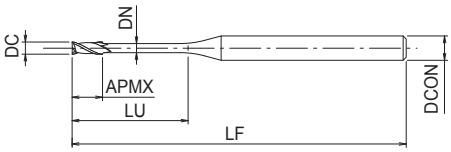
| EDP | DC | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3131605 | 0,6 | 5 | 0,9 | 4 | 0,55 | 45 | 8,52 | 5,17 | 5,35 | 5,55 | 5,75 | 5,98 | 6,22 | 2 |
| 3131606 | 0,6 | 6 | 0,9 | 4 | 0,55 | 45 | 7,84 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3131607 | 0,6 | 7 | 0,9 | 4 | 0,55 | 45 | 7,26 | 7,24 | 7,49 | 7,76 | 8,05 | 8,37 | 8,71 | 2 |
| 3131608 | 0,6 | 8 | 0,9 | 4 | 0,55 | 45 | 6,76 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3131610 | 0,6 | 10 | 0,9 | 4 | 0,55 | 45 | 5,94 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3131612 | 0,6 | 12 | 0,9 | 4 | 0,55 | 45 | 5,29 | 12,41 | 12,84 | 13,31 | 13,8 | 14,34 | 14,92 | 2 |
| 3131615 | 0,6 | 15 | 0,9 | 4 | 0,55 | 50 | 4,55 | 15,51 | 16,05 | 16,63 | 17,25 | 17,93 | 18,65 | 2 |
| 3131618 | 0,6 | 18 | 0,9 | 4 | 0,55 | 50 | 3,99 | 18,61 | 19,26 | 19,96 | 20,7 | 21,51 | 22,38 | 2 |
| 3131702 | 0,7 | 2 | 1 | 4 | 0,65 | 45 | 11,43 | 2,07 | 2,14 | 2,22 | 2,31 | 2,4 | 2,49 | 2 |
| 3131704 | 0,7 | 4 | 1 | 4 | 0,65 | 45 | 9,22 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |
| 3131706 | 0,7 | 6 | 1 | 4 | 0,65 | 45 | 7,73 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3131708 | 0,7 | 8 | 1 | 4 | 0,65 | 45 | 6,65 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3131710 | 0,7 | 10 | 1 | 4 | 0,65 | 45 | 5,83 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3131804 | 0,8 | 4 | 1,2 | 4 | 0,75 | 45 | 9,11 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |
| 3131806 | 0,8 | 6 | 1,2 | 4 | 0,75 | 45 | 7,61 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3131808 | 0,8 | 8 | 1,2 | 4 | 0,75 | 45 | 6,53 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3131810 | 0,8 | 10 | 1,2 | 4 | 0,75 | 45 | 5,72 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3131812 | 0,8 | 12 | 1,2 | 4 | 0,75 | 45 | 5,09 | 12,41 | 12,84 | 13,31 | 13,8 | 14,34 | 14,92 | 2 |
| 3131814 | 0,8 | 14 | 1,2 | 4 | 0,75 | 50 | 4,58 | 14,48 | 14,98 | 15,52 | 16,1 | 16,73 | 17,41 | 2 |
| 3131816 | 0,8 | 16 | 1,2 | 4 | 0,75 | 50 | 4,16 | 16,54 | 17,12 | 17,74 | 18,4 | 19,12 | 19,9 | 2 |
| 3131820 | 0,8 | 20 | 1,2 | 4 | 0,75 | 55 | 3,52 | 20,68 | 21,4 | 22,17 | 23 | 23,9 | 24,87 | 2 |
| 3131824 | 0,8 | 24 | 1,2 | 4 | 0,75 | 60 | 3,06 | 24,81 | 25,68 | 26,6 | 27,6 | 28,68 | 29,84 | 2 |
| 3131904 | 0,9 | 4 | 1,35 | 4 | 0,85 | 45 | 9 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |
| 3131906 | 0,9 | 6 | 1,35 | 4 | 0,85 | 45 | 7,49 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3131908 | 0,9 | 8 | 1,35 | 4 | 0,85 | 45 | 6,41 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3131910 | 0,9 | 10 | 1,35 | 4 | 0,85 | 45 | 5,61 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3131915 | 0,9 | 15 | 1,35 | 4 | 0,85 | 50 | 4,26 | 15,51 | 16,05 | 16,63 | 17,25 | 17,93 | 18,65 | 2 |
| 3132003 | 1 | 3 | 1,5 | 4 | 0,95 | 45 | 9,89 | 3,11 | 3,21 | 3,33 | 3,46 | 3,59 | 3,74 | 2 |
| 3132004 | 1 | 4 | 1,5 | 4 | 0,95 | 45 | 8,88 | 4,14 | 4,28 | 4,44 | 4,61 | 4,78 | 4,98 | 2 |
| 3132005 | 1 | 5 | 1,5 | 4 | 0,95 | 45 | 8,05 | 5,17 | 5,35 | 5,55 | 5,75 | 5,98 | 6,22 | 2 |
| 3132006 | 1 | 6 | 1,5 | 4 | 0,95 | 45 | 7,37 | 6,21 | 6,42 | 6,66 | 6,9 | 7,17 | 7,47 | 2 |
| 3132007 | 1 | 7 | 1,5 | 4 | 0,95 | 45 | 6,79 | 7,24 | 7,49 | 7,76 | 8,05 | 8,37 | 8,71 | 2 |
| 3132008 | 1 | 8 | 1,5 | 4 | 0,95 | 45 | 6,29 | 8,27 | 8,56 | 8,87 | 9,2 | 9,56 | 9,95 | 2 |
| 3132009 | 1 | 9 | 1,5 | 4 | 0,95 | 45 | 5,86 | 9,31 | 9,63 | 9,98 | 10,35 | 10,76 | 11,19 | 2 |
| 3132010 | 1 | 10 | 1,5 | 4 | 0,95 | 45 | 5,49 | 10,34 | 10,7 | 11,09 | 11,5 | 11,95 | 12,44 | 2 |
| 3132012 | 1 | 12 | 1,5 | 4 | 0,95 | 45 | 4,87 | 12,41 | 12,84 | 13,31 | 13,8 | 14,34 | 14,92 | 2 |
| 3132014 | 1 | 14 | 1,5 | 4 | 0,95 | 50 | 4,38 | 14,48 | 14,98 | 15,52 | 16,1 | 16,73 | 17,41 | 2 |
| 3132016 | 1 | 16 | 1,5 | 4 | 0,95 | 50 | 3,97 | 16,54 | 17,12 | 17,74 | 18,4 | 19,12 | 19,9 | 2 |
| 3132018 | 1 | 18 | 1,5 | 4 | 0,95 | 55 | 3,64 | 18,61 | 19,26 | 19,96 | 20,7 | 21,51 | 22,38 | 2 |
| 3132020 | 1 | 20 | 1,5 | 4 | 0,95 | 55 | 3,35 | 20,68 | 21,4 | 22,17 | 23 | 23,9 | 24,87 | 2 |
| 3132022 | 1 | 22 | 1,5 | 4 | 0,95 | 60 | 3,11 | 22,75 | 23,54 | 24,39 | 25,3 | 26,29 | 27,36 | 2 |
| 3132025 | 1 | 25 | 1,5 | 4 | 0,95 | 60 | 2,81 | 25,85 | 26,75 | 27,71 | 28,75 | 29,87 | - | 2 |
| 3132030 | 1 | 30 | 1,5 | 4 | 0,95 | 70 | 2,41 | 31,02 | 32,1 | 33,25 | 34,5 | - | - | 2 |
| 3132204 | 1,2 | 4 | 1,8 | 4 | 1,15 | 45 | 8,54 | 4,22 | 4,38 | 4,54 | 4,71 | 4,9 | 5,09 | 2 |
| 3132206 | 1,2 | 6 | 1,8 | 4 | 1,15 | 45 | 7,05 | 6,3 | 6,52 | 6,76 | 7,01 | 7,29 | 7,58 | 2 |
| 3132208 | 1,2 | 8 | 1,8 | 4 | 1,15 | 45 | 6 | 8,37 | 8,66 | 8,98 | 9,31 | 9,67 | 10,07 | 2 |

# WXL-LN-EDS

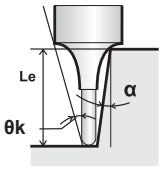


**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, long neck, square
- 199 sizes

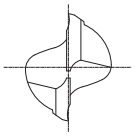


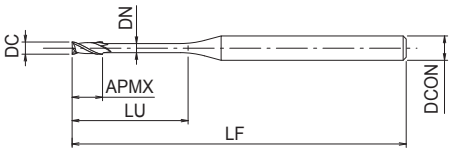
| EDP | DC | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3132210 | 1,2 | 10 | 1,8 | 4 | 1,15 | 45 | - | 5,22 | 10,44 | 10,8 | 11,19 | 11,61 | 12,06 | 12,55 | 2 |
| 3132212 | 1,2 | 12 | 1,8 | 4 | 1,15 | 45 | - | 4,62 | 12,51 | 12,94 | 13,41 | 13,91 | 14,45 | 15,04 | 2 |
| 3132214 | 1,2 | 14 | 1,8 | 4 | 1,15 | 50 | - | 4,14 | 14,57 | 15,08 | 15,63 | 16,21 | 16,84 | 17,53 | 2 |
| 3132216 | 1,2 | 16 | 1,8 | 4 | 1,15 | 50 | - | 3,76 | 16,64 | 17,22 | 17,84 | 18,51 | 19,23 | 20,01 | 2 |
| 3132220 | 1,2 | 20 | 1,8 | 4 | 1,15 | 55 | - | 3,16 | 20,77 | 21,5 | 22,28 | 23,11 | 24,01 | 24,99 | 2 |
| 3132406 | 1,4 | 6 | 2,1 | 4 | 1,35 | 45 | - | 6,77 | 6,3 | 6,52 | 6,76 | 7,01 | 7,29 | 7,58 | 2 |
| 3132408 | 1,4 | 8 | 2,1 | 4 | 1,35 | 45 | - | 5,73 | 8,37 | 8,66 | 8,98 | 9,31 | 9,67 | 10,07 | 2 |
| 3132410 | 1,4 | 10 | 2,1 | 4 | 1,35 | 45 | - | 4,97 | 10,44 | 10,8 | 11,19 | 11,61 | 12,06 | 12,55 | 2 |
| 3132412 | 1,4 | 12 | 2,1 | 4 | 1,35 | 45 | - | 4,39 | 12,51 | 12,94 | 13,41 | 13,91 | 14,45 | 15,04 | 2 |
| 3132414 | 1,4 | 14 | 2,1 | 4 | 1,35 | 50 | - | 3,92 | 14,57 | 15,08 | 15,63 | 16,21 | 16,84 | 17,53 | 2 |
| 3132416 | 1,4 | 16 | 2,1 | 4 | 1,35 | 50 | - | 3,55 | 16,64 | 17,22 | 17,84 | 18,51 | 19,23 | 20,01 | 2 |
| 3132422 | 1,4 | 22 | 2,1 | 4 | 1,35 | 60 | - | 2,76 | 22,84 | 23,64 | 24,49 | 25,41 | 26,4 | - | 2 |
| 3132504 | 1,5 | 4 | 2,3 | 4 | 1,45 | 45 | - | 8,12 | 4,22 | 4,38 | 4,54 | 4,71 | 4,9 | 5,09 | 2 |
| 3132506 | 1,5 | 6 | 2,3 | 4 | 1,45 | 45 | - | 6,62 | 6,3 | 6,52 | 6,76 | 7,01 | 7,29 | 7,58 | 2 |
| 3132508 | 1,5 | 8 | 2,3 | 4 | 1,45 | 45 | - | 5,59 | 8,37 | 8,66 | 8,98 | 9,31 | 9,67 | 10,07 | 2 |
| 3132510 | 1,5 | 10 | 2,3 | 4 | 1,45 | 45 | - | 4,84 | 10,44 | 10,8 | 11,19 | 11,61 | 12,06 | 12,55 | 2 |
| 3132512 | 1,5 | 12 | 2,3 | 4 | 1,45 | 45 | - | 4,26 | 12,51 | 12,94 | 13,41 | 13,91 | 14,45 | 15,04 | 2 |
| 3132514 | 1,5 | 14 | 2,3 | 4 | 1,45 | 50 | - | 3,81 | 14,57 | 15,08 | 15,63 | 16,21 | 16,84 | 17,53 | 2 |
| 3132516 | 1,5 | 16 | 2,3 | 4 | 1,45 | 50 | - | 3,45 | 16,64 | 17,22 | 17,84 | 18,51 | 19,23 | 20,01 | 2 |
| 3132518 | 1,5 | 18 | 2,3 | 4 | 1,45 | 55 | - | 3,14 | 18,71 | 19,36 | 20,06 | 20,81 | 21,62 | 22,5 | 2 |
| 3132520 | 1,5 | 20 | 2,3 | 4 | 1,45 | 55 | 25 | 2,89 | 20,77 | 21,5 | 22,28 | 23,11 | 24,01 | - | 2 |
| 3132525 | 1,5 | 25 | 2,3 | 4 | 1,45 | 60 | - | 2,4 | 25,94 | 26,85 | 27,82 | 28,86 | - | - | 2 |
| 3132530 | 1,5 | 30 | 2,3 | 4 | 1,45 | 70 | - | 2,06 | 31,11 | 32,2 | 33,36 | 34,61 | - | - | 2 |
| 3132538 | 1,5 | 38 | 2,3 | 4 | 1,45 | 80 | - | 1,67 | 39,38 | 40,75 | 42,22 | - | - | - | 2 |
| 3132540 | 1,5 | 40 | 2,3 | 4 | 1,45 | 80 | - | 1,6 | 41,45 | 42,89 | 44,44 | - | - | - | 2 |
| 3132545 | 1,5 | 45 | 2,3 | 4 | 1,45 | 80 | - | 1,44 | 46,62 | 48,24 | - | - | - | - | 2 |
| 3132606 | 1,6 | 6 | 2,4 | 4 | 1,55 | 45 | - | 6,47 | 6,3 | 6,52 | 6,76 | 7,01 | 7,29 | 7,58 | 2 |
| 3132608 | 1,6 | 8 | 2,4 | 4 | 1,55 | 45 | - | 5,45 | 8,37 | 8,66 | 8,98 | 9,31 | 9,67 | 10,07 | 2 |
| 3132610 | 1,6 | 10 | 2,4 | 4 | 1,55 | 45 | - | 4,71 | 10,44 | 10,8 | 11,19 | 11,61 | 12,06 | 12,55 | 2 |
| 3132612 | 1,6 | 12 | 2,4 | 4 | 1,55 | 45 | - | 4,14 | 12,51 | 12,94 | 13,41 | 13,91 | 14,45 | 15,04 | 2 |
| 3132614 | 1,6 | 14 | 2,4 | 4 | 1,55 | 50 | - | 3,7 | 14,57 | 15,08 | 15,63 | 16,21 | 16,84 | 17,53 | 2 |
| 3132616 | 1,6 | 16 | 2,4 | 4 | 1,55 | 50 | - | 3,34 | 16,64 | 17,22 | 17,84 | 18,51 | 19,23 | 20,01 | 2 |
| 3132618 | 1,6 | 18 | 2,4 | 4 | 1,55 | 55 | - | 3,04 | 18,71 | 19,36 | 20,06 | 20,81 | 21,62 | 22,5 | 2 |
| 3132620 | 1,6 | 20 | 2,4 | 4 | 1,55 | 55 | - | 2,8 | 20,77 | 21,5 | 22,28 | 23,11 | 24,01 | - | 2 |
| 3132806 | 1,8 | 6 | 2,7 | 4 | 1,75 | 45 | - | 5,96 | 6,42 | 6,77 | 7,1 | 7,39 | 7,68 | 7,99 | 2 |
| 3132808 | 1,8 | 8 | 2,7 | 4 | 1,75 | 45 | - | 5,01 | 8,53 | 8,96 | 9,34 | 9,69 | 10,07 | 10,48 | 2 |
| 3132810 | 1,8 | 10 | 2,7 | 4 | 1,75 | 45 | - | 4,33 | 10,64 | 11,13 | 11,56 | 11,99 | 12,46 | 12,97 | 2 |
| 3132812 | 1,8 | 12 | 2,7 | 4 | 1,75 | 45 | - | 3,81 | 12,74 | 13,29 | 13,78 | 14,29 | 14,85 | 15,45 | 2 |
| 3132814 | 1,8 | 14 | 2,7 | 4 | 1,75 | 50 | - | 3,4 | 14,83 | 15,44 | 15,99 | 16,59 | 17,24 | 17,94 | 2 |
| 3132816 | 1,8 | 16 | 2,7 | 4 | 1,75 | 50 | - | 3,07 | 16,92 | 17,58 | 18,21 | 18,89 | 19,63 | 20,43 | 2 |
| 3132818 | 1,8 | 18 | 2,7 | 4 | 1,75 | 55 | - | 2,79 | 19,01 | 19,71 | 20,43 | 21,19 | 22,02 | - | 2 |
| 3132820 | 1,8 | 20 | 2,7 | 4 | 1,75 | 55 | - | 2,57 | 21,09 | 21,85 | 22,64 | 23,49 | 24,41 | - | 2 |
| 3132825 | 1,8 | 25 | 2,7 | 4 | 1,75 | 60 | - | 2,13 | 26,28 | 27,2 | 28,18 | 29,24 | - | - | 2 |
| 3133006 | 2 | 6 | 3 | 4 | 1,95 | 45 | - | 5,62 | 6,42 | 6,77 | 7,1 | 7,39 | 7,68 | 7,99 | 2 |
| 3133008 | 2 | 8 | 3 | 4 | 1,95 | 45 | - | 4,7 | 8,53 | 8,96 | 9,34 | 9,69 | 10,07 | 10,48 | 2 |
| 3133010 | 2 | 10 | 3 | 4 | 1,95 | 45 | - | 4,04 | 10,64 | 11,13 | 11,56 | 11,99 | 12,46 | 12,97 | 2 |

# WXL-LN-EDS

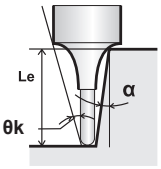
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, long neck, square
- 199 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | 0~-0.015 | Ø2<D

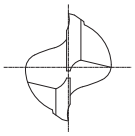
C.961

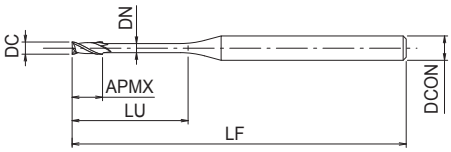
| EDP | DC | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3133012 | 2 | 12 | 3 | 4 | 1,95 | 45 | 3,54 | 12,74 | 13,29 | 13,78 | 14,29 | 14,85 | 15,45 | 2 |
| 3133014 | 2 | 14 | 3 | 4 | 1,95 | 50 | 3,15 | 14,83 | 15,44 | 15,99 | 16,59 | 17,24 | 17,94 | 2 |
| 3133016 | 2 | 16 | 3 | 4 | 1,95 | 50 | 2,84 | 16,92 | 17,58 | 18,21 | 18,89 | 19,63 | - | 2 |
| 3133018 | 2 | 18 | 3 | 4 | 1,95 | 55 | 2,58 | 19,01 | 19,71 | 20,43 | 21,19 | 22,02 | - | 2 |
| 3133020 | 2 | 20 | 3 | 4 | 1,95 | 55 | 2,37 | 21,09 | 21,85 | 22,64 | 23,49 | - | - | 2 |
| 3133025 | 2 | 25 | 3 | 4 | 1,95 | 60 | 1,96 | 26,28 | 27,2 | 28,18 | - | - | - | 2 |
| 3133030 | 2 | 30 | 3 | 4 | 1,95 | 70 | 1,68 | 31,45 | 32,55 | 33,73 | - | - | - | 2 |
| 3133035 | 2 | 35 | 3 | 4 | 1,95 | 80 | 1,46 | 36,62 | 37,9 | - | - | - | - | 2 |
| 3133040 | 2 | 40 | 3 | 4 | 1,95 | 90 | 1,3 | 41,79 | 43,25 | - | - | - | - | 2 |
| 3133050 | 2 | 50 | 3 | 4 | 1,95 | 100 | 1,06 | 52,13 | 53,94 | - | - | - | - | 2 |
| 3133060 | 2 | 60 | 3 | 4 | 1,95 | 110 | 0,89 | 62,46 | - | - | - | - | - | 2 |
| 3133508 | 2,5 | 8 | 3,7 | 4 | 2,4 | 45 | 3,86 | 8,47 | 8,87 | 9,22 | 9,57 | 9,94 | 10,35 | 2 |
| 3133510 | 2,5 | 10 | 3,7 | 4 | 2,4 | 45 | 3,27 | 10,57 | 11,03 | 11,44 | 11,87 | 12,33 | 12,83 | 2 |
| 3133512 | 2,5 | 12 | 3,7 | 4 | 2,4 | 45 | 2,84 | 12,66 | 13,18 | 13,66 | 14,17 | 14,72 | - | 2 |
| 3133514 | 2,5 | 14 | 3,7 | 4 | 2,4 | 50 | 2,51 | 14,75 | 15,32 | 15,88 | 16,47 | 17,11 | - | 2 |
| 3133516 | 2,5 | 16 | 3,7 | 4 | 2,4 | 55 | 2,25 | 16,83 | 17,46 | 18,09 | 18,77 | - | - | 2 |
| 3133518 | 2,5 | 18 | 3,7 | 4 | 2,4 | 55 | 2,03 | 18,91 | 19,6 | 20,31 | 21,07 | - | - | 2 |
| 3133520 | 2,5 | 20 | 3,7 | 4 | 2,4 | 60 | 1,86 | 20,99 | 21,74 | 22,52 | - | - | - | 2 |
| 3133525 | 2,5 | 25 | 3,7 | 4 | 2,4 | 70 | 1,53 | 26,17 | 27,09 | 28,07 | - | - | - | 2 |
| 3133530 | 2,5 | 30 | 3,7 | 4 | 2,4 | 80 | 1,3 | 31,34 | 32,44 | - | - | - | - | 2 |
| 3133540 | 2,5 | 40 | 3,7 | 4 | 2,4 | 90 | 1 | 41,68 | - | - | - | - | - | 2 |
| 3133550 | 2,5 | 50 | 3,7 | 4 | 2,4 | 100 | 0,81 | 52,02 | - | - | - | - | - | 2 |
| 3134008 | 3 | 8 | 4,5 | 6 | 2,85 | 45 | 6,19 | 8,42 | 8,79 | 9,13 | 9,47 | 9,84 | 10,24 | 2 |
| 3134010 | 3 | 10 | 4,5 | 6 | 2,85 | 45 | 5,41 | 10,51 | 10,95 | 11,35 | 11,77 | 12,23 | 12,73 | 2 |
| 3134012 | 3 | 12 | 4,5 | 6 | 2,85 | 45 | 4,81 | 12,6 | 13,09 | 13,56 | 14,07 | 14,62 | 15,21 | 2 |
| 3134014 | 3 | 14 | 4,5 | 6 | 2,85 | 50 | 4,32 | 14,68 | 15,23 | 15,78 | 16,37 | 17,01 | 17,7 | 2 |
| 3134016 | 3 | 16 | 4,5 | 6 | 2,85 | 55 | 3,93 | 16,76 | 17,37 | 18 | 18,67 | 19,4 | 20,18 | 2 |
| 3134018 | 3 | 18 | 4,5 | 6 | 2,85 | 55 | 3,6 | 18,84 | 19,51 | 20,21 | 20,97 | 21,79 | 22,67 | 2 |
| 3134020 | 3 | 20 | 4,5 | 6 | 2,85 | 60 | 3,32 | 20,91 | 21,65 | 22,43 | 23,27 | 24,18 | 25,16 | 2 |
| 3134025 | 3 | 25 | 4,5 | 6 | 2,85 | 65 | 2,79 | 26,09 | 27 | 27,97 | 29,02 | 30,15 | - | 2 |
| 3134030 | 3 | 30 | 4,5 | 6 | 2,85 | 80 | 2,4 | 31,25 | 32,34 | 33,51 | 34,77 | - | - | 2 |
| 3134035 | 3 | 35 | 4,5 | 6 | 2,85 | 90 | 2,1 | 36,42 | 37,69 | 39,05 | 40,52 | - | - | 2 |
| 3134040 | 3 | 40 | 4,5 | 6 | 2,85 | 90 | 1,87 | 41,59 | 43,04 | 44,6 | - | - | - | 2 |
| 3134050 | 3 | 50 | 4,5 | 6 | 2,85 | 100 | 1,54 | 51,93 | 53,74 | 55,68 | - | - | - | 2 |
| 3135012 | 4 | 12 | 6 | 6 | 3,85 | 50 | 3,58 | 12,6 | 13,09 | 13,56 | 14,07 | 14,62 | 15,21 | 2 |
| 3135016 | 4 | 16 | 6 | 6 | 3,85 | 60 | 2,87 | 16,76 | 17,37 | 18 | 18,67 | 19,4 | - | 2 |
| 3135020 | 4 | 20 | 6 | 6 | 3,85 | 60 | 2,39 | 20,91 | 21,65 | 22,43 | 23,27 | - | - | 2 |
| 3135025 | 4 | 25 | 6 | 6 | 3,85 | 70 | 1,98 | 26,09 | 27 | 27,97 | - | - | - | 2 |
| 3135030 | 4 | 30 | 6 | 6 | 3,85 | 80 | 1,69 | 31,25 | 32,34 | 33,51 | - | - | - | 2 |
| 3135035 | 4 | 35 | 6 | 6 | 3,85 | 90 | 1,47 | 36,42 | 37,69 | - | - | - | - | 2 |
| 3135040 | 4 | 40 | 6 | 6 | 3,85 | 90 | 1,3 | 41,59 | 43,04 | - | - | - | - | 2 |
| 3135045 | 4 | 45 | 6 | 6 | 3,85 | 100 | 1,17 | 46,76 | 48,39 | - | - | - | - | 2 |
| 3135050 | 4 | 50 | 6 | 6 | 3,85 | 100 | 1,06 | 51,93 | 53,74 | - | - | - | - | 2 |
| 3135060 | 4 | 60 | 6 | 6 | 3,85 | 110 | 0,9 | 62,26 | - | - | - | - | - | 2 |
| 3136016 | 5 | 16 | 7,5 | 6 | 4,85 | 60 | 1,58 | 16,76 | 17,37 | 18 | - | - | - | 2 |
| 3136020 | 5 | 20 | 7,5 | 6 | 4,85 | 70 | 1,3 | 20,91 | 21,65 | - | - | - | - | 2 |

# WXL-LN-EDS

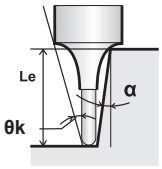


**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, long neck, square
- 199 sizes

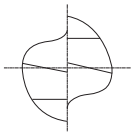


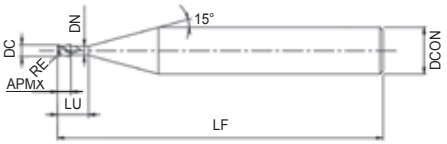
| EDP | DC | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 3136025 | 5 | 25 | 7,5 | 6 | 4,85 | 70 | 1,06 | 26,09 | 27 | 2 |
| 3136030 | 5 | 30 | 7,5 | 6 | 4,85 | 90 | 0,89 | 31,25 | - | 2 |
| 3136035 | 5 | 35 | 7,5 | 6 | 4,85 | 90 | 0,77 | 36,42 | - | 2 |
| 3136040 | 5 | 40 | 7,5 | 6 | 4,85 | 100 | 0,68 | 41,59 | - | 2 |
| 3136050 | 5 | 50 | 7,5 | 6 | 4,85 | 110 | 0,55 | 51,93 | - | 2 |
| 3136060 | 5 | 60 | 7,5 | 6 | 4,85 | 120 | 0,46 | - | - | 2 |
| 3137020 | 6 | 20 | 9 | 6 | 5,85 | 80 | - | - | - | 2 |
| 3137030 | 6 | 30 | 9 | 6 | 5,85 | 90 | - | - | - | 2 |
| 3137040 | 6 | 40 | 9 | 6 | 5,85 | 100 | - | - | - | 2 |
| 3137050 | 6 | 50 | 9 | 6 | 5,85 | 110 | - | - | - | 2 |
| 3137060 | 6 | 60 | 9 | 6 | 5,85 | 120 | - | - | - | 2 |
| 3138040 | 8 | 40 | 12 | 8 | 7,85 | 110 | - | - | - | 2 |
| 3139050 | 10 | 50 | 15 | 10 | 9,85 | 125 | - | - | - | 2 |
| 3140060 | 12 | 60 | 18 | 12 | 11,9 | 140 | - | - | - | 2 |

# WXL-CR-EDS-6

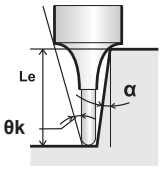


**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For general applications
- 2 flutes, corner radius
- Shank diameter 6

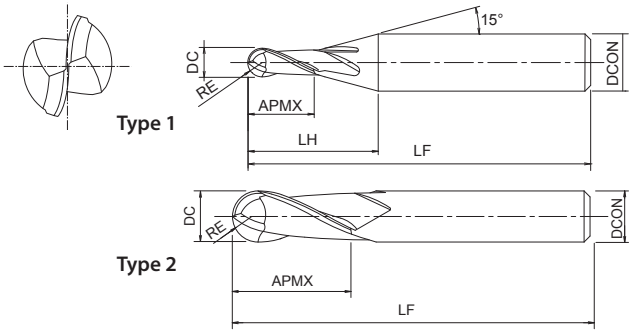


| EDP | DC | RE | LU | APMX | DCON | DN | LF | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48144060 | 0,6 | 0,1 | 1,8 | 0,9 | 6 | 0,55 | 50 | 1,86 | 1,92 | 1,99 | 2,07 | 2,15 | 2,23 | 2 |
| 48144080 | 0,8 | 0,1 | 2,4 | 1,2 | 6 | 0,75 | 50 | 2,48 | 2,56 | 2,66 | 2,76 | 2,86 | 2,98 | 2 |
| 48144100 | 1 | 0,1 | 2,5 | 1,5 | 6 | 0,95 | 50 | 2,58 | 2,67 | 2,77 | 2,85 | 2,98 | 3,1 | 2 |
| 48144120 | 1,2 | 0,1 | 3 | 1,8 | 6 | 1,15 | 50 | 3,1 | 3,2 | 3,32 | 3,45 | 3,58 | 3,72 | 2 |
| 48144150 | 1,5 | 0,1 | 3,8 | 2,3 | 6 | 1,45 | 50 | 3,92 | 4,06 | 4,21 | 4,36 | 4,54 | 4,72 | 2 |
| 48144180 | 1,8 | 0,1 | 4,5 | 2,7 | 6 | 1,75 | 50 | 4,62 | 4,81 | 4,98 | 5,17 | 5,37 | 5,59 | 2 |
| 48144200 | 2 | 0,1 | 5 | 3 | 6 | 1,95 | 50 | 5,16 | 5,34 | 5,54 | 5,74 | 5,97 | 6,21 | 2 |
| 48144250 | 2,5 | 0,1 | 5 | 3,7 | 6 | 2,4 | 50 | 5,16 | 5,34 | 5,54 | 5,74 | 5,97 | 6,21 | 2 |

# WXL-HS-EBD



**Milling | Solid carbide**




- Carbide end mill with WXL coating
- For high speed milling in steels, stainless and cast iron
- 2 flutes, shorter overall length, ball nose

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R 0.003~-0.007 3≤R≤6 | R ± 0.005 R<3

C.964

| EDP | DC | RE | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 3107020 | 0,2 | 0,1 | 0,4 | 4 | 35 | 6,5 | 2 | 1 |
| 3107040 | 0,4 | 0,2 | 0,8 | 4 | 35 | 6,9 | 2 | 1 |
| 3107060 | 0,6 | 0,3 | 1,1 | 4 | 35 | 6,9 | 2 | 1 |
| 3107080 | 0,8 | 0,4 | 2 | 4 | 35 | 7,4 | 2 | 1 |
| 3107100 | 1 | 0,5 | 1,5 | 4 | 40 | 6,7 | 2 | 1 |
| 3107120 | 1,2 | 0,6 | 3 | 4 | 40 | 7,9 | 2 | 1 |
| 3107150 | 1,5 | 0,75 | 2 | 4 | 40 | 6,4 | 2 | 1 |
| 3107200 | 2 | 1 | 3 | 4 | 40 | 7,1 | 2 | 1 |
| 3107300 | 3 | 1,5 | 4,5 | 4 | 40 | 7,9 | 2 | 1 |
| 3107400 | 4 | 2 | 6 | 6 | 40 | 11,2 | 2 | 1 |
| 3108500 | 5 | 2,5 | 8 | 6 | 40 | 11,6 | 2 | 1 |
| 3108600 | 6 | 3 | 10 | 6 | 45 | - | 2 | 2 |
| 3108620 | 8 | 4 | 12 | 8 | 55 | - | 2 | 2 |
| 3108640 | 10 | 5 | 15 | 10 | 65 | - | 2 | 2 |
| 3108660 | 12 | 6 | 18 | 12 | 70 | - | 2 | 2 |

# WXL-EBD

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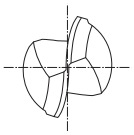
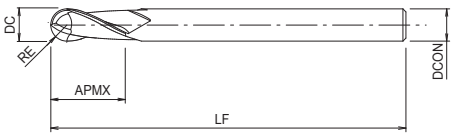
**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For high speed milling in steels, stainless and cast iron
- 2 flutes, ball nose

| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 3105010 | 0,1 | 0,05 | 0,2 | 4 | 40 | 2 |
| 3105020 | 0,2 | 0,1 | 0,4 | 4 | 40 | 2 |
| 3105030 | 0,3 | 0,15 | 0,6 | 4 | 40 | 2 |
| 3106030 | 0,3 | 0,15 | 0,6 | 6 | 50 | 2 |
| 3105040 | 0,4 | 0,2 | 0,8 | 4 | 40 | 2 |
| 3106040 | 0,4 | 0,2 | 0,8 | 6 | 50 | 2 |
| 3105050 | 0,5 | 0,25 | 1,1 | 4 | 40 | 2 |
| 3106050 | 0,5 | 0,25 | 1,1 | 6 | 50 | 2 |
| 3105060 | 0,6 | 0,3 | 1,1 | 4 | 40 | 2 |
| 3106060 | 0,6 | 0,3 | 1,1 | 6 | 50 | 2 |
| 3106710 | 0,7 | 0,35 | 1,5 | 4 | 40 | 2 |
| 3105080 | 0,8 | 0,4 | 2 | 4 | 40 | 2 |
| 3106080 | 0,8 | 0,4 | 2 | 6 | 50 | 2 |
| 3106720 | 0,9 | 0,45 | 2,2 | 4 | 50 | 2 |
| 3105100 | 1 | 0,5 | 1,5 | 4 | 50 | 2 |
| 3105101 | 1 | 0,5 | 2,5 | 4 | 50 | 2 |
| 3106100 | 1 | 0,5 | 2,5 | 6 | 60 | 2 |
| 3106730 | 1,1 | 0,55 | 2,7 | 4 | 50 | 2 |
| 3105120 | 1,2 | 0,6 | 3 | 4 | 50 | 2 |
| 3106740 | 1,3 | 0,65 | 3,2 | 4 | 50 | 2 |
| 3105140 | 1,4 | 0,7 | 3,5 | 4 | 50 | 2 |
| 3105150 | 1,5 | 0,75 | 2 | 4 | 50 | 2 |
| 3105151 | 1,5 | 0,75 | 4 | 4 | 50 | 2 |
| 3106150 | 1,5 | 0,75 | 4 | 6 | 50 | 2 |
| 3105160 | 1,6 | 0,8 | 4 | 4 | 50 | 2 |
| 3106750 | 1,7 | 0,85 | 4,2 | 4 | 50 | 2 |
| 3106760 | 1,8 | 0,9 | 4,5 | 4 | 50 | 2 |
| 3106770 | 1,9 | 0,95 | 4,7 | 4 | 50 | 2 |
| 3105200 | 2 | 1 | 3 | 4 | 50 | 2 |
| 3105201 | 2 | 1 | 6 | 4 | 50 | 2 |
| 3106200 | 2 | 1 | 5 | 6 | 50 | 2 |
| 3106780 | 2,1 | 1,05 | 4,8 | 6 | 50 | 2 |
| 3106790 | 2,2 | 1,1 | 4,9 | 6 | 50 | 2 |
| 3106800 | 2,3 | 1,15 | 5 | 6 | 50 | 2 |
| 3106810 | 2,4 | 1,2 | 5,1 | 6 | 50 | 2 |
| 3105250 | 2,5 | 1,25 | 3 | 4 | 50 | 2 |
| 3105251 | 2,5 | 1,25 | 6 | 4 | 50 | 2 |
| 3106250 | 2,5 | 1,25 | 6 | 6 | 60 | 2 |
| 3106820 | 2,6 | 1,3 | 5,2 | 6 | 50 | 2 |
| 3106830 | 2,7 | 1,35 | 5,4 | 6 | 50 | 2 |
| 3106840 | 2,8 | 1,4 | 5,6 | 6 | 60 | 2 |
| 3106850 | 2,9 | 1,45 | 5,8 | 6 | 60 | 2 |
| 3105300 | 3 | 1,5 | 4,5 | 4 | 60 | 2 |
| 3106300 | 3 | 1,5 | 4,5 | 6 | 60 | 2 |
| 3106301 | 3 | 1,5 | 8 | 6 | 60 | 2 |
| 3106350 | 3,5 | 1,75 | 8 | 6 | 70 | 2 |

# WXL-EBD

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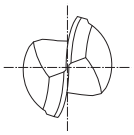
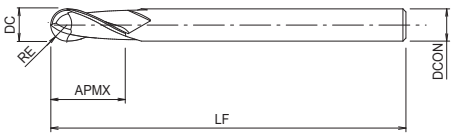
**Milling | Solid carbide**





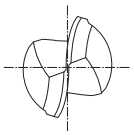

- Carbide end mill with WXL coating
- For high speed milling in steels, stainless and cast iron
- 2 flutes, ball nose

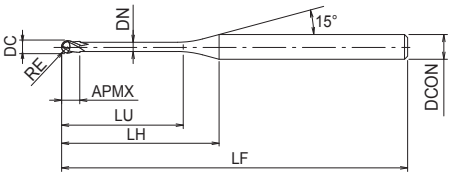
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 3105400 | 4 | 2 | 8 | 4 | 60 | 2 |
| 3106400 | 4 | 2 | 6 | 6 | 70 | 2 |
| 3106401 | 4 | 2 | 8 | 6 | 70 | 2 |
| 3106860 | 4,5 | 2,25 | 8 | 6 | 80 | 2 |
| 3106500 | 5 | 2,5 | 8 | 6 | 80 | 2 |
| 3106501 | 5 | 2,5 | 10 | 6 | 80 | 2 |
| 3106502 | 5 | 2,5 | 12 | 6 | 80 | 2 |
| 3106870 | 5,5 | 2,75 | 10 | 6 | 80 | 2 |
| 3106600 | 6 | 3 | 10 | 6 | 90 | 2 |
| 3106601 | 6 | 3 | 12 | 6 | 90 | 2 |
| 3106880 | 6,5 | 3,25 | 13 | 6 | 90 | 2 |
| 3106610 | 7 | 3,5 | 14 | 6 | 90 | 2 |
| 3106890 | 7,5 | 3,75 | 14 | 6 | 90 | 2 |
| 3106620 | 8 | 4 | 12 | 8 | 100 | 2 |
| 3106621 | 8 | 4 | 14 | 8 | 100 | 2 |
| 3106900 | 8,5 | 4,25 | 16 | 8 | 100 | 2 |
| 3106630 | 9 | 4,5 | 18 | 8 | 100 | 2 |
| 3106910 | 9,5 | 4,75 | 18 | 8 | 100 | 2 |
| 3106640 | 10 | 5 | 15 | 10 | 100 | 2 |
| 3106641 | 10 | 5 | 18 | 10 | 100 | 2 |
| 3106650 | 11 | 5,5 | 22 | 10 | 100 | 2 |
| 3106660 | 12 | 6 | 18 | 12 | 110 | 2 |
| 3106661 | 12 | 6 | 22 | 12 | 110 | 2 |
| 3106920 | 13 | 6,5 | 24 | 12 | 110 | 2 |
| 3106670 | 14 | 7 | 26 | 12 | 110 | 2 |
| 3106930 | 15 | 7,5 | 28 | 12 | 110 | 2 |
| 3106680 | 16 | 8 | 30 | 16 | 140 | 2 |
| 3106690 | 18 | 9 | 34 | 16 | 140 | 2 |
| 3106700 | 20 | 10 | 38 | 20 | 160 | 2 |

# WXL-LN-EBD

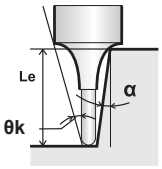
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes



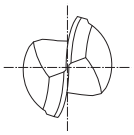
C.966

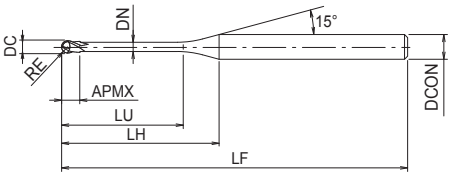
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3110103 | 0,1 | 0,05 | 0,3 | 0,08 | 4 | 0,09 | 45 | 7,5 | 14,46 | 0,34 | 0,35 | 0,36 | 0,37 | 0,38 | 0,4 | 2 |
| 3110105 | 0,1 | 0,05 | 0,5 | 0,08 | 4 | 0,09 | 45 | 7,7 | 14,1 | 0,54 | 0,56 | 0,58 | 0,6 | 0,62 | 0,64 | 2 |
| 3110203 | 0,2 | 0,1 | 0,3 | 0,16 | 4 | 0,18 | 45 | 7,3 | 14,59 | 0,3 | 0,31 | 0,32 | 0,33 | 0,34 | 0,35 | 2 |
| 3110205 | 0,2 | 0,1 | 0,5 | 0,16 | 4 | 0,18 | 45 | 7,5 | 14,44 | 0,53 | 0,55 | 0,57 | 0,59 | 0,61 | 0,63 | 2 |
| 3120205 | 0,2 | 0,1 | 0,5 | 0,16 | 6 | 0,18 | 50 | 11,3 | 14,16 | 0,53 | 0,55 | 0,57 | 0,59 | 0,61 | 0,63 | 2 |
| 3110207 | 0,2 | 0,1 | 0,75 | 0,16 | 4 | 0,18 | 45 | 7,8 | 13,72 | 0,79 | 0,82 | 0,85 | 0,88 | 0,91 | 0,94 | 2 |
| 3110210 | 0,2 | 0,1 | 1 | 0,16 | 4 | 0,18 | 45 | 8 | 13,31 | 1,05 | 1,09 | 1,13 | 1,17 | 1,21 | 1,26 | 2 |
| 3120210 | 0,2 | 0,1 | 1 | 0,16 | 6 | 0,18 | 50 | 11,8 | 13,85 | 1,05 | 1,09 | 1,13 | 1,17 | 1,21 | 1,26 | 2 |
| 3110212 | 0,2 | 0,1 | 1,25 | 0,16 | 4 | 0,18 | 45 | 8,3 | 12,92 | 1,31 | 1,36 | 1,41 | 1,46 | 1,51 | 1,57 | 2 |
| 3110215 | 0,2 | 0,1 | 1,5 | 0,16 | 4 | 0,18 | 45 | 8,5 | 12,56 | 1,57 | 1,63 | 1,68 | 1,74 | 1,81 | 1,88 | 2 |
| 3120215 | 0,2 | 0,1 | 1,5 | 0,16 | 6 | 0,18 | 50 | 12,3 | 13,3 | 1,57 | 1,63 | 1,68 | 1,74 | 1,81 | 1,88 | 2 |
| 3110217 | 0,2 | 0,1 | 1,75 | 0,16 | 4 | 0,18 | 45 | 8,8 | 12,21 | 1,83 | 1,9 | 1,96 | 2,03 | 2,11 | 2,19 | 2 |
| 3110220 | 0,2 | 0,1 | 2 | 0,16 | 4 | 0,18 | 45 | 9 | 11,88 | 2,09 | 2,16 | 2,24 | 2,32 | 2,4 | 2,5 | 2 |
| 3120220 | 0,2 | 0,1 | 2 | 0,16 | 6 | 0,18 | 50 | 12,8 | 12,8 | 2,09 | 2,16 | 2,24 | 2,32 | 2,4 | 2,5 | 2 |
| 3110225 | 0,2 | 0,1 | 2,5 | 0,16 | 4 | 0,18 | 45 | 9,5 | 11,28 | 2,61 | 2,7 | 2,79 | 2,89 | 3 | 3,12 | 2 |
| 3110230 | 0,2 | 0,1 | 3 | 0,16 | 4 | 0,18 | 45 | 10 | 10,73 | 3,13 | 3,23 | 3,35 | 3,47 | 3,6 | 3,74 | 2 |
| 3110305 | 0,3 | 0,15 | 0,5 | 0,24 | 4 | 0,28 | 45 | 7,3 | 14,22 | 0,52 | 0,54 | 0,56 | 0,58 | 0,6 | 0,62 | 2 |
| 3110306 | 0,3 | 0,15 | 0,6 | 0,24 | 4 | 0,28 | 45 | 7,4 | 14,03 | 0,63 | 0,65 | 0,68 | 0,7 | 0,72 | 0,75 | 2 |
| 3110307 | 0,3 | 0,15 | 0,75 | 0,24 | 4 | 0,28 | 45 | 7,6 | 13,77 | 0,79 | 0,82 | 0,85 | 0,87 | 0,9 | 0,93 | 2 |
| 3110310 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,28 | 45 | 7,8 | 13,34 | 1,05 | 1,09 | 1,12 | 1,16 | 1,2 | 1,24 | 2 |
| 3120310 | 0,3 | 0,15 | 1 | 0,24 | 6 | 0,28 | 50 | 11,6 | 13,88 | 1,05 | 1,09 | 1,12 | 1,16 | 1,2 | 1,24 | 2 |
| 3110312 | 0,3 | 0,15 | 1,25 | 0,24 | 4 | 0,28 | 45 | 8,1 | 12,94 | 1,31 | 1,36 | 1,4 | 1,45 | 1,5 | 1,55 | 2 |
| 3110315 | 0,3 | 0,15 | 1,5 | 0,24 | 4 | 0,28 | 45 | 8,3 | 12,57 | 1,57 | 1,63 | 1,68 | 1,74 | 1,8 | 1,87 | 2 |
| 3120315 | 0,3 | 0,15 | 1,5 | 0,24 | 6 | 0,28 | 50 | 12,1 | 13,33 | 1,57 | 1,63 | 1,68 | 1,74 | 1,8 | 1,87 | 2 |
| 3110317 | 0,3 | 0,15 | 1,75 | 0,24 | 4 | 0,28 | 45 | 8,6 | 12,21 | 1,83 | 1,89 | 1,96 | 2,02 | 2,1 | 2,18 | 2 |
| 3110320 | 0,3 | 0,15 | 2 | 0,24 | 4 | 0,28 | 45 | 8,8 | 11,87 | 2,09 | 2,16 | 2,23 | 2,31 | 2,4 | 2,49 | 2 |
| 3120320 | 0,3 | 0,15 | 2 | 0,24 | 6 | 0,28 | 50 | 12,6 | 12,81 | 2,09 | 2,16 | 2,23 | 2,31 | 2,4 | 2,49 | 2 |
| 3110322 | 0,3 | 0,15 | 2,25 | 0,24 | 4 | 0,28 | 45 | 9,1 | 11,56 | 2,35 | 2,43 | 2,51 | 2,6 | 2,69 | 2,8 | 2 |
| 3110325 | 0,3 | 0,15 | 2,5 | 0,24 | 4 | 0,28 | 45 | 9,3 | 11,25 | 2,61 | 2,69 | 2,79 | 2,89 | 2,99 | 3,11 | 2 |
| 3120325 | 0,3 | 0,15 | 2,5 | 0,24 | 6 | 0,28 | 50 | 13,1 | 12,34 | 2,61 | 2,69 | 2,79 | 2,89 | 2,99 | 3,11 | 2 |
| 3110327 | 0,3 | 0,15 | 2,75 | 0,24 | 4 | 0,28 | 45 | 9,6 | 10,97 | 2,87 | 2,96 | 3,06 | 3,17 | 3,29 | 3,42 | 2 |
| 3110330 | 0,3 | 0,15 | 3 | 0,24 | 4 | 0,28 | 45 | 9,8 | 10,69 | 3,13 | 3,23 | 3,34 | 3,46 | 3,59 | 3,73 | 2 |
| 3120330 | 0,3 | 0,15 | 3 | 0,24 | 6 | 0,28 | 50 | 13,6 | 11,89 | 3,13 | 3,23 | 3,34 | 3,46 | 3,59 | 3,73 | 2 |
| 3110335 | 0,3 | 0,15 | 3,5 | 0,24 | 4 | 0,28 | 45 | 10,3 | 10,19 | 3,64 | 3,76 | 3,9 | 4,04 | 4,19 | 4,35 | 2 |
| 3110340 | 0,3 | 0,15 | 4 | 0,24 | 4 | 0,28 | 45 | 10,8 | 9,72 | 4,16 | 4,3 | 4,45 | 4,61 | 4,78 | 4,97 | 2 |
| 3110345 | 0,3 | 0,15 | 4,5 | 0,24 | 4 | 0,28 | 45 | 11,3 | 9,3 | 4,68 | 4,83 | 5 | 5,19 | 5,38 | 5,59 | 2 |
| 3110350 | 0,3 | 0,15 | 5 | 0,24 | 4 | 0,28 | 45 | 11,8 | 8,91 | 5,19 | 5,37 | 5,56 | 5,76 | 5,98 | 6,22 | 2 |
| 3110405 | 0,4 | 0,2 | 0,5 | 0,3 | 4 | 0,37 | 45 | 7,1 | 14,3 | 0,52 | 0,53 | 0,55 | 0,56 | 0,58 | 0,6 | 2 |
| 3110407 | 0,4 | 0,2 | 0,75 | 0,3 | 4 | 0,37 | 45 | 7,4 | 13,83 | 0,78 | 0,8 | 0,83 | 0,85 | 0,88 | 0,91 | 2 |
| 3110410 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,37 | 45 | 7,6 | 13,39 | 1,04 | 1,07 | 1,11 | 1,14 | 1,18 | 1,22 | 2 |
| 3120410 | 0,4 | 0,2 | 1 | 0,3 | 6 | 0,37 | 50 | 11,4 | 13,93 | 1,04 | 1,07 | 1,11 | 1,14 | 1,18 | 1,22 | 2 |
| 3110415 | 0,4 | 0,2 | 1,5 | 0,3 | 4 | 0,37 | 45 | 8,1 | 12,59 | 1,56 | 1,61 | 1,66 | 1,72 | 1,77 | 1,84 | 2 |
| 3120415 | 0,4 | 0,2 | 1,5 | 0,3 | 6 | 0,37 | 50 | 11,9 | 13,36 | 1,56 | 1,61 | 1,66 | 1,72 | 1,77 | 1,84 | 2 |
| 3110420 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,37 | 45 | 8,6 | 11,88 | 2,08 | 2,14 | 2,21 | 2,29 | 2,37 | 2,46 | 2 |
| 3120420 | 0,4 | 0,2 | 2 | 0,3 | 6 | 0,37 | 50 | 12,4 | 12,83 | 2,08 | 2,14 | 2,21 | 2,29 | 2,37 | 2,46 | 2 |
| 3110425 | 0,4 | 0,2 | 2,5 | 0,3 | 4 | 0,37 | 45 | 9,1 | 11,24 | 2,6 | 2,68 | 2,77 | 2,87 | 2,97 | 3,08 | 2 |

# WXL-LN-EBD

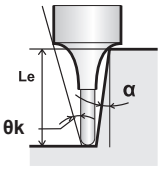
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005

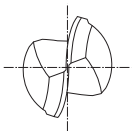
C.966

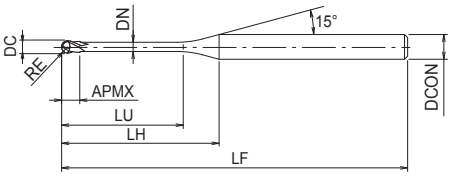
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3120425 | 0,4 | 0,2 | 2,5 | 0,3 | 6 | 0,37 | 50 | 12,9 | 12,35 | 2,6 | 2,68 | 2,77 | 2,87 | 2,97 | 3,08 | 2 |
| 3110430 | 0,4 | 0,2 | 3 | 0,3 | 4 | 0,37 | 45 | 9,6 | 10,67 | 3,11 | 3,21 | 3,32 | 3,44 | 3,57 | 3,7 | 2 |
| 3120430 | 0,4 | 0,2 | 3 | 0,3 | 6 | 0,37 | 50 | 13,4 | 11,9 | 3,11 | 3,21 | 3,32 | 3,44 | 3,57 | 3,7 | 2 |
| 3110435 | 0,4 | 0,2 | 3,5 | 0,3 | 4 | 0,37 | 45 | 10,1 | 10,15 | 3,63 | 3,75 | 3,88 | 4,02 | 4,16 | 4,33 | 2 |
| 3110440 | 0,4 | 0,2 | 4 | 0,3 | 4 | 0,37 | 45 | 10,6 | 9,68 | 4,15 | 4,28 | 4,43 | 4,59 | 4,76 | 4,95 | 2 |
| 3120440 | 0,4 | 0,2 | 4 | 0,3 | 6 | 0,37 | 50 | 14,4 | 11,09 | 4,15 | 4,28 | 4,43 | 4,59 | 4,76 | 4,95 | 2 |
| 3110445 | 0,4 | 0,2 | 4,5 | 0,3 | 4 | 0,37 | 45 | 11,1 | 9,25 | 4,66 | 4,82 | 4,99 | 5,17 | 5,36 | 5,57 | 2 |
| 3110450 | 0,4 | 0,2 | 5 | 0,3 | 4 | 0,37 | 45 | 11,6 | 8,86 | 5,18 | 5,35 | 5,54 | 5,74 | 5,96 | 6,19 | 2 |
| 3120450 | 0,4 | 0,2 | 5 | 0,3 | 6 | 0,37 | 50 | 15,4 | 10,38 | 5,18 | 5,35 | 5,54 | 5,74 | 5,96 | 6,19 | 2 |
| 3110455 | 0,4 | 0,2 | 5,5 | 0,3 | 4 | 0,37 | 45 | 12,1 | 8,5 | 5,7 | 5,89 | 6,09 | 6,32 | 6,55 | 6,81 | 2 |
| 3110460 | 0,4 | 0,2 | 6 | 0,3 | 4 | 0,37 | 45 | 12,6 | 8,16 | 6,21 | 6,42 | 6,65 | 6,89 | 7,15 | 7,43 | 2 |
| 3120460 | 0,4 | 0,2 | 6 | 0,3 | 6 | 0,37 | 50 | 16,4 | 9,76 | 6,21 | 6,42 | 6,65 | 6,89 | 7,15 | 7,43 | 2 |
| 3110510 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,45 | 45 | 7,6 | 13,45 | 1,03 | 1,06 | 1,09 | 1,12 | 1,15 | 1,19 | 2 |
| 3110515 | 0,5 | 0,25 | 1,5 | 0,4 | 4 | 0,45 | 45 | 8,1 | 12,62 | 1,55 | 1,59 | 1,64 | 1,69 | 1,75 | 1,81 | 2 |
| 3120515 | 0,5 | 0,25 | 1,5 | 0,4 | 6 | 0,45 | 50 | 11,9 | 13,4 | 1,55 | 1,59 | 1,64 | 1,69 | 1,75 | 1,81 | 2 |
| 3110520 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,45 | 45 | 8,6 | 11,89 | 2,06 | 2,13 | 2,2 | 2,27 | 2,35 | 2,43 | 2 |
| 3120520 | 0,5 | 0,25 | 2 | 0,4 | 6 | 0,45 | 50 | 12,4 | 12,86 | 2,06 | 2,13 | 2,2 | 2,27 | 2,35 | 2,43 | 2 |
| 3110525 | 0,5 | 0,25 | 2,5 | 0,4 | 4 | 0,45 | 45 | 9,1 | 11,23 | 2,58 | 2,66 | 2,75 | 2,84 | 2,94 | 3,05 | 2 |
| 3120525 | 0,5 | 0,25 | 2,5 | 0,4 | 6 | 0,45 | 50 | 12,9 | 12,36 | 2,58 | 2,66 | 2,75 | 2,84 | 2,94 | 3,05 | 2 |
| 3110530 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,45 | 45 | 9,6 | 10,65 | 3,1 | 3,2 | 3,3 | 3,42 | 3,54 | 3,68 | 2 |
| 3120530 | 0,5 | 0,25 | 3 | 0,4 | 6 | 0,45 | 50 | 13,4 | 11,9 | 3,1 | 3,2 | 3,3 | 3,42 | 3,54 | 3,68 | 2 |
| 3110535 | 0,5 | 0,25 | 3,5 | 0,4 | 4 | 0,45 | 45 | 10,1 | 10,12 | 3,61 | 3,73 | 3,86 | 3,99 | 4,14 | 4,3 | 2 |
| 3110540 | 0,5 | 0,25 | 4 | 0,4 | 4 | 0,45 | 45 | 10,6 | 9,64 | 4,13 | 4,27 | 4,41 | 4,57 | 4,74 | 4,92 | 2 |
| 3120540 | 0,5 | 0,25 | 4 | 0,4 | 6 | 0,45 | 50 | 14,4 | 11,08 | 4,13 | 4,27 | 4,41 | 4,57 | 4,74 | 4,92 | 2 |
| 3110545 | 0,5 | 0,25 | 4,5 | 0,4 | 4 | 0,45 | 45 | 11,1 | 9,2 | 4,65 | 4,8 | 4,97 | 5,14 | 5,33 | 5,54 | 2 |
| 3110550 | 0,5 | 0,25 | 5 | 0,4 | 4 | 0,45 | 45 | 11,6 | 8,8 | 5,17 | 5,34 | 5,52 | 5,72 | 5,93 | 6,16 | 2 |
| 3120550 | 0,5 | 0,25 | 5 | 0,4 | 6 | 0,45 | 50 | 15,4 | 10,36 | 5,17 | 5,34 | 5,52 | 5,72 | 5,93 | 6,16 | 2 |
| 3110555 | 0,5 | 0,25 | 5,5 | 0,4 | 4 | 0,45 | 45 | 12,1 | 8,43 | 5,68 | 5,87 | 6,07 | 6,29 | 6,53 | 6,78 | 2 |
| 3110560 | 0,5 | 0,25 | 6 | 0,4 | 4 | 0,45 | 45 | 12,6 | 8,1 | 6,2 | 6,41 | 6,63 | 6,87 | 7,13 | 7,41 | 2 |
| 3120560 | 0,5 | 0,25 | 6 | 0,4 | 6 | 0,45 | 50 | 16,4 | 9,73 | 6,2 | 6,41 | 6,63 | 6,87 | 7,13 | 7,41 | 2 |
| 3110570 | 0,5 | 0,25 | 7 | 0,4 | 4 | 0,45 | 45 | 13,6 | 7,49 | 7,23 | 7,48 | 7,74 | 8,02 | 8,32 | 8,65 | 2 |
| 3110580 | 0,5 | 0,25 | 8 | 0,4 | 4 | 0,45 | 45 | 14,6 | 6,98 | 8,27 | 8,55 | 8,85 | 9,17 | 9,52 | 9,89 | 2 |
| 3120580 | 0,5 | 0,25 | 8 | 0,4 | 6 | 0,45 | 50 | 18,4 | 8,67 | 8,27 | 8,55 | 8,85 | 9,17 | 9,52 | 9,89 | 2 |
| 3110590 | 0,5 | 0,25 | 9 | 0,4 | 4 | 0,45 | 45 | 15,6 | 6,52 | 9,3 | 9,62 | 9,95 | 10,32 | 10,71 | 11,14 | 2 |
| 3110600 | 0,5 | 0,25 | 10 | 0,4 | 4 | 0,45 | 45 | 16,6 | 6,13 | 10,33 | 10,68 | 11,06 | 11,47 | 11,9 | 12,38 | 2 |
| 3110610 | 0,6 | 0,3 | 1 | 0,5 | 4 | 0,55 | 45 | 7,4 | 13,49 | 1,03 | 1,05 | 1,08 | 1,11 | 1,14 | 1,18 | 2 |
| 3110615 | 0,6 | 0,3 | 1,5 | 0,5 | 4 | 0,55 | 45 | 7,9 | 12,64 | 1,55 | 1,59 | 1,64 | 1,69 | 1,74 | 1,8 | 2 |
| 3120615 | 0,6 | 0,3 | 1,5 | 0,5 | 6 | 0,55 | 50 | 11,7 | 13,42 | 1,55 | 1,59 | 1,64 | 1,69 | 1,74 | 1,8 | 2 |
| 3110620 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 8,4 | 11,88 | 2,06 | 2,12 | 2,19 | 2,26 | 2,34 | 2,42 | 2 |
| 3120620 | 0,6 | 0,3 | 2 | 0,5 | 6 | 0,55 | 50 | 12,2 | 12,87 | 2,06 | 2,12 | 2,19 | 2,26 | 2,34 | 2,42 | 2 |
| 3110625 | 0,6 | 0,3 | 2,5 | 0,5 | 4 | 0,55 | 45 | 8,9 | 11,21 | 2,58 | 2,66 | 2,74 | 2,84 | 2,94 | 3,04 | 2 |
| 3120625 | 0,6 | 0,3 | 2,5 | 0,5 | 6 | 0,55 | 50 | 12,7 | 12,37 | 2,58 | 2,66 | 2,74 | 2,84 | 2,94 | 3,04 | 2 |
| 3110630 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 9,4 | 10,61 | 3,1 | 3,19 | 3,3 | 3,41 | 3,53 | 3,66 | 2 |
| 3120630 | 0,6 | 0,3 | 3 | 0,5 | 6 | 0,55 | 50 | 13,2 | 11,9 | 3,1 | 3,19 | 3,3 | 3,41 | 3,53 | 3,66 | 2 |
| 3110635 | 0,6 | 0,3 | 3,5 | 0,5 | 4 | 0,55 | 45 | 9,9 | 10,07 | 3,61 | 3,73 | 3,85 | 3,99 | 4,13 | 4,29 | 2 |
| 3110640 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 10,4 | 9,58 | 4,13 | 4,26 | 4,41 | 4,56 | 4,73 | 4,91 | 2 |

# WXL-LN-EBD

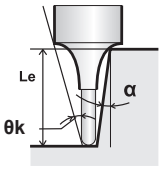
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes



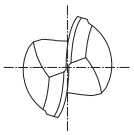
C.966

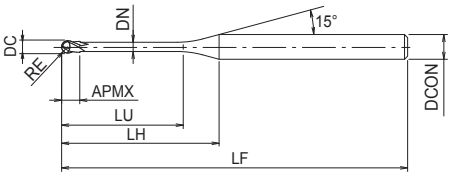
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3120640 | 0,6 | 0,3 | 4 | 0,5 | 6 | 0,55 | 50 | 14,2 | 11,06 | 4,13 | 4,26 | 4,41 | 4,56 | 4,73 | 4,91 | 2 |
| 3110645 | 0,6 | 0,3 | 4,5 | 0,5 | 4 | 0,55 | 45 | 10,9 | 9,13 | 4,65 | 4,8 | 4,96 | 5,14 | 5,32 | 5,53 | 2 |
| 3110650 | 0,6 | 0,3 | 5 | 0,5 | 4 | 0,55 | 45 | 11,4 | 8,73 | 5,16 | 5,33 | 5,51 | 5,71 | 5,92 | 6,15 | 2 |
| 3120650 | 0,6 | 0,3 | 5 | 0,5 | 6 | 0,55 | 50 | 15,2 | 10,33 | 5,16 | 5,33 | 5,51 | 5,71 | 5,92 | 6,15 | 2 |
| 3110655 | 0,6 | 0,3 | 5,5 | 0,5 | 4 | 0,55 | 45 | 11,9 | 8,36 | 5,68 | 5,87 | 6,07 | 6,29 | 6,52 | 6,77 | 2 |
| 3110660 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 12,4 | 8,02 | 6,2 | 6,4 | 6,62 | 6,86 | 7,12 | 7,39 | 2 |
| 3120660 | 0,6 | 0,3 | 6 | 0,5 | 6 | 0,55 | 50 | 16,2 | 9,69 | 6,2 | 6,4 | 6,62 | 6,86 | 7,12 | 7,39 | 2 |
| 3110665 | 0,6 | 0,3 | 6,5 | 0,5 | 4 | 0,55 | 45 | 12,9 | 7,7 | 6,71 | 6,94 | 7,18 | 7,44 | 7,71 | 8,02 | 2 |
| 3110670 | 0,6 | 0,3 | 7 | 0,5 | 4 | 0,55 | 45 | 13,4 | 7,41 | 7,23 | 7,47 | 7,73 | 8,01 | 8,31 | 8,64 | 2 |
| 3110675 | 0,6 | 0,3 | 7,5 | 0,5 | 4 | 0,55 | 45 | 13,9 | 7,14 | 7,75 | 8,01 | 8,29 | 8,59 | 8,91 | 9,26 | 2 |
| 3110680 | 0,6 | 0,3 | 8 | 0,5 | 4 | 0,55 | 45 | 14,4 | 6,89 | 8,26 | 8,54 | 8,84 | 9,16 | 9,51 | 9,88 | 2 |
| 3120680 | 0,6 | 0,3 | 8 | 0,5 | 6 | 0,55 | 50 | 18,2 | 8,62 | 8,26 | 8,54 | 8,84 | 9,16 | 9,51 | 9,88 | 2 |
| 3110685 | 0,6 | 0,3 | 8,5 | 0,5 | 4 | 0,55 | 45 | 14,9 | 6,66 | 8,78 | 9,08 | 9,39 | 9,74 | 10,1 | 10,5 | 2 |
| 3110690 | 0,6 | 0,3 | 9 | 0,5 | 4 | 0,55 | 45 | 15,4 | 6,44 | 9,3 | 9,61 | 9,95 | 10,31 | 10,7 | 11,12 | 2 |
| 3110695 | 0,6 | 0,3 | 9,5 | 0,5 | 4 | 0,55 | 45 | 15,9 | 6,23 | 9,81 | 10,15 | 10,5 | 10,89 | 11,3 | 11,75 | 2 |
| 3110700 | 0,6 | 0,3 | 10 | 0,5 | 4 | 0,55 | 45 | 16,4 | 6,04 | 10,33 | 10,68 | 11,06 | 11,46 | 11,9 | 12,37 | 2 |
| 3120700 | 0,6 | 0,3 | 10 | 0,5 | 6 | 0,55 | 50 | 20,2 | 7,76 | 10,33 | 10,68 | 11,06 | 11,46 | 11,9 | 12,37 | 2 |
| 3110711 | 0,6 | 0,3 | 11 | 0,5 | 4 | 0,55 | 45 | 17,4 | 5,69 | 11,37 | 11,75 | 12,16 | 12,61 | 13,09 | 13,61 | 2 |
| 3110712 | 0,6 | 0,3 | 12 | 0,5 | 4 | 0,55 | 45 | 18,4 | 5,38 | 12,4 | 12,82 | 13,27 | 13,76 | 14,28 | 14,85 | 2 |
| 3110820 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 8,1 | 11,86 | 2,06 | 2,12 | 2,18 | 2,25 | 2,32 | 2,4 | 2 |
| 3120820 | 0,8 | 0,4 | 2 | 0,6 | 6 | 0,75 | 50 | 11,8 | 12,9 | 2,06 | 2,12 | 2,18 | 2,25 | 2,32 | 2,4 | 2 |
| 3110830 | 0,8 | 0,4 | 3 | 0,5 | 4 | 0,75 | 45 | 9,1 | 10,52 | 3,09 | 3,19 | 3,29 | 3,4 | 3,51 | 3,64 | 2 |
| 3120830 | 0,8 | 0,4 | 3 | 0,6 | 6 | 0,75 | 50 | 12,8 | 11,89 | 3,09 | 3,19 | 3,29 | 3,4 | 3,51 | 3,64 | 2 |
| 3110840 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 10,1 | 9,45 | 4,13 | 4,26 | 4,4 | 4,55 | 4,71 | 4,88 | 2 |
| 3120840 | 0,8 | 0,4 | 4 | 0,6 | 6 | 0,75 | 50 | 13,8 | 11,02 | 4,13 | 4,26 | 4,4 | 4,55 | 4,71 | 4,88 | 2 |
| 3110850 | 0,8 | 0,4 | 5 | 0,6 | 4 | 0,75 | 45 | 11,1 | 8,58 | 5,16 | 5,33 | 5,5 | 5,7 | 5,9 | 6,13 | 2 |
| 3120850 | 0,8 | 0,4 | 5 | 0,6 | 6 | 0,75 | 50 | 14,8 | 10,27 | 5,16 | 5,33 | 5,5 | 5,7 | 5,9 | 6,13 | 2 |
| 3110860 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 12,1 | 7,85 | 6,19 | 6,4 | 6,61 | 6,85 | 7,1 | 7,37 | 2 |
| 3120860 | 0,8 | 0,4 | 6 | 0,6 | 6 | 0,75 | 50 | 15,8 | 9,62 | 6,19 | 6,4 | 6,61 | 6,85 | 7,1 | 7,37 | 2 |
| 3110870 | 0,8 | 0,4 | 7 | 0,6 | 4 | 0,75 | 45 | 13,1 | 7,24 | 7,23 | 7,47 | 7,72 | 8 | 8,29 | 8,61 | 2 |
| 3110880 | 0,8 | 0,4 | 8 | 0,6 | 4 | 0,75 | 45 | 14,1 | 6,71 | 8,26 | 8,54 | 8,83 | 9,15 | 9,49 | 9,86 | 2 |
| 3120880 | 0,8 | 0,4 | 8 | 0,6 | 6 | 0,75 | 50 | 17,8 | 8,53 | 8,26 | 8,54 | 8,83 | 9,15 | 9,49 | 9,86 | 2 |
| 3110890 | 0,8 | 0,4 | 9 | 0,6 | 4 | 0,75 | 45 | 15,1 | 6,25 | 9,29 | 9,6 | 9,94 | 10,3 | 10,68 | 11,1 | 2 |
| 3110900 | 0,8 | 0,4 | 10 | 0,6 | 4 | 0,75 | 45 | 16,1 | 5,86 | 10,33 | 10,67 | 11,05 | 11,45 | 11,88 | 12,34 | 2 |
| 3120900 | 0,8 | 0,4 | 10 | 0,6 | 6 | 0,75 | 50 | 19,8 | 7,66 | 10,33 | 10,67 | 11,05 | 11,45 | 11,88 | 12,34 | 2 |
| 3110912 | 0,8 | 0,4 | 12 | 0,5 | 4 | 0,75 | 45 | 18,1 | 5,2 | 12,4 | 12,81 | 13,26 | 13,75 | 14,27 | 14,83 | 2 |
| 3111025 | 1 | 0,5 | 2,5 | 0,8 | 4 | 0,95 | 45 | 8,2 | 11,09 | 2,57 | 2,64 | 2,72 | 2,81 | 2,9 | 3 | 2 |
| 3111030 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 8,7 | 10,43 | 3,09 | 3,18 | 3,28 | 3,38 | 3,49 | 3,62 | 2 |
| 3121030 | 1 | 0,5 | 3 | 0,8 | 6 | 0,95 | 50 | 12,4 | 11,88 | 3,09 | 3,18 | 3,28 | 3,38 | 3,49 | 3,62 | 2 |
| 3111040 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,7 | 9,32 | 4,12 | 4,25 | 4,39 | 4,53 | 4,69 | 4,86 | 2 |
| 3121040 | 1 | 0,5 | 4 | 0,8 | 6 | 0,95 | 50 | 13,4 | 10,98 | 4,12 | 4,25 | 4,39 | 4,53 | 4,69 | 4,86 | 2 |
| 3111050 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 10,7 | 8,41 | 5,16 | 5,32 | 5,49 | 5,68 | 5,88 | 6,1 | 2 |
| 3121050 | 1 | 0,5 | 5 | 0,8 | 6 | 0,95 | 50 | 14,4 | 10,21 | 5,16 | 5,32 | 5,49 | 5,68 | 5,88 | 6,1 | 2 |
| 3111060 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 11,7 | 7,67 | 6,19 | 6,39 | 6,6 | 6,83 | 7,08 | 7,35 | 2 |
| 3121060 | 1 | 0,5 | 6 | 0,8 | 6 | 0,95 | 50 | 15,4 | 9,54 | 6,19 | 6,39 | 6,6 | 6,83 | 7,08 | 7,35 | 2 |
| 3111070 | 1 | 0,5 | 7 | 0,8 | 4 | 0,95 | 45 | 12,7 | 7,05 | 7,22 | 7,46 | 7,71 | 7,98 | 8,27 | 8,59 | 2 |

# WXL-LN-EBD

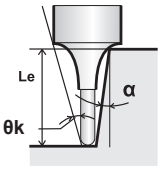
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005

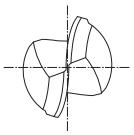
C.966

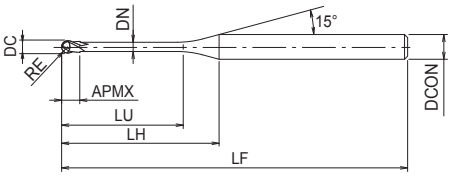
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3121070 | 1 | 0,5 | 7 | 0,8 | 6 | 0,95 | 50 | 16,4 | 8,95 | 7,22 | 7,46 | 7,71 | 7,98 | 8,27 | 8,59 | 2 |
| 3111080 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 13,7 | 6,52 | 8,26 | 8,53 | 8,82 | 9,13 | 9,47 | 9,83 | 2 |
| 3121080 | 1 | 0,5 | 8 | 0,8 | 6 | 0,95 | 50 | 17,4 | 8,43 | 8,26 | 8,53 | 8,82 | 9,13 | 9,47 | 9,83 | 2 |
| 3111090 | 1 | 0,5 | 9 | 0,8 | 4 | 0,95 | 45 | 14,7 | 6,06 | 9,29 | 9,6 | 9,93 | 10,28 | 10,66 | 11,08 | 2 |
| 3111100 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 15,7 | 5,66 | 10,33 | 10,67 | 11,04 | 11,43 | 11,86 | 12,32 | 2 |
| 3121100 | 1 | 0,5 | 10 | 0,8 | 6 | 0,95 | 50 | 19,4 | 7,55 | 10,33 | 10,67 | 11,04 | 11,43 | 11,86 | 12,32 | 2 |
| 3111112 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 17,7 | 5,01 | 12,39 | 12,81 | 13,25 | 13,73 | 14,25 | 14,81 | 2 |
| 3121112 | 1 | 0,5 | 12 | 0,8 | 6 | 0,95 | 50 | 21,4 | 6,83 | 12,39 | 12,81 | 13,25 | 13,73 | 14,25 | 14,81 | 2 |
| 3111114 | 1 | 0,5 | 14 | 0,8 | 4 | 0,95 | 50 | 19,7 | 4,49 | 14,46 | 14,95 | 15,47 | 16,03 | 16,64 | 17,29 | 2 |
| 3121114 | 1 | 0,5 | 14 | 0,8 | 6 | 0,95 | 60 | 23,4 | 6,24 | 14,46 | 14,95 | 15,47 | 16,03 | 16,64 | 17,29 | 2 |
| 3111116 | 1 | 0,5 | 16 | 0,8 | 4 | 0,95 | 50 | 21,7 | 4,06 | 16,53 | 17,09 | 17,69 | 18,33 | 19,03 | 19,78 | 2 |
| 3121116 | 1 | 0,5 | 16 | 0,8 | 6 | 0,95 | 60 | 25,4 | 5,74 | 16,53 | 17,09 | 17,69 | 18,33 | 19,03 | 19,78 | 2 |
| 3111118 | 1 | 0,5 | 18 | 0,8 | 4 | 0,95 | 55 | 23,7 | 3,71 | 18,59 | 19,23 | 19,9 | 20,63 | 21,41 | 22,26 | 2 |
| 3111120 | 1 | 0,5 | 20 | 0,8 | 4 | 0,95 | 55 | 25,7 | 4,95 | 20,66 | 21,36 | 22,12 | 22,93 | 23,8 | 24,75 | 2 |
| 3121120 | 1 | 0,5 | 20 | 0,8 | 6 | 0,95 | 60 | 29,4 | 3,42 | 20,66 | 21,36 | 22,12 | 22,93 | 23,8 | 24,75 | 2 |
| 3121122 | 1 | 0,5 | 22 | 0,8 | 6 | 0,95 | 60 | 31,4 | 4,63 | 22,73 | 23,5 | 24,33 | 25,23 | 26,19 | 27,24 | 2 |
| 3111240 | 1,2 | 0,6 | 4 | 1 | 4 | 1,15 | 45 | 9,4 | 9,07 | 4,19 | 4,34 | 4,48 | 4,62 | 4,78 | 4,95 | 2 |
| 3111260 | 1,2 | 0,6 | 6 | 1 | 4 | 1,15 | 45 | 11,4 | 7,41 | 6,27 | 6,48 | 6,69 | 6,92 | 7,17 | 7,44 | 2 |
| 3121260 | 1,2 | 0,6 | 6 | 1 | 6 | 1,15 | 50 | 15,2 | 9,4 | 6,27 | 6,48 | 6,69 | 6,92 | 7,17 | 7,44 | 2 |
| 3111280 | 1,2 | 0,6 | 8 | 1 | 4 | 1,15 | 45 | 13,4 | 6,26 | 8,35 | 8,62 | 8,91 | 9,22 | 9,56 | 9,93 | 2 |
| 3121280 | 1,2 | 0,6 | 8 | 1 | 6 | 1,15 | 50 | 17,1 | 8,28 | 8,35 | 8,62 | 8,91 | 9,22 | 9,56 | 9,93 | 2 |
| 3111300 | 1,2 | 0,6 | 10 | 1 | 4 | 1,15 | 45 | 15,4 | 5,42 | 10,42 | 10,76 | 11,13 | 11,52 | 11,95 | 12,41 | 2 |
| 3121300 | 1,2 | 0,6 | 10 | 1 | 6 | 1,15 | 50 | 19,2 | 7,39 | 10,42 | 10,76 | 11,13 | 11,52 | 11,95 | 12,41 | 2 |
| 3111312 | 1,2 | 0,6 | 12 | 1 | 4 | 1,15 | 45 | 17,4 | 4,78 | 12,49 | 12,9 | 13,34 | 13,82 | 14,34 | 14,9 | 2 |
| 3121312 | 1,2 | 0,6 | 12 | 1 | 6 | 1,15 | 50 | 21,2 | 6,68 | 12,49 | 12,9 | 13,34 | 13,82 | 14,34 | 14,9 | 2 |
| 3111314 | 1,2 | 0,6 | 14 | 1 | 4 | 1,15 | 50 | 19,4 | 4,27 | 14,55 | 15,04 | 15,56 | 16,12 | 16,73 | 17,38 | 2 |
| 3111316 | 1,2 | 0,6 | 16 | 1 | 4 | 1,15 | 50 | 21,4 | 3,86 | 16,62 | 17,18 | 17,78 | 18,42 | 19,12 | 19,87 | 2 |
| 3121316 | 1,2 | 0,6 | 16 | 1 | 6 | 1,15 | 60 | 25,2 | 5,6 | 16,62 | 17,18 | 17,78 | 18,42 | 19,12 | 19,87 | 2 |
| 3111318 | 1,2 | 0,6 | 18 | 1 | 4 | 1,15 | 55 | 23,4 | 3,52 | 18,69 | 19,32 | 19,99 | 20,72 | 21,51 | 22,36 | 2 |
| 3111320 | 1,2 | 0,6 | 20 | 1 | 4 | 1,15 | 60 | 25,4 | 3,24 | 20,75 | 21,46 | 22,21 | 23,02 | 23,9 | 24,84 | 2 |
| 3111324 | 1,2 | 0,6 | 24 | 1 | 4 | 1,15 | 60 | 29,4 | 2,79 | 24,89 | 25,74 | 26,64 | 27,62 | 28,68 | - | 2 |
| 3111480 | 1,4 | 0,7 | 8 | 1,1 | 4 | 1,35 | 45 | 13,1 | 6,04 | 8,35 | 8,61 | 8,9 | 9,21 | 9,54 | 9,9 | 2 |
| 3111512 | 1,4 | 0,7 | 12 | 1,1 | 4 | 1,35 | 45 | 17,1 | 4,57 | 12,48 | 12,89 | 13,33 | 13,81 | 14,32 | 14,87 | 2 |
| 3111516 | 1,4 | 0,7 | 16 | 1,1 | 4 | 1,35 | 50 | 21,1 | 3,67 | 16,62 | 17,17 | 17,77 | 18,41 | 19,1 | 19,85 | 2 |
| 3111530 | 1,5 | 0,75 | 3 | 1,2 | 4 | 1,45 | 45 | 7,9 | 10,01 | 3,13 | 3,25 | 3,35 | 3,45 | 3,56 | 3,67 | 2 |
| 3111540 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,9 | 8,8 | 4,18 | 4,33 | 4,46 | 4,6 | 4,75 | 4,92 | 2 |
| 3111560 | 1,5 | 0,75 | 6 | 1,2 | 4 | 1,45 | 45 | 10,9 | 7,08 | 6,27 | 6,47 | 6,68 | 6,9 | 7,14 | 7,4 | 2 |
| 3121560 | 1,5 | 0,75 | 6 | 1,2 | 6 | 1,45 | 50 | 14,6 | 9,26 | 6,27 | 6,47 | 6,68 | 6,9 | 7,14 | 7,4 | 2 |
| 3111580 | 1,5 | 0,75 | 8 | 1,2 | 4 | 1,45 | 45 | 12,9 | 5,92 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| 3121580 | 1,5 | 0,75 | 8 | 1,2 | 6 | 1,45 | 50 | 16,6 | 8,11 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| 3111600 | 1,5 | 0,75 | 10 | 1,2 | 4 | 1,45 | 45 | 14,9 | 5,09 | 10,41 | 10,75 | 11,11 | 11,5 | 11,92 | 12,38 | 2 |
| 3121600 | 1,5 | 0,75 | 10 | 1,2 | 6 | 1,45 | 50 | 18,6 | 7,21 | 10,41 | 10,75 | 11,11 | 11,5 | 11,92 | 12,38 | 2 |
| 3111612 | 1,5 | 0,75 | 12 | 1,2 | 4 | 1,45 | 45 | 16,9 | 4,46 | 12,48 | 12,89 | 13,33 | 13,8 | 14,31 | 14,86 | 2 |
| 3121612 | 1,5 | 0,75 | 12 | 1,2 | 6 | 1,45 | 50 | 20,6 | 6,49 | 12,48 | 12,89 | 13,33 | 13,8 | 14,31 | 14,86 | 2 |
| 3111614 | 1,5 | 0,75 | 14 | 1,2 | 4 | 1,45 | 50 | 18,9 | 3,96 | 14,55 | 15,03 | 15,55 | 16,1 | 16,7 | 17,35 | 2 |
| 3111616 | 1,5 | 0,75 | 16 | 1,2 | 4 | 1,45 | 55 | 20,9 | 3,57 | 16,62 | 17,17 | 17,76 | 18,4 | 19,09 | 19,83 | 2 |

# WXL-LN-EBD

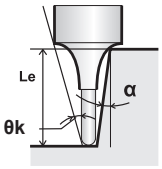
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes



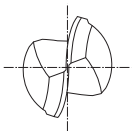
C.966

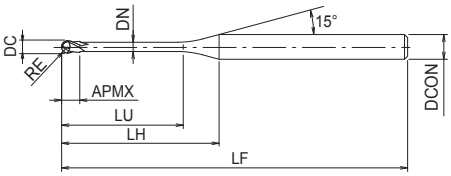
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3121616 | 1,5 | 0,75 | 16 | 1,2 | 6 | 1,45 | 60 | 24,6 | 5,4 | 16,62 | 17,17 | 17,76 | 18,4 | 19,09 | 19,83 | 2 |
| 3111618 | 1,5 | 0,75 | 18 | 1,2 | 4 | 1,45 | 55 | 22,9 | 3,25 | 18,68 | 19,31 | 19,98 | 20,7 | 21,48 | 22,32 | 2 |
| 3111620 | 1,5 | 0,75 | 20 | 1,2 | 4 | 1,45 | 55 | 24,9 | 2,98 | 20,75 | 21,45 | 22,19 | 23 | 23,87 | - | 2 |
| 3121620 | 1,5 | 0,75 | 20 | 1,2 | 6 | 1,45 | 60 | 28,6 | 4,63 | 20,75 | 21,45 | 22,19 | 23 | 23,87 | 24,81 | 2 |
| 3111622 | 1,5 | 0,75 | 22 | 1,2 | 4 | 1,45 | 55 | 26,9 | 2,75 | 22,82 | 23,59 | 24,41 | 25,3 | 26,26 | - | 2 |
| 3111630 | 1,5 | 0,75 | 30 | 1,2 | 4 | 1,45 | 65 | 34,9 | 2,1 | 31,09 | 32,14 | 33,28 | 34,5 | - | - | 2 |
| 3111640 | 1,6 | 0,8 | 4 | 1,3 | 4 | 1,55 | 45 | 8,7 | 8,7 | 4,18 | 4,33 | 4,46 | 4,59 | 4,74 | 4,91 | 2 |
| 3111680 | 1,6 | 0,8 | 8 | 1,3 | 4 | 1,55 | 45 | 12,7 | 5,8 | 8,34 | 8,61 | 8,89 | 9,19 | 9,52 | 9,88 | 2 |
| 3111712 | 1,6 | 0,8 | 12 | 1,3 | 4 | 1,55 | 45 | 16,7 | 4,34 | 12,48 | 12,89 | 13,32 | 13,79 | 14,3 | 14,85 | 2 |
| 3111716 | 1,6 | 0,8 | 16 | 1,3 | 4 | 1,55 | 50 | 20,7 | 3,47 | 16,61 | 17,16 | 17,76 | 18,39 | 19,08 | 19,82 | 2 |
| 3111720 | 1,6 | 0,8 | 20 | 1,3 | 4 | 1,55 | 55 | 24,7 | 2,89 | 20,75 | 21,44 | 22,19 | 22,99 | 23,86 | - | 2 |
| 3111880 | 1,8 | 0,9 | 8 | 1,4 | 4 | 1,75 | 45 | 12,6 | 5,38 | 8,48 | 8,88 | 9,23 | 9,56 | 9,9 | 10,27 | 2 |
| 3111912 | 1,8 | 0,9 | 12 | 1,4 | 4 | 1,75 | 45 | 16,6 | 4,02 | 12,69 | 13,22 | 13,68 | 14,16 | 14,68 | 15,24 | 2 |
| 3111916 | 1,8 | 0,9 | 16 | 1,4 | 4 | 1,75 | 50 | 20,6 | 3,2 | 16,88 | 17,51 | 18,11 | 18,76 | 19,46 | 20,21 | 2 |
| 3111920 | 1,8 | 0,9 | 20 | 1,4 | 4 | 1,75 | 55 | 24,6 | 2,66 | 21,05 | 21,79 | 22,55 | 23,36 | 24,24 | - | 2 |
| 3112030 | 2 | 1 | 3 | 1,6 | 4 | 1,95 | 45 | 7,3 | 9,1 | 3,16 | 3,31 | 3,47 | 3,64 | 3,8 | 3,96 | 2 |
| 3112040 | 2 | 1 | 4 | 1,6 | 4 | 1,95 | 45 | 8,3 | 7,87 | 4,23 | 4,44 | 4,66 | 4,86 | 5,06 | 5,26 | 2 |
| 3122040 | 2 | 1 | 4 | 1,6 | 6 | 1,95 | 50 | 12 | 10,32 | 4,23 | 4,44 | 4,66 | 4,86 | 5,06 | 5,26 | 2 |
| 3112060 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 45 | 10,3 | 6,19 | 6,36 | 6,67 | 6,96 | 7,23 | 7,49 | 7,76 | 2 |
| 3122060 | 2 | 1 | 6 | 1,6 | 6 | 1,95 | 50 | 14 | 8,77 | 6,36 | 6,67 | 6,96 | 7,23 | 7,49 | 7,76 | 2 |
| 3112080 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 45 | 12,3 | 5,1 | 8,48 | 8,87 | 9,22 | 9,55 | 9,88 | 10,24 | 2 |
| 3122080 | 2 | 1 | 8 | 1,6 | 6 | 1,95 | 50 | 16 | 7,61 | 8,48 | 8,87 | 9,22 | 9,55 | 9,88 | 10,24 | 2 |
| 3112100 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 45 | 14,3 | 4,33 | 10,59 | 11,05 | 11,45 | 11,85 | 12,27 | 12,73 | 2 |
| 3122100 | 2 | 1 | 10 | 1,6 | 6 | 1,95 | 50 | 18 | 6,73 | 10,59 | 11,05 | 11,45 | 11,85 | 12,27 | 12,73 | 2 |
| 3112112 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 45 | 16,3 | 3,77 | 12,69 | 13,21 | 13,67 | 14,15 | 14,66 | 15,22 | 2 |
| 3122112 | 2 | 1 | 12 | 1,6 | 6 | 1,95 | 50 | 20 | 6,03 | 12,69 | 13,21 | 13,67 | 14,15 | 14,66 | 15,22 | 2 |
| 3112114 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 18,3 | 3,33 | 14,78 | 15,36 | 15,89 | 16,45 | 17,05 | 17,7 | 2 |
| 3112116 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 20,3 | 2,98 | 16,88 | 17,51 | 18,1 | 18,75 | 19,44 | - | 2 |
| 3122116 | 2 | 1 | 16 | 1,6 | 6 | 1,95 | 60 | 24 | 4,98 | 16,88 | 17,51 | 18,1 | 18,75 | 19,44 | 20,19 | 2 |
| 3112118 | 2 | 1 | 18 | 1,6 | 4 | 1,95 | 55 | 22,3 | 2,7 | 18,96 | 19,65 | 20,32 | 21,04 | 21,83 | - | 2 |
| 3112120 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 55 | 24,3 | 2,47 | 21,05 | 21,78 | 22,54 | 23,34 | - | - | 2 |
| 3122120 | 2 | 1 | 20 | 1,6 | 6 | 1,95 | 65 | 28 | 4,25 | 21,05 | 21,78 | 22,54 | 23,34 | 24,22 | 25,16 | 2 |
| 3112122 | 2 | 1 | 22 | 1,6 | 4 | 1,95 | 60 | 26,3 | 2,27 | 23,13 | 23,92 | 24,75 | 25,64 | - | - | 2 |
| 3112125 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 65 | 29,3 | 2,03 | 26,24 | 27,13 | 28,08 | 29,09 | - | - | 2 |
| 3122125 | 2 | 1 | 25 | 1,6 | 6 | 1,95 | 70 | 33 | 3,58 | 26,24 | 27,13 | 28,08 | 29,09 | 30,19 | 31,38 | 2 |
| 3112130 | 2 | 1 | 30 | 1,6 | 4 | 1,95 | 70 | 34,3 | 1,73 | 31,42 | 32,48 | 33,62 | - | - | - | 2 |
| 3122130 | 2 | 1 | 30 | 1,6 | 6 | 1,95 | 75 | 38 | 3,1 | 31,42 | 32,48 | 33,62 | 34,84 | 36,16 | 37,59 | 2 |
| 3112135 | 2 | 1 | 35 | 1,6 | 4 | 1,95 | 75 | 39,3 | 1,5 | 36,59 | 37,83 | 39,16 | - | - | - | 2 |
| 3122135 | 2 | 1 | 35 | 1,6 | 6 | 1,95 | 80 | 43 | 2,73 | 36,59 | 37,83 | 39,16 | 40,59 | 42,14 | - | 2 |
| 3112140 | 2 | 1 | 40 | 1,6 | 4 | 1,95 | 80 | 44,3 | 1,33 | 41,76 | 43,18 | - | - | - | - | 2 |
| 3112560 | 2,5 | 1,25 | 6 | 2 | 4 | 2,35 | 45 | 9,1 | 5,46 | 6,26 | 6,51 | 6,75 | 6,99 | 7,21 | 7,46 | 2 |
| 3112600 | 2,5 | 1,25 | 10 | 2 | 4 | 2,35 | 50 | 13,1 | 3,63 | 10,46 | 10,85 | 11,21 | 11,59 | 11,99 | 12,43 | 2 |
| 3112615 | 2,5 | 1,25 | 15 | 2 | 4 | 2,35 | 55 | 18,1 | 2,55 | 15,67 | 16,21 | 16,75 | 17,34 | 17,96 | - | 2 |
| 3112620 | 2,5 | 1,25 | 20 | 2 | 4 | 2,35 | 60 | 23,1 | 1,97 | 20,87 | 21,56 | 22,3 | - | - | - | 2 |
| 3112625 | 2,5 | 1,25 | 25 | 2 | 4 | 2,35 | 65 | 28,1 | 1,6 | 26,04 | 26,91 | 27,84 | - | - | - | 2 |
| 3112630 | 2,5 | 1,25 | 30 | 2 | 4 | 2,35 | 70 | 33,1 | 1,35 | 31,21 | 32,26 | - | - | - | - | 2 |

# WXL-LN-EBD

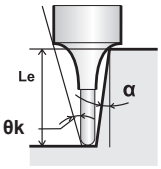
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005

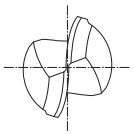
C.966

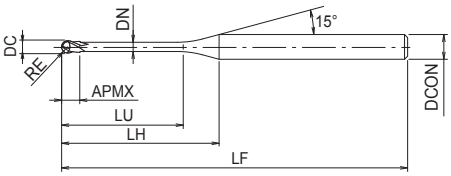
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3112635 | 2,5 | 1,25 | 35 | 2 | 4 | 2,35 | 70 | 38,1 | 1,17 | 36,38 | 37,61 | - | - | - | - | 2 |
| 3113060 | 3 | 1,5 | 6 | 2,4 | 4 | 2,85 | 45 | 8,2 | 4,29 | 6,25 | 6,49 | 6,72 | 6,95 | 7,17 | 7,4 | 2 |
| 3123059 | 3 | 1,5 | 6 | 2,4 | 3 | 2,85 | 45 | - | - | - | - | - | - | - | - | 2 |
| 3123060 | 3 | 1,5 | 6 | 2,4 | 6 | 2,85 | 50 | 11,9 | 8,17 | 6,25 | 6,49 | 6,72 | 6,95 | 7,17 | 7,4 | 2 |
| 3123080 | 3 | 1,5 | 8 | 2,4 | 6 | 2,85 | 50 | 13,9 | 6,88 | 8,35 | 8,67 | 8,97 | 9,25 | 9,55 | 9,88 | 2 |
| 3123100 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 50 | 15,9 | 5,94 | 10,44 | 10,83 | 11,19 | 11,55 | 11,94 | 12,37 | 2 |
| 3123112 | 3 | 1,5 | 12 | 2,4 | 6 | 2,85 | 55 | 17,9 | 5,22 | 12,53 | 12,98 | 13,4 | 13,85 | 14,33 | 14,86 | 2 |
| 3123114 | 3 | 1,5 | 14 | 2,4 | 6 | 2,85 | 55 | 19,9 | 4,66 | 14,62 | 15,13 | 15,62 | 16,15 | 16,72 | 17,34 | 2 |
| 3123115 | 3 | 1,5 | 15 | 2,4 | 6 | 2,85 | 55 | 20,9 | 4,42 | 15,66 | 16,2 | 16,73 | 17,3 | 17,92 | 18,59 | 2 |
| 3123116 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 21,9 | 4,21 | 16,7 | 17,26 | 17,84 | 18,45 | 19,11 | 19,83 | 2 |
| 3123120 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 60 | 25,9 | 3,52 | 20,86 | 21,54 | 22,27 | 23,05 | 23,89 | 24,8 | 2 |
| 3123125 | 3 | 1,5 | 25 | 2,4 | 6 | 2,85 | 65 | 30,9 | 2,92 | 26,04 | 26,89 | 27,81 | 28,8 | 29,86 | - | 2 |
| 3123130 | 3 | 1,5 | 30 | 2,4 | 6 | 2,85 | 70 | 35,9 | 2,5 | 31,2 | 32,24 | 33,35 | 34,55 | - | - | 2 |
| 3123135 | 3 | 1,5 | 35 | 2,4 | 6 | 2,85 | 80 | 40,9 | 2,18 | 36,37 | 37,59 | 38,89 | 40,3 | - | - | 2 |
| 3123140 | 3 | 1,5 | 40 | 2,4 | 6 | 2,85 | 85 | 45,9 | 1,94 | 41,54 | 42,94 | 44,43 | - | - | - | 2 |
| 3123600 | 3,5 | 1,75 | 10 | 2,8 | 6 | 3,35 | 60 | 15 | 5,4 | 10,43 | 10,81 | 11,16 | 11,51 | 11,9 | 12,31 | 2 |
| 3123615 | 3,5 | 1,75 | 15 | 2,8 | 6 | 3,35 | 60 | 20 | 3,93 | 15,65 | 16,18 | 16,7 | 17,26 | 17,87 | 18,53 | 2 |
| 3123620 | 3,5 | 1,75 | 20 | 2,8 | 6 | 3,35 | 65 | 25 | 3,08 | 20,85 | 21,53 | 22,24 | 23,01 | 23,84 | 24,74 | 2 |
| 3123625 | 3,5 | 1,75 | 25 | 2,8 | 6 | 3,35 | 65 | 30 | 2,54 | 26,03 | 26,87 | 27,78 | 28,76 | 29,82 | - | 2 |
| 3123630 | 3,5 | 1,75 | 30 | 2,8 | 6 | 3,35 | 70 | 35 | 2,16 | 31,2 | 32,22 | 33,32 | 34,51 | - | - | 2 |
| 3123635 | 3,5 | 1,75 | 35 | 2,8 | 6 | 3,35 | 80 | 40 | 1,88 | 36,36 | 37,57 | 38,87 | - | - | - | 2 |
| 3123640 | 3,5 | 1,75 | 40 | 2,8 | 6 | 3,35 | 90 | 45 | 1,66 | 41,53 | 42,92 | 44,41 | - | - | - | 2 |
| 3123645 | 3,5 | 1,75 | 45 | 2,8 | 6 | 3,35 | 90 | 50 | 1,49 | 46,7 | 48,27 | - | - | - | - | 2 |
| 3114080 | 4 | 2 | 8 | 3,2 | 4 | 3,85 | 55 | - | - | - | - | - | - | - | - | 2 |
| 3124080 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 60 | 12,1 | 5,67 | 8,33 | 8,63 | 8,91 | 9,18 | 9,46 | 9,77 | 2 |
| 3124100 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 14,1 | 4,74 | 10,42 | 10,79 | 11,13 | 11,48 | 11,85 | 12,25 | 2 |
| 3124112 | 4 | 2 | 12 | 3,2 | 6 | 3,85 | 60 | 16,1 | 4,07 | 12,51 | 12,95 | 13,35 | 13,78 | 14,24 | 14,74 | 2 |
| 3124114 | 4 | 2 | 14 | 3,2 | 6 | 3,85 | 60 | 18,1 | 3,57 | 14,6 | 15,09 | 15,57 | 16,08 | 16,63 | 17,22 | 2 |
| 3124115 | 4 | 2 | 15 | 3,2 | 6 | 3,85 | 60 | 19,1 | 3,36 | 15,64 | 16,16 | 16,67 | 17,23 | 17,82 | 18,47 | 2 |
| 3124116 | 4 | 2 | 16 | 3,2 | 6 | 3,85 | 60 | 20,1 | 3,18 | 16,68 | 17,23 | 17,78 | 18,38 | 19,02 | 19,71 | 2 |
| 3124120 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 24,1 | 2,6 | 20,84 | 21,51 | 22,22 | 22,98 | 23,8 | - | 2 |
| 3124125 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 70 | 29,1 | 2,12 | 26,02 | 26,86 | 27,76 | 28,72 | - | - | 2 |
| 3124130 | 4 | 2 | 30 | 3,2 | 6 | 3,85 | 80 | 34,1 | 1,79 | 31,19 | 32,21 | 33,3 | - | - | - | 2 |
| 3124135 | 4 | 2 | 35 | 3,2 | 6 | 3,85 | 80 | 39,1 | 1,55 | 36,36 | 37,55 | 38,84 | - | - | - | 2 |
| 3124140 | 4 | 2 | 40 | 3,2 | 6 | 3,85 | 90 | 44,1 | 1,36 | 41,52 | 42,9 | - | - | - | - | 2 |
| 3124145 | 4 | 2 | 45 | 3,2 | 6 | 3,85 | 90 | 49,1 | 1,22 | 46,69 | 48,25 | - | - | - | - | 2 |
| 3124150 | 4 | 2 | 50 | 3,2 | 6 | 3,85 | 100 | 54,1 | 1,1 | 51,86 | 53,6 | - | - | - | - | 2 |
| 3125100 | 5 | 2,5 | 10 | 5 | 6 | 4,85 | 65 | 12,2 | 2,96 | 10,4 | 10,75 | 11,08 | 11,4 | 11,75 | - | 2 |
| 3125115 | 5 | 2,5 | 15 | 5 | 6 | 4,85 | 70 | 17,2 | 1,96 | 15,62 | 16,13 | 16,62 | - | - | - | 2 |
| 3125120 | 5 | 2,5 | 20 | 5 | 6 | 4,85 | 70 | 22,2 | 1,46 | 20,82 | 21,47 | - | - | - | - | 2 |
| 3125125 | 5 | 2,5 | 25 | 5 | 6 | 4,85 | 70 | 27,2 | 1,16 | 26 | 26,82 | - | - | - | - | 2 |
| 3125130 | 5 | 2,5 | 30 | 5 | 6 | 4,85 | 80 | 32,2 | 0,97 | 31,17 | - | - | - | - | - | 2 |
| 3125135 | 5 | 2,5 | 35 | 5 | 6 | 4,85 | 80 | 37,2 | 0,83 | 36,34 | - | - | - | - | - | 2 |
| 3125140 | 5 | 2,5 | 40 | 5 | 6 | 4,85 | 90 | 42,2 | 0,72 | 41,51 | - | - | - | - | - | 2 |
| 3125145 | 5 | 2,5 | 45 | 5 | 6 | 4,85 | 100 | 47,2 | 0,64 | 46,68 | - | - | - | - | - | 2 |
| 3125150 | 5 | 2,5 | 50 | 5 | 6 | 4,85 | 100 | 52,2 | 0,58 | 51,84 | - | - | - | - | - | 2 |

# WXL-LN-EBD

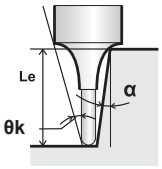
**Milling | Solid carbide**

INDEX






- Carbide end mill with WXL coating
- For hardened steels up to 65 HRC and stainless steels
- 2 flutes, long neck, ball nose
- 284 sizes

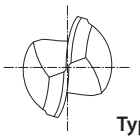


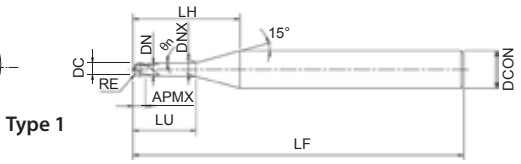
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 3126100 | 6 | 3 | 10 | 6 | 6 | 5,85 | 60 | 2 |
| 3126120 | 6 | 3 | 20 | 6 | 6 | 5,85 | 70 | 2 |
| 3126125 | 6 | 3 | 25 | 6 | 6 | 5,85 | 70 | 2 |
| 3126130 | 6 | 3 | 30 | 6 | 6 | 5,85 | 80 | 2 |
| 3126135 | 6 | 3 | 35 | 6 | 6 | 5,85 | 80 | 2 |
| 3126140 | 6 | 3 | 40 | 6 | 6 | 5,85 | 90 | 2 |
| 3126145 | 6 | 3 | 45 | 6 | 6 | 5,85 | 100 | 2 |
| 3126150 | 6 | 3 | 50 | 6 | 6 | 5,85 | 120 | 2 |

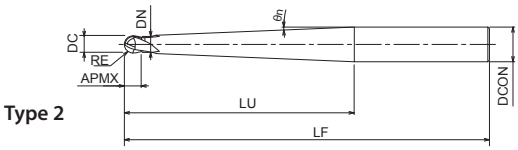
# WXL-PC-EBD

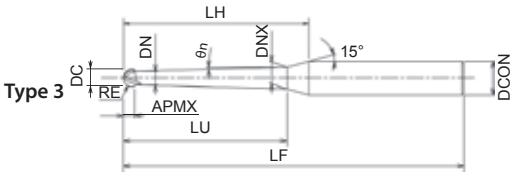


**Milling | Solid carbide**





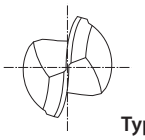

- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, ball nose, pencil neck
- 152 sizes

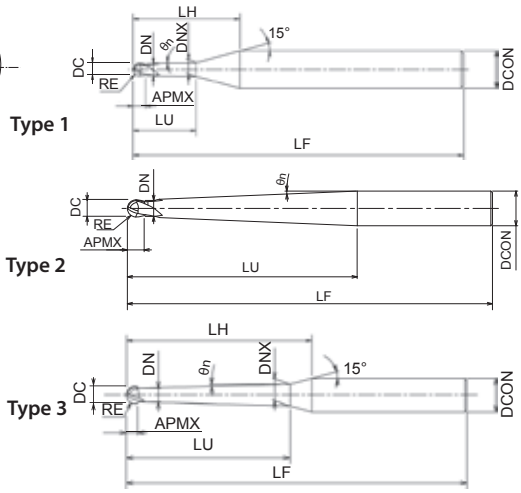
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3170051 | 0,4 | 0,2 | 0,5 | 2 | 0,3 | 4 | 0,38 | 0,41 | 45 | 9 | 2 | 1 |
| 3170052 | 0,4 | 0,2 | 0,5 | 3 | 0,3 | 4 | 0,38 | 0,43 | 45 | 9,9 | 2 | 1 |
| 3170053 | 0,4 | 0,2 | 0,5 | 4 | 0,3 | 4 | 0,38 | 0,44 | 45 | 10,9 | 2 | 1 |
| 3170061 | 0,4 | 0,2 | 1 | 4 | 0,3 | 4 | 0,38 | 0,5 | 45 | 10,8 | 2 | 1 |
| 3170054 | 0,4 | 0,2 | 0,5 | 5 | 0,3 | 4 | 0,38 | 0,46 | 45 | 11,9 | 2 | 1 |
| 3170062 | 0,4 | 0,2 | 1 | 5 | 0,3 | 4 | 0,38 | 0,53 | 45 | 11,7 | 2 | 1 |
| 3170055 | 0,4 | 0,2 | 0,5 | 6 | 0,3 | 4 | 0,38 | 0,47 | 45 | 12,8 | 2 | 1 |
| 3170063 | 0,4 | 0,2 | 1 | 6 | 0,3 | 4 | 0,38 | 0,57 | 45 | 12,7 | 2 | 1 |
| 3170091 | 0,6 | 0,3 | 0,5 | 2 | 0,5 | 4 | 0,58 | 0,61 | 45 | 9 | 2 | 1 |
| 3170092 | 0,6 | 0,3 | 0,5 | 4 | 0,5 | 4 | 0,58 | 0,64 | 45 | 10,9 | 2 | 1 |
| 3170101 | 0,6 | 0,3 | 1 | 4 | 0,5 | 4 | 0,58 | 0,69 | 45 | 10,8 | 2 | 1 |
| 3170093 | 0,6 | 0,3 | 0,5 | 6 | 0,5 | 4 | 0,58 | 0,67 | 45 | 12,8 | 2 | 1 |
| 3170102 | 0,6 | 0,3 | 1 | 6 | 0,5 | 4 | 0,58 | 0,76 | 45 | 12,6 | 2 | 1 |
| 3170094 | 0,6 | 0,3 | 0,5 | 8 | 0,5 | 4 | 0,58 | 0,7 | 45 | 14,8 | 2 | 1 |
| 3170103 | 0,6 | 0,3 | 1 | 8 | 0,5 | 4 | 0,58 | 0,83 | 45 | 14,5 | 2 | 1 |
| 3170095 | 0,6 | 0,3 | 0,5 | 10 | 0,5 | 4 | 0,58 | 0,74 | 45 | 16,7 | 2 | 1 |
| 3170104 | 0,6 | 0,3 | 1 | 10 | 0,5 | 4 | 0,58 | 0,9 | 45 | 16,4 | 2 | 1 |
| 3170096 | 0,6 | 0,3 | 0,5 | 12 | 0,5 | 4 | 0,58 | 0,77 | 45 | 18,7 | 2 | 1 |
| 3170105 | 0,6 | 0,3 | 1 | 12 | 0,5 | 4 | 0,58 | 0,97 | 45 | 18,2 | 2 | 1 |
| 3170097 | 0,6 | 0,3 | 0,5 | 16 | 0,5 | 4 | 0,58 | 0,84 | 50 | 22,5 | 2 | 1 |
| 3170106 | 0,6 | 0,3 | 1 | 16 | 0,5 | 4 | 0,58 | 1,11 | 50 | 22 | 2 | 1 |
| 3170111 | 0,8 | 0,4 | 0,5 | 4 | 0,6 | 4 | 0,78 | 0,84 | 45 | 10,5 | 2 | 1 |
| 3170112 | 0,8 | 0,4 | 0,5 | 6 | 0,6 | 4 | 0,78 | 0,87 | 45 | 12,5 | 2 | 1 |
| 3170113 | 0,8 | 0,4 | 0,5 | 8 | 0,6 | 4 | 0,78 | 0,9 | 45 | 14,4 | 2 | 1 |
| 3170121 | 0,8 | 0,4 | 1 | 8 | 0,6 | 4 | 0,78 | 1,02 | 45 | 14,1 | 2 | 1 |
| 3170114 | 0,8 | 0,4 | 0,5 | 12 | 0,6 | 4 | 0,78 | 0,97 | 45 | 18,3 | 2 | 1 |
| 3170122 | 0,8 | 0,4 | 1 | 12 | 0,6 | 4 | 0,78 | 1,16 | 45 | 17,9 | 2 | 1 |
| 3170123 | 0,8 | 0,4 | 1 | 16 | 0,6 | 4 | 0,78 | 1,3 | 50 | 21,6 | 2 | 1 |
| 3170131 | 1 | 0,5 | 0,5 | 6 | 0,63 | 4 | 0,95 | 1,03 | 45 | 12,2 | 2 | 3 |
| 3170132 | 1 | 0,5 | 0,5 | 8 | 0,63 | 4 | 0,95 | 1,07 | 45 | 14,1 | 2 | 3 |
| 3170151 | 1 | 0,5 | 1,5 | 8 | 0,63 | 4 | 0,95 | 1,31 | 45 | 13,5 | 2 | 3 |
| 3170133 | 1 | 0,5 | 0,5 | 10 | 0,63 | 4 | 0,95 | 1,1 | 45 | 16 | 2 | 3 |
| 3170141 | 1 | 0,5 | 1 | 10 | 0,63 | 4 | 0,95 | 1,26 | 45 | 15,7 | 2 | 3 |
| 3170152 | 1 | 0,5 | 1,5 | 10 | 0,63 | 4 | 0,95 | 1,41 | 45 | 15,4 | 2 | 3 |
| 3170134 | 1 | 0,5 | 0,5 | 12 | 0,63 | 4 | 0,95 | 1,14 | 45 | 18 | 2 | 3 |
| 3170153 | 1 | 0,5 | 1,5 | 12 | 0,63 | 4 | 0,95 | 1,52 | 45 | 17,2 | 2 | 3 |
| 3170135 | 1 | 0,5 | 0,5 | 16 | 0,63 | 4 | 0,95 | 1,21 | 50 | 21,8 | 2 | 3 |
| 3170154 | 1 | 0,5 | 1,5 | 16 | 0,63 | 4 | 0,95 | 1,73 | 50 | 20,8 | 2 | 3 |
| 3170136 | 1 | 0,5 | 0,5 | 18 | 0,63 | 4 | 0,95 | 1,24 | 55 | 23,8 | 2 | 3 |
| 3170137 | 1 | 0,5 | 0,5 | 20 | 0,63 | 4 | 0,95 | 1,28 | 55 | 25,7 | 2 | 3 |
| 3170155 | 1 | 0,5 | 1,5 | 20 | 0,63 | 4 | 0,95 | 1,94 | 55 | 24,4 | 2 | 3 |
| 3170138 | 1 | 0,5 | 0,5 | 25 | 0,63 | 4 | 0,95 | 1,37 | 60 | 30,5 | 2 | 3 |
| 3170156 | 1 | 0,5 | 1,5 | 25 | 0,63 | 4 | 0,95 | 2,2 | 60 | 28,9 | 2 | 3 |
| 3170139 | 1 | 0,5 | 0,5 | 30 | 0,63 | 4 | 0,95 | 1,45 | 65 | 35,4 | 2 | 3 |
| 3170157 | 1 | 0,5 | 1,5 | 30 | 0,63 | 4 | 0,95 | 2,46 | 65 | 33,4 | 2 | 3 |
| 3170140 | 1 | 0,5 | 0,5 | 35 | 0,63 | 4 | 0,95 | 1,54 | 70 | 40,2 | 2 | 3 |

# WXL-PC-EBD



**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, ball nose, pencil neck
- 152 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005

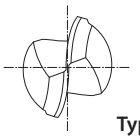
C.971

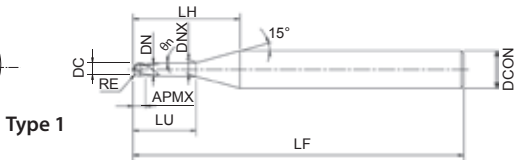
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3170142 | 1 | 0,5 | 1 | 16 | 0,63 | 4 | 0,95 | 1,47 | 50 | 21,3 | 2 | 3 |
| 3170143 | 1 | 0,5 | 1 | 20 | 0,63 | 4 | 0,95 | 1,61 | 55 | 25 | 2 | 3 |
| 3170144 | 1 | 0,5 | 1 | 25 | 0,63 | 4 | 0,95 | 1,78 | 60 | 29,7 | 2 | 3 |
| 3170145 | 1 | 0,5 | 1 | 30 | 0,63 | 4 | 0,95 | 1,96 | 65 | 34,4 | 2 | 3 |
| 3170146 | 1 | 0,5 | 1 | 35 | 0,63 | 4 | 0,95 | 2,13 | 70 | 39,1 | 2 | 3 |
| 3170158 | 1 | 0,5 | 1,5 | 35 | 0,63 | 4 | 0,95 | 2,72 | 70 | 37,9 | 2 | 3 |
| 3170147 | 1 | 0,5 | 1 | 40 | 0,63 | 4 | 0,95 | 2,31 | 80 | 43,7 | 2 | 3 |
| 3170161 | 1 | 0,5 | 2 | 45 | 0,63 | 4 | 0,95 | - | 80 | - | 2 | 2 |
| 3170148 | 1 | 0,5 | 1 | 50 | 0,63 | 4 | 0,95 | 2,66 | 90 | 53,1 | 2 | 3 |
| 3170149 | 1 | 0,5 | 1 | 60 | 0,63 | 4 | 0,95 | 3 | 100 | 62,4 | 2 | 3 |
| 3170150 | 1 | 0,5 | 1 | 70 | 0,63 | 4 | 0,95 | 3,35 | 110 | 71,8 | 2 | 3 |
| 3170211 | 1,5 | 0,75 | 0,5 | 8 | 0,95 | 4 | 1,42 | 1,53 | 45 | 13,2 | 2 | 3 |
| 3170212 | 1,5 | 0,75 | 0,5 | 10 | 0,95 | 4 | 1,42 | 1,57 | 45 | 15,2 | 2 | 3 |
| 3170221 | 1,5 | 0,75 | 1 | 10 | 0,95 | 4 | 1,42 | 1,71 | 45 | 14,8 | 2 | 3 |
| 3170230 | 1,5 | 0,75 | 1,5 | 10 | 0,95 | 4 | 1,42 | 1,87 | 45 | 14,5 | 2 | 3 |
| 3170213 | 1,5 | 0,75 | 0,5 | 12 | 0,95 | 4 | 1,42 | 1,6 | 45 | 17,1 | 2 | 3 |
| 3170222 | 1,5 | 0,75 | 1 | 12 | 0,95 | 4 | 1,42 | 1,79 | 45 | 16,7 | 2 | 3 |
| 3170231 | 1,5 | 0,75 | 1,5 | 12 | 0,95 | 4 | 1,42 | 1,97 | 45 | 16,3 | 2 | 3 |
| 3170214 | 1,5 | 0,75 | 0,5 | 16 | 0,95 | 4 | 1,42 | 1,67 | 55 | 21 | 2 | 3 |
| 3170223 | 1,5 | 0,75 | 1 | 16 | 0,95 | 4 | 1,42 | 1,93 | 55 | 20,4 | 2 | 3 |
| 3170232 | 1,5 | 0,75 | 1,5 | 16 | 0,95 | 4 | 1,42 | 2,18 | 55 | 19,9 | 2 | 3 |
| 3170215 | 1,5 | 0,75 | 0,5 | 20 | 0,95 | 4 | 1,42 | 1,74 | 55 | 24,8 | 2 | 3 |
| 3170224 | 1,5 | 0,75 | 1 | 20 | 0,95 | 4 | 1,42 | 2,07 | 55 | 24,2 | 2 | 3 |
| 3170233 | 1,5 | 0,75 | 1,5 | 20 | 0,95 | 4 | 1,42 | 2,39 | 55 | 23,5 | 2 | 3 |
| 3170216 | 1,5 | 0,75 | 0,5 | 25 | 0,95 | 4 | 1,42 | 1,83 | 60 | 29,7 | 2 | 3 |
| 3170225 | 1,5 | 0,75 | 1 | 25 | 0,95 | 4 | 1,42 | 2,24 | 60 | 28,9 | 2 | 3 |
| 3170234 | 1,5 | 0,75 | 1,5 | 25 | 0,95 | 4 | 1,42 | 2,65 | 60 | 28 | 2 | 3 |
| 3170217 | 1,5 | 0,75 | 0,5 | 30 | 0,95 | 4 | 1,42 | 1,92 | 65 | 34,5 | 2 | 3 |
| 3170226 | 1,5 | 0,75 | 1 | 30 | 0,95 | 4 | 1,42 | 2,41 | 65 | 33,5 | 2 | 3 |
| 3170235 | 1,5 | 0,75 | 1,5 | 30 | 0,95 | 4 | 1,42 | 2,91 | 65 | 32,6 | 2 | 3 |
| 3170218 | 1,5 | 0,75 | 0,5 | 35 | 0,95 | 4 | 1,42 | 2 | 70 | 39,4 | 2 | 3 |
| 3170227 | 1,5 | 0,75 | 1 | 35 | 0,95 | 4 | 1,42 | 2,59 | 70 | 38,2 | 2 | 3 |
| 3170236 | 1,5 | 0,75 | 1,5 | 35 | 0,95 | 4 | 1,42 | 3,17 | 70 | 37,1 | 2 | 3 |
| 3170241 | 1,5 | 0,75 | 2 | 38,6 | 0,95 | 4 | 1,42 | - | 70 | - | 2 | 2 |
| 3170271 | 2 | 1 | 0,5 | 8 | 1,26 | 4 | 1,93 | 2,04 | 45 | 12,3 | 2 | 3 |
| 3170272 | 2 | 1 | 0,5 | 10 | 1,26 | 4 | 1,93 | 2,07 | 45 | 14,2 | 2 | 3 |
| 3170273 | 2 | 1 | 0,5 | 12 | 1,26 | 4 | 1,93 | 2,11 | 45 | 16,2 | 2 | 3 |
| 3170274 | 2 | 1 | 0,5 | 16 | 1,26 | 4 | 1,93 | 2,18 | 50 | 20 | 2 | 3 |
| 3170281 | 2 | 1 | 1 | 16 | 1,26 | 4 | 1,93 | 2,43 | 50 | 19,5 | 2 | 3 |
| 3170291 | 2 | 1 | 1,5 | 16 | 1,26 | 4 | 1,93 | 2,67 | 50 | 19 | 2 | 3 |
| 3170275 | 2 | 1 | 0,5 | 20 | 1,26 | 4 | 1,93 | 2,25 | 55 | 23,9 | 2 | 3 |
| 3170282 | 2 | 1 | 1 | 20 | 1,26 | 4 | 1,93 | 2,57 | 55 | 23,3 | 2 | 3 |
| 3170276 | 2 | 1 | 0,5 | 25 | 1,26 | 4 | 1,93 | 2,33 | 65 | 28,7 | 2 | 3 |
| 3170277 | 2 | 1 | 0,5 | 30 | 1,26 | 4 | 1,93 | 2,42 | 70 | 33,6 | 2 | 3 |
| 3170278 | 2 | 1 | 0,5 | 35 | 1,26 | 4 | 1,93 | 2,51 | 75 | 38,4 | 2 | 3 |
| 3170279 | 2 | 1 | 0,5 | 40 | 1,26 | 4 | 1,93 | 2,6 | 80 | 43,2 | 2 | 3 |

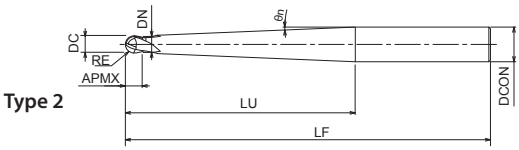
# WXL-PC-EBD

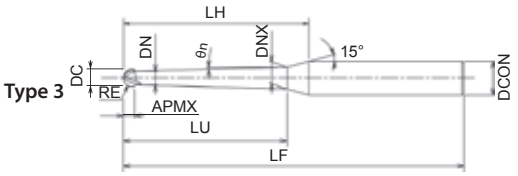
INDEX

**Milling | Solid carbide**





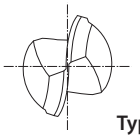

- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, ball nose, pencil neck
- 152 sizes

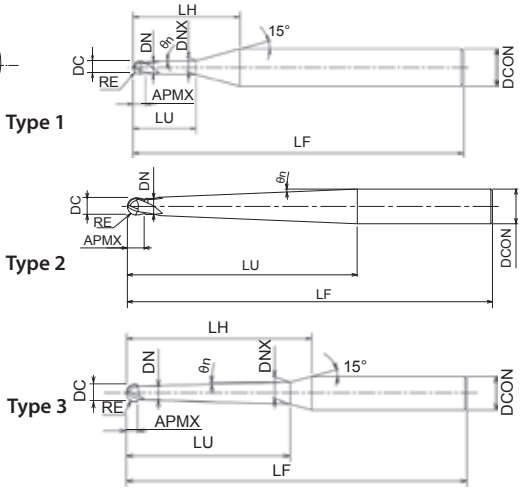
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3170292 | 2 | 1 | 1,5 | 20 | 1,26 | 4 | 1,93 | 2,88 | 55 | 22,6 | 2 | 3 |
| 3170283 | 2 | 1 | 1 | 25 | 1,26 | 4 | 1,93 | 2,74 | 65 | 27,9 | 2 | 3 |
| 3170293 | 2 | 1 | 1,5 | 25 | 1,26 | 4 | 1,93 | 3,15 | 65 | 27,1 | 2 | 3 |
| 3170284 | 2 | 1 | 1 | 30 | 1,26 | 4 | 1,93 | 2,91 | 70 | 32,6 | 2 | 3 |
| 3170294 | 2 | 1 | 1,5 | 30 | 1,26 | 4 | 1,93 | 3,41 | 70 | 31,6 | 2 | 3 |
| 3170301 | 2 | 1 | 2 | 31,5 | 1,26 | 4 | 1,93 | - | 70 | - | 2 | 2 |
| 3170285 | 2 | 1 | 1 | 35 | 1,26 | 4 | 1,93 | 3,09 | 75 | 37,3 | 2 | 3 |
| 3170295 | 2 | 1 | 1,5 | 35 | 1,26 | 4 | 1,93 | 3,67 | 75 | 36,1 | 2 | 3 |
| 3170286 | 2 | 1 | 1 | 40 | 1,26 | 4 | 1,93 | 3,26 | 80 | 41,9 | 2 | 3 |
| 3170296 | 2 | 1 | 1,5 | 41,4 | 1,26 | 4 | 1,93 | - | 80 | - | 2 | 2 |
| 3170287 | 2 | 1 | 1 | 50 | 1,26 | 6 | 1,93 | 3,61 | 90 | 55 | 2 | 3 |
| 3170288 | 2 | 1 | 1 | 60 | 1,26 | 6 | 1,93 | 3,96 | 100 | 64,4 | 2 | 3 |
| 3170289 | 2 | 1 | 1 | 70 | 1,26 | 6 | 1,93 | 4,31 | 110 | 73,7 | 2 | 3 |
| 3170321 | 3 | 1,5 | 0,5 | 8 | 2,4 | 6 | 2,95 | 3,05 | 50 | 14,1 | 2 | 1 |
| 3170322 | 3 | 1,5 | 0,5 | 10 | 2,4 | 6 | 2,95 | 3,08 | 50 | 16,1 | 2 | 1 |
| 3170323 | 3 | 1,5 | 0,5 | 12 | 2,4 | 6 | 2,95 | 3,12 | 55 | 18 | 2 | 1 |
| 3170324 | 3 | 1,5 | 0,5 | 16 | 2,4 | 6 | 2,95 | 3,18 | 55 | 21,9 | 2 | 1 |
| 3170325 | 3 | 1,5 | 0,5 | 20 | 2,4 | 6 | 2,95 | 3,25 | 60 | 25,8 | 2 | 1 |
| 3170331 | 3 | 1,5 | 1 | 20 | 2,4 | 6 | 2,95 | 3,55 | 60 | 25,1 | 2 | 1 |
| 3170341 | 3 | 1,5 | 1,5 | 20 | 2,4 | 6 | 2,95 | 3,85 | 60 | 24,5 | 2 | 1 |
| 3170326 | 3 | 1,5 | 0,5 | 25 | 2,4 | 6 | 2,95 | 3,34 | 65 | 30,6 | 2 | 1 |
| 3170332 | 3 | 1,5 | 1 | 25 | 2,4 | 6 | 2,95 | 3,73 | 65 | 29,8 | 2 | 1 |
| 3170342 | 3 | 1,5 | 1,5 | 25 | 2,4 | 6 | 2,95 | 4,11 | 65 | 29 | 2 | 1 |
| 3170327 | 3 | 1,5 | 0,5 | 30 | 2,4 | 6 | 2,95 | 3,42 | 70 | 35,4 | 2 | 1 |
| 3170333 | 3 | 1,5 | 1 | 30 | 2,4 | 6 | 2,95 | 3,9 | 70 | 34,5 | 2 | 1 |
| 3170343 | 3 | 1,5 | 1,5 | 30 | 2,4 | 6 | 2,95 | 4,37 | 70 | 33,6 | 2 | 1 |
| 3170328 | 3 | 1,5 | 0,5 | 35 | 2,4 | 6 | 2,95 | 3,51 | 80 | 40,3 | 2 | 1 |
| 3170334 | 3 | 1,5 | 1 | 35 | 2,4 | 6 | 2,95 | 4,07 | 80 | 39,2 | 2 | 1 |
| 3170344 | 3 | 1,5 | 1,5 | 35 | 2,4 | 6 | 2,95 | 4,64 | 80 | 38,1 | 2 | 1 |
| 3170329 | 3 | 1,5 | 0,5 | 40 | 2,4 | 6 | 2,95 | 3,6 | 85 | 45,1 | 2 | 1 |
| 3170335 | 3 | 1,5 | 1 | 40 | 2,4 | 6 | 2,95 | 4,25 | 85 | 43,8 | 2 | 1 |
| 3170345 | 3 | 1,5 | 1,5 | 40 | 2,4 | 6 | 2,95 | 4,9 | 85 | 42,6 | 2 | 1 |
| 3170351 | 3 | 1,5 | 2 | 47,5 | 2,4 | 6 | 2,95 | - | 100 | - | 2 | 2 |
| 3170330 | 3 | 1,5 | 0,5 | 50 | 2,4 | 6 | 2,95 | 3,77 | 90 | 54,8 | 2 | 1 |
| 3170336 | 3 | 1,5 | 1 | 50 | 2,4 | 6 | 2,95 | 4,6 | 90 | 53,2 | 2 | 1 |
| 3170346 | 3 | 1,5 | 1,5 | 50 | 2,4 | 6 | 2,95 | 5,42 | 90 | 51,6 | 2 | 1 |
| 3170337 | 3 | 1,5 | 1 | 60 | 2,4 | 6 | 2,95 | 4,95 | 100 | 62,5 | 2 | 1 |
| 3170347 | 3 | 1,5 | 1,5 | 62,5 | 2,4 | 6 | 2,95 | - | 100 | - | 2 | 2 |
| 3170338 | 3 | 1,5 | 1 | 70 | 2,4 | 6 | 2,95 | 5,3 | 110 | 71,9 | 2 | 1 |
| 3170371 | 4 | 2 | 1 | 20 | 3,2 | 6 | 3,93 | 4,5 | 65 | 23,4 | 2 | 1 |
| 3170372 | 4 | 2 | 1 | 30 | 3,2 | 6 | 3,93 | 4,85 | 80 | 32,7 | 2 | 1 |
| 3170391 | 4 | 2 | 2 | 34 | 3,2 | 6 | 3,93 | - | 80 | - | 2 | 2 |
| 3170373 | 4 | 2 | 1 | 40 | 3,2 | 6 | 3,93 | 5,2 | 90 | 42,1 | 2 | 1 |
| 3170381 | 4 | 2 | 1,5 | 44,2 | 3,2 | 6 | 3,93 | - | 80 | - | 2 | 2 |
| 3170374 | 4 | 2 | 1 | 50 | 3,2 | 8 | 3,93 | 5,55 | 100 | 55,1 | 2 | 1 |
| 3170375 | 4 | 2 | 1 | 60 | 3,2 | 8 | 3,93 | 5,9 | 110 | 64,5 | 2 | 1 |

# WXL-PC-EBD

INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For hardened steels up to 52 HRC
- 2 flutes, ball nose, pencil neck
- 152 sizes

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005

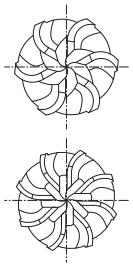
C.971

| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3170431 | 6 | 3 | 1 | 30 | 6 | 8 | 5,95 | 6,77 | 100 | 32,9 | 2 | 1 |
| 3170451 | 6 | 3 | 2 | 36 | 6 | 8 | 5,95 | - | 100 | - | 2 | 2 |
| 3170432 | 6 | 3 | 1 | 40 | 6 | 8 | 5,95 | 7,12 | 100 | 42,2 | 2 | 1 |
| 3170441 | 6 | 3 | 1,5 | 49 | 6 | 8 | 5,95 | - | 100 | - | 2 | 2 |
| 3170433 | 6 | 3 | 1 | 50 | 6 | 8 | 5,95 | 7,47 | 100 | 51,6 | 2 | 1 |
| 3170434 | 6 | 3 | 1 | 60 | 6 | 10 | 5,95 | 7,82 | 110 | 64,6 | 2 | 1 |
| 3170435 | 6 | 3 | 1 | 70 | 6 | 10 | 5,95 | 8,17 | 120 | 74 | 2 | 1 |
| 3170436 | 6 | 3 | 1 | 80 | 6 | 12 | 5,95 | 8,52 | 130 | 87,1 | 2 | 1 |
| 3170574 | 8 | 4 | 3 | 35,5 | 8 | 10 | 7,95 | - | 100 | - | 2 | 2 |
| 3170576 | 8 | 4 | 1,5 | 54,5 | 8 | 10 | 7,95 | - | 120 | - | 2 | 2 |
| 3170585 | 10 | 5 | 3 | 39,5 | 10 | 12 | 9,95 | - | 110 | - | 2 | 2 |
| 3170587 | 10 | 5 | 1,5 | 58,5 | 10 | 12 | 9,95 | - | 130 | - | 2 | 2 |
| 3170598 | 12 | 6 | 3 | 60 | 12 | 16 | 11,9 | 15,6 | 140 | 60,7 | 2 | 1 |
| 3170599 | 12 | 6 | 1,5 | 80 | 12 | 16 | 11,9 | 14,8 | 160 | 82,2 | 2 | 1 |

# AM-CRE



**Milling | Solid carbide**



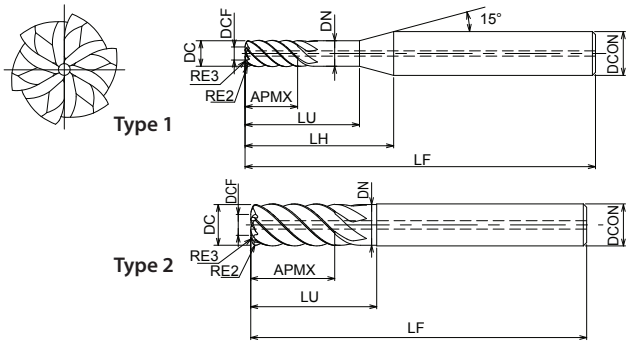
- Carbide end mill with DUROREY coating
- For additive manufacturing
- Multi flutes, corner radius

| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 3183010 | 6 | 1 | 9 | 6 | 60 | 6 |
| 3183015 | 6 | 1,5 | 9 | 6 | 60 | 6 |
| 3183018 | 8 | 1 | 12 | 8 | 70 | 6 |
| 3183020 | 8 | 2 | 12 | 8 | 70 | 6 |
| 3183110 | 10 | 1 | 15 | 10 | 80 | 6 |
| 3183120 | 10 | 2 | 15 | 10 | 80 | 6 |
| 3183210 | 12 | 1 | 18 | 12 | 90 | 8 |
| 3183220 | 12 | 2 | 18 | 12 | 90 | 8 |
| 3183226 | 16 | 1 | 24 | 16 | 105 | 8 |
| 3183230 | 16 | 3 | 24 | 16 | 105 | 8 |
| 3183310 | 20 | 1 | 30 | 20 | 110 | 8 |
| 3183330 | 20 | 3 | 30 | 20 | 110 | 8 |

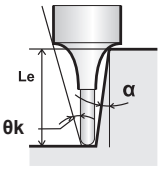
# AM-HFC

**Milling | Solid carbide**

INDEX




- Carbide end mill with DUROREY coating
- For high feed additive manufacturing milling
- 6 flutes
- Centre through coolant




P ~45 HRC | P ~55 HRC | M ~35 HRC | S Ti | S Ni | H ~70 HRC

CARBIDE | DUROREY | 45° | R ± 0.03 | SHRINK FIT

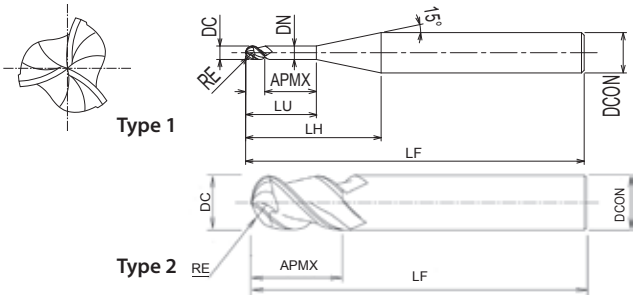
C.977

| EDP | DC | RE | RE2 | RE3 | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type | DCF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3188204 | 4 | 0,5 | 0,4 | 2,5 | 12 | 8 | 6 | 3,8 | 50 | 15,9 | 3,73 | 12,53 | 12,98 | 13,43 | 13,91 | 15 | 6 | 1 | 2 |
| 3188205 | 5 | 0,6 | 0,5 | 3 | 15 | 10 | 6 | 4,8 | 60 | 17 | 1,76 | 15,64 | 16,18 | 16,74 | - | - | 6 | 1 | 2,50 |
| 3188206 | 6 | 0,8 | 0,6 | 3,5 | 18 | 12 | 6 | 5,8 | 60 | - | - | - | - | - | - | - | 6 | 2 | 3 |
| 3188208 | 8 | 1 | 0,8 | 5 | 24 | 16 | 8 | 7,7 | 70 | - | - | - | - | - | - | - | 6 | 2 | 4 |
| 3188210 | 10 | 1,2 | 1 | 6 | 30 | 20 | 10 | 9,7 | 80 | - | - | - | - | - | - | - | 6 | 2 | 5 |
| 3188212 | 12 | 1,5 | 1,2 | 7 | 36 | 24 | 12 | 11,7 | 90 | - | - | - | - | - | - | - | 6 | 2 | 6 |

# AM-EBT

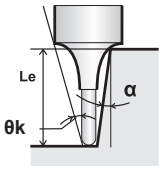
**Milling | Solid carbide**

INDEX




- Carbide end mill with DUROREY coating
- For additive manufacturing
- 3 flutes, ball nose

P ~45 HRC | P ~55 HRC | M ~35 HRC | S Ti | S Ni | H ~65 HRC




CARBIDE | DUROREY | 30° | R ±0.01 | SHRINK FIT

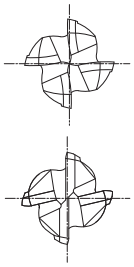
C.978

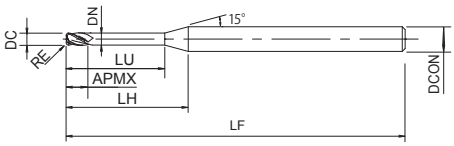
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3187240 | 2 | 1 | 4 | 2 | 6 | 1,95 | 60 | 11,9 | 10,64 | 4,19 | 4,3 | 4,42 | 4,85 | 4,55 | 3 | 1 |
| 3187280 | 2 | 1 | 8 | 2 | 6 | 1,95 | 60 | 15,9 | 7,79 | 8,33 | 8,58 | 8,86 | 9,82 | 9,15 | 3 | 1 |
| 3187360 | 3 | 1,5 | 6 | 3 | 6 | 2,85 | 60 | 11,8 | 8,15 | 6,44 | 6,61 | 6,79 | 7,45 | 7 | 3 | 1 |
| 3187392 | 3 | 1,5 | 12 | 3 | 6 | 2,85 | 60 | 17,8 | 5,22 | 12,64 | 13,03 | 13,44 | 14,91 | 13,89 | 3 | 1 |
| 3187408 | 4 | 2 | 8 | 4 | 6 | 3,85 | 60 | 12 | 5,65 | 8,49 | 8,71 | 8,96 | 9,81 | 9,22 | 3 | 1 |
| 3187416 | 4 | 2 | 16 | 4 | 6 | 3,85 | 60 | 20 | 3,17 | 16,76 | 17,27 | 17,82 | 19,76 | 18,42 | 3 | 1 |
| 3187510 | 5 | 2,5 | 10 | 5 | 6 | 4,85 | 60 | 12,1 | 2,95 | 10,54 | 10,82 | 11,12 | - | 11,45 | 3 | 1 |
| 3187520 | 5 | 2,5 | 20 | 5 | 6 | 4,85 | 60 | 22,1 | 1,46 | 20,87 | 21,52 | - | - | - | 3 | 1 |
| 3188060 | 6 | 3 | - | 9 | 6 | - | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 3188080 | 8 | 4 | - | 12 | 8 | - | 70 | - | - | - | - | - | - | - | 3 | 2 |
| 3188100 | 10 | 5 | - | 15 | 10 | - | 80 | - | - | - | - | - | - | - | 3 | 2 |
| 3188120 | 12 | 6 | - | 18 | 12 | - | 90 | - | - | - | - | - | - | - | 3 | 2 |
| 3188160 | 16 | 8 | - | 24 | 16 | - | 105 | - | - | - | - | - | - | - | 3 | 2 |
| 3188200 | 20 | 10 | - | 30 | 20 | - | 110 | - | - | - | - | - | - | - | 3 | 2 |

# PHX-LN-CRE

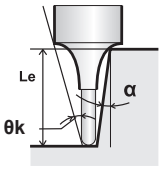
INDEX

**Milling | Solid carbide | Corner Radius**






- Carbide end mill with WXS coating
- For steels up to 60 HRC
- 4 flutes, long neck, corner radius




P ~45 HRC | P ~55 HRC | M | K ~350 HB | N | S | H ~60 HRC

CARBIDE | WXS | SHRINK FIT | 30°

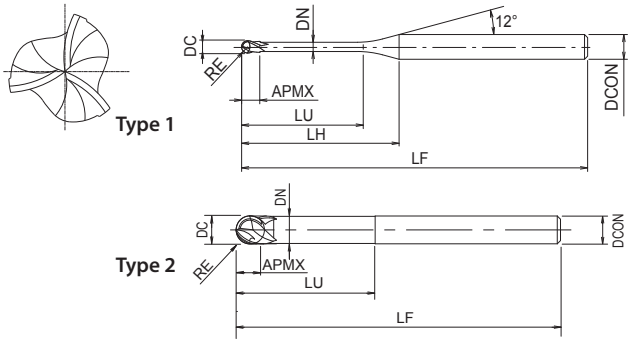
C.979

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3190800 | 0,8 | 0,1 | 2 | 0,32 | 4 | 0,72 | 50 | 8,1 | 11,48 | 2,06 | 2,13 | 4 |
| 3190801 | 0,8 | 0,1 | 4 | 0,32 | 4 | 0,72 | 50 | 10,1 | 9,2 | 4,13 | 4,27 | 4 |
| 3190802 | 0,8 | 0,1 | 6 | 0,32 | 4 | 0,72 | 50 | 12,1 | 7,67 | 6,2 | 6,41 | 4 |
| 3190803 | 0,8 | 0,1 | 8 | 0,32 | 4 | 0,72 | 50 | 14,1 | 6,58 | 8,27 | 8,55 | 4 |
| 3191006 | 1 | 0,1 | 4 | 0,4 | 4 | 0,93 | 50 | 9,7 | 8,97 | 4,13 | 4,27 | 4 |
| 3191007 | 1 | 0,1 | 6 | 0,4 | 4 | 0,93 | 50 | 11,7 | 7,43 | 6,2 | 6,41 | 4 |
| 3191008 | 1 | 0,1 | 8 | 0,4 | 4 | 0,93 | 50 | 13,7 | 6,34 | 8,27 | 8,55 | 4 |
| 3191009 | 1 | 0,1 | 10 | 0,4 | 4 | 0,93 | 50 | 15,7 | 5,53 | 10,33 | 10,69 | 4 |
| 3191010 | 1 | 0,1 | 12 | 0,4 | 4 | 0,93 | 50 | 17,7 | 4,9 | 12,4 | 12,83 | 4 |
| 3191011 | 1 | 0,2 | 4 | 0,4 | 4 | 0,93 | 50 | 9,7 | 9,05 | 4,13 | 4,26 | 4 |
| 3191012 | 1 | 0,2 | 6 | 0,4 | 4 | 0,93 | 50 | 11,7 | 7,49 | 6,2 | 6,4 | 4 |
| 3191013 | 1 | 0,2 | 8 | 0,4 | 4 | 0,93 | 50 | 13,7 | 6,38 | 8,26 | 8,54 | 4 |
| 3191014 | 1 | 0,2 | 10 | 0,4 | 4 | 0,93 | 50 | 15,7 | 5,56 | 10,33 | 10,68 | 4 |
| 3191015 | 1 | 0,2 | 12 | 0,4 | 4 | 0,93 | 50 | 17,7 | 4,93 | 12,4 | 12,82 | 4 |
| 3191018 | 1 | 0,3 | 4 | 0,4 | 4 | 0,93 | 50 | 9,7 | 9,14 | 4,12 | 4,26 | 4 |
| 3191019 | 1 | 0,3 | 6 | 0,4 | 4 | 0,93 | 50 | 11,7 | 7,55 | 6,19 | 6,4 | 4 |
| 3191501 | 1,5 | 0,1 | 4 | 0,6 | 4 | 1,41 | 50 | 8,8 | 8,3 | 4,13 | 4,27 | 4 |
| 3191503 | 1,5 | 0,1 | 8 | 0,6 | 4 | 1,41 | 50 | 12,8 | 5,68 | 8,27 | 8,55 | 4 |
| 3191505 | 1,5 | 0,1 | 12 | 0,6 | 4 | 1,41 | 50 | 16,8 | 4,31 | 12,4 | 12,83 | 4 |
| 3191506 | 1,5 | 0,2 | 4 | 0,6 | 4 | 1,41 | 50 | 8,8 | 8,39 | 4,13 | 4,26 | 4 |
| 3191507 | 1,5 | 0,2 | 6 | 0,6 | 4 | 1,41 | 50 | 10,8 | 6,8 | 6,2 | 6,4 | 4 |
| 3191508 | 1,5 | 0,2 | 8 | 0,6 | 4 | 1,41 | 50 | 12,8 | 5,72 | 8,26 | 8,54 | 4 |
| 3192001 | 2 | 0,1 | 8 | 0,8 | 4 | 1,89 | 50 | 12,1 | 4,91 | 8,27 | 8,55 | 4 |
| 3192002 | 2 | 0,1 | 10 | 0,8 | 4 | 1,89 | 50 | 14,1 | 4,19 | 10,33 | 10,69 | 4 |
| 3192003 | 2 | 0,1 | 12 | 0,8 | 4 | 1,89 | 50 | 16,1 | 3,66 | 12,4 | 12,83 | 4 |
| 3192004 | 2 | 0,1 | 16 | 0,8 | 4 | 1,89 | 50 | 20,1 | 2,92 | 16,54 | 17,11 | 4 |
| 3192013 | 2 | 0,3 | 8 | 0,8 | 4 | 1,89 | 50 | 12,1 | 4,99 | 8,26 | 8,54 | 4 |
| 3192015 | 2 | 0,3 | 12 | 0,8 | 4 | 1,89 | 50 | 16,1 | 3,71 | 12,39 | 12,82 | 4 |
| 3192019 | 2 | 0,5 | 6 | 0,8 | 4 | 1,89 | 50 | 10,1 | 6,16 | 6,19 | 6,38 | 4 |
| 3192020 | 2 | 0,5 | 8 | 0,8 | 4 | 1,89 | 50 | 12,1 | 5,08 | 8,25 | 8,52 | 4 |
| 3192021 | 2 | 0,5 | 10 | 0,8 | 4 | 1,89 | 50 | 14,1 | 4,32 | 10,32 | 10,66 | 4 |
| 3192022 | 2 | 0,5 | 12 | 0,8 | 4 | 1,89 | 50 | 16,1 | 3,75 | 12,39 | 12,8 | 4 |
| 3193008 | 3 | 0,3 | 12 | 1,2 | 4 | 2,85 | 50 | 14,2 | 2,11 | 12,39 | 12,82 | 4 |

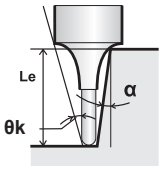
# PHX-LN-DBT



**Milling | Solid carbide | Ball nose**




- Carbide end mill with WXS coating
- For steels up to 60 HRC
- 3 flutes, long neck, ball nose

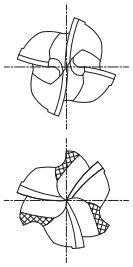


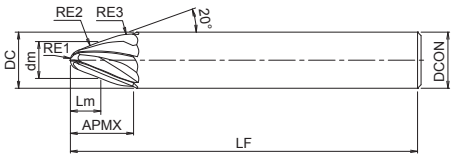
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3194901 | 0,6 | 0,3 | 1 | 0,45 | 4 | 0,55 | 50 | 9,1 | 11,02 | 1,03 | 1,06 | 3 | 1 |
| 3194902 | 0,6 | 0,3 | 2 | 0,45 | 4 | 0,55 | 50 | 10,1 | 9,92 | 2,07 | 2,15 | 3 | 1 |
| 3194903 | 0,6 | 0,3 | 3 | 0,45 | 4 | 0,55 | 50 | 11,1 | 9,01 | 3,12 | 3,24 | 3 | 1 |
| 3194904 | 0,6 | 0,3 | 4 | 0,45 | 4 | 0,55 | 50 | 12,1 | 8,25 | 4,16 | 4,33 | 3 | 1 |
| 3194906 | 0,6 | 0,3 | 6 | 0,45 | 4 | 0,55 | 50 | 14,1 | 7,07 | 6,24 | 6,51 | 3 | 1 |
| 3195004 | 1 | 0,5 | 4 | 0,75 | 4 | 0,95 | 50 | 11,2 | 8,06 | 4,15 | 4,31 | 3 | 1 |
| 3195006 | 1 | 0,5 | 6 | 0,75 | 4 | 0,95 | 50 | 13,2 | 6,8 | 6,24 | 6,49 | 3 | 1 |
| 3195008 | 1 | 0,5 | 8 | 0,75 | 4 | 0,95 | 50 | 15,2 | 5,87 | 8,32 | 8,67 | 3 | 1 |
| 3195010 | 1 | 0,5 | 10 | 0,75 | 4 | 0,95 | 50 | 17,2 | 5,17 | 10,41 | 10,85 | 3 | 1 |
| 3195012 | 1 | 0,5 | 12 | 0,75 | 4 | 0,95 | 50 | 19,2 | 4,62 | 12,49 | 13,03 | 3 | 1 |
| 3195014 | 1 | 0,5 | 14 | 0,75 | 4 | 0,95 | 50 | 21,2 | 4,17 | 14,58 | 15,21 | 3 | 1 |
| 3195016 | 1 | 0,5 | 16 | 0,75 | 4 | 0,95 | 50 | 23,2 | 3,8 | 16,66 | 17,39 | 3 | 1 |
| 3195106 | 1,5 | 0,75 | 6 | 1,13 | 4 | 1,45 | 50 | 12 | 6,38 | 6,22 | 6,47 | 3 | 1 |
| 3195108 | 1,5 | 0,75 | 8 | 1,13 | 4 | 1,45 | 50 | 14 | 5,42 | 8,31 | 8,65 | 3 | 1 |
| 3195110 | 1,5 | 0,75 | 10 | 1,13 | 4 | 1,45 | 50 | 16 | 4,71 | 10,4 | 10,83 | 3 | 1 |
| 3195112 | 1,5 | 0,75 | 12 | 1,13 | 4 | 1,45 | 50 | 18 | 4,17 | 12,48 | 13,01 | 3 | 1 |
| 3195116 | 1,5 | 0,75 | 16 | 1,13 | 4 | 1,45 | 50 | 22 | 3,38 | 16,65 | 17,36 | 3 | 1 |
| 3195206 | 2 | 1 | 6 | 1,5 | 4 | 1,95 | 50 | 11 | 5,85 | 6,21 | 6,45 | 3 | 1 |
| 3195208 | 2 | 1 | 8 | 1,5 | 4 | 1,95 | 50 | 13 | 4,87 | 8,3 | 8,63 | 3 | 1 |
| 3195210 | 2 | 1 | 10 | 1,5 | 4 | 1,95 | 50 | 15 | 4,16 | 10,39 | 10,81 | 3 | 1 |
| 3195212 | 2 | 1 | 12 | 1,5 | 4 | 1,95 | 50 | 17 | 3,64 | 12,47 | 12,98 | 3 | 1 |
| 3195214 | 2 | 1 | 14 | 1,5 | 4 | 1,95 | 50 | 19 | 3,23 | 14,56 | 15,16 | 3 | 1 |
| 3195216 | 2 | 1 | 16 | 1,5 | 4 | 1,95 | 50 | 21 | 2,9 | 16,64 | 17,34 | 3 | 1 |
| 3195218 | 2 | 1 | 18 | 1,5 | 4 | 1,95 | 60 | 23 | 2,64 | 18,73 | 19,52 | 3 | 1 |
| 3195220 | 2 | 1 | 20 | 1,5 | 4 | 1,95 | 60 | 25 | 2,41 | 20,81 | 21,7 | 3 | 1 |
| 3195222 | 2 | 1 | 22 | 1,5 | 4 | 1,95 | 60 | 27 | 2,23 | 22,9 | 23,88 | 3 | 1 |
| 3195312 | 3 | 1,5 | 12 | 2,25 | 4 | 2,85 | 60 | 14,5 | 2,22 | 12,45 | 12,94 | 3 | 1 |
| 3195316 | 3 | 1,5 | 16 | 2,25 | 4 | 2,85 | 60 | 18,5 | 1,7 | 16,62 | 17,3 | 3 | 1 |
| 3195320 | 3 | 1,5 | 20 | 2,25 | 4 | 2,85 | 60 | 22,5 | 1,37 | 20,79 | 21,66 | 3 | 1 |
| 3195325 | 3 | 1,5 | 25 | 2,25 | 4 | 2,85 | 60 | 27,5 | 1,11 | 26,01 | 27,1 | 3 | 1 |
| 3195416 | 4 | 2 | 16 | 3 | 4 | 3,85 | 60 | - | - | - | - | 3 | 2 |
| 3195420 | 4 | 2 | 20 | 3 | 4 | 3,85 | 60 | - | - | - | - | 3 | 2 |
| 3195425 | 4 | 2 | 25 | 3 | 4 | 3,85 | 60 | - | - | - | - | 3 | 2 |
| 3195520 | 6 | 3 | 20 | 4,5 | 6 | 5,85 | 70 | - | - | - | - | 3 | 2 |
| 3195530 | 6 | 3 | 30 | 4,5 | 6 | 5,85 | 70 | - | - | - | - | 3 | 2 |

# VU-TBR

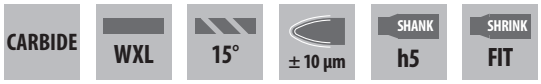
INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- High-efficiency finishing
- 4-6 flutes, Taper Barrel Solid Type



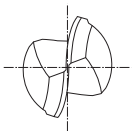

C.981

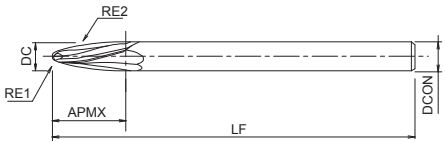
| EDP | DC | RE | RE2 | RE3 | APMX | DCON | LF | ZEFP | Lm | dm |
|---|---|---|---|---|---|---|---|---|---|---|
| 8549544 | 6 | 0,5 | 150 | 5 | 8,2 | 6 | 50 | 4 | 3,43 | 3,27 |
| 8549545 | 8 | 1 | 150 | 5 | 9,9 | 8 | 60 | 4 | 4,48 | 4,78 |
| 8549546 | 10 | 1,5 | 300 | 5 | 11,7 | 10 | 70 | 4 | 5,52 | 6,20 |
| 8549547 | 12 | 2 | 300 | 5 | 13,5 | 12 | 80 | 6 | 6,57 | 7,70 |
| 8549548 | 16 | 2,5 | 500 | 5 | 18 | 16 | 100 | 6 | 8,99 | 10,18 |
| 8549549 | 16 | 3 | 500 | 5 | 17,1 | 16 | 100 | 6 | 8,67 | 10,62 |

# VU-EGG



**Milling | Solid carbide**






- Carbide end mill with WXL coating
- High-efficiency finishing
- 2 flutes, Oval shape Type

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H 30-45 HRC | H 45-55 HRC

CARBIDE | WXL | 15° | ± 10 µm | SHRINK FIT

C.983

| EDP | DC | RE | RE2 | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| W1901274 | 8 | 1,5 | 50 | 16,88 | 8 | 100 | 2 |

# VU-EGG-H

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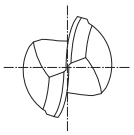
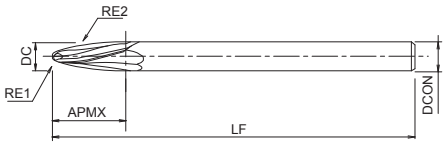
**Milling | Solid carbide**





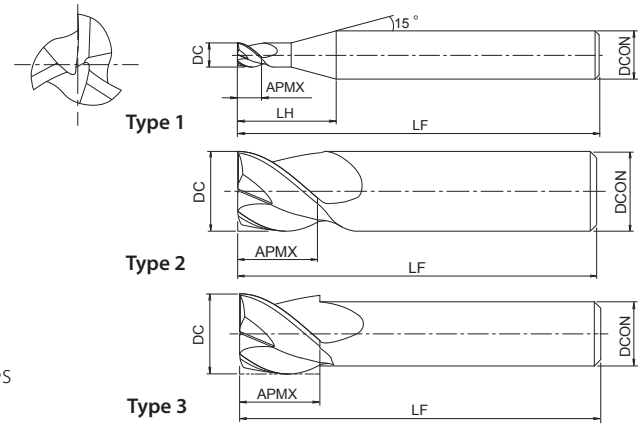

- Carbide end mill with DUROREY coating
- High-efficiency finishing
- 2 flutes, Oval shape Type

| EDP | DC | RE | RE2 | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| W1901273 | 8 | 1,5 | 50 | 16,88 | 8 | 100 | 2 |

# AE-VTSS

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Anti-vibration carbide end mill compatible with sliding head lathes
- Wide variety in applications and work materials
- 3 flutes, variable helix and unequal spacing

P ~40 HRC | P ~45 HRC | M ~35 HRC | K ~350 HB | N | S | H

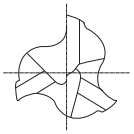
A | CARBIDE | DUARISE | 40°~43 | 0~-0.02 | SHRINK FIT | C.985

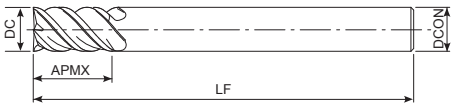
| EDP | DC | APMX | DCON | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8557251 | 3 | 4,5 | 6 | 45 | 12,2 | 3 | 1 |
| 8557252 | 4 | 6 | 6 | 45 | 11,9 | 3 | 1 |
| 8557253 | 5 | 6 | 6 | 45 | 11,7 | 3 | 1 |
| 8557254 | 6 | 6 | 6 | 45 | - | 3 | 2 |
| 8557255 | 8 | 8 | 8 | 45 | - | 3 | 2 |
| 8557256 | 10 | 10 | 10 | 45 | - | 3 | 2 |
| 8557257 | 12 | 12 | 10 | 50 | - | 3 | 3 |

# WX-G-ETSS

INDEX

**Milling | Solid carbide**






- Carbide end mill with WX coating
- For general applications
- 3 flutes, extra short length of cut

P ~45 HRC | P ~55 HRC | M ~35 HRC | S | H ~60 HRC

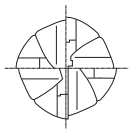
CARBIDE | WX | 45° | SHRINK FIT | 0~-0.02 | C.986

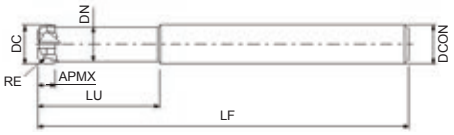
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 48120030 | 3 | 4,5 | 6 | 50 | 3 |
| 48120040 | 4 | 6 | 6 | 50 | 3 |
| 48120050 | 5 | 7,5 | 6 | 50 | 3 |
| 48120060 | 6 | 9 | 6 | 50 | 3 |
| 48120080 | 8 | 12 | 8 | 60 | 3 |
| 48120100 | 10 | 15 | 10 | 70 | 3 |
| 48120120 | 12 | 18 | 12 | 75 | 3 |
| 48120160 | 16 | 24 | 16 | 100 | 3 |

# WX-HS-CRE

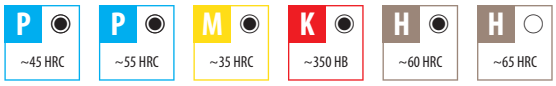


**Milling | Solid carbide**






- Carbide end mill with WX coating
- For general applications
- 4 flutes, shorter overall length, super radius

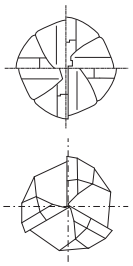


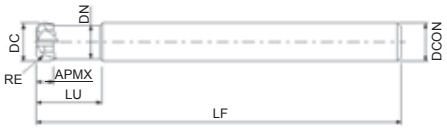
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 3019867 | 6 | 1,5 | 24 | 2,5 | 6 | 5,4 | 50 | 4 |
| 3019889 | 8 | 2 | 32 | 3,5 | 8 | 7,2 | 60 | 4 |
| 3019909 | 10 | 2 | 40 | 4 | 10 | 9 | 70 | 4 |
| 3019933 | 12 | 3 | 48 | 5 | 12 | 11 | 80 | 4 |

# WX-CRE

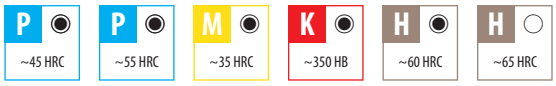


**Milling | Solid carbide**






- Carbide end mill with WX coating
- For general applications
- Multi flute, super radius



* While stock lasts

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8549421 | 2 | 0,5 | 5 | 0,8 | 6 | 1,8 | 60 | 3 |
| 8549433 | 3 | 0,75 | 7,5 | 1,2 | 6 | 2,7 | 60 | 4 |
| 8549445 | 4 | 1 | 10 | 1,6 | 6 | 3,6 | 70 | 4 |
| 8549457 | 5 | 1,2 | 12,5 | 2 | 6 | 4,5 | 80 | 4 |
| 8549467 | 6 | 1,5 | 12 | 2,5 | 6 | 5,4 | 90 | 4 |
| 8549477 | 7 | 1,5 | - | 3 | 6 | - | 90 | 4 |
| 8549489 | 8 | 2 | 16 | 3,5 | 8 | 7,2 | 100 | 4 |
| 8549499 | 9 | 2 | - | 4 | 8 | - | 100 | 4 |
| 8549509 | 10 | 2 | 20 | 4 | 10 | 9 | 100 | 4 |
| 8549519* | 11 | 2 | - | 4,5 | 10 | - | 100 | 4 |
| 8549533 | 12 | 3 | 24 | 5 | 12 | 11 | 110 | 4 |
| 8549543* | 13 | 3 | - | 5,5 | 12 | - | 110 | 4 |

# FXS-EQD

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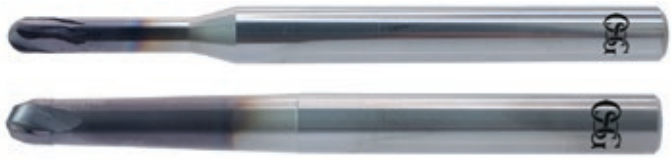
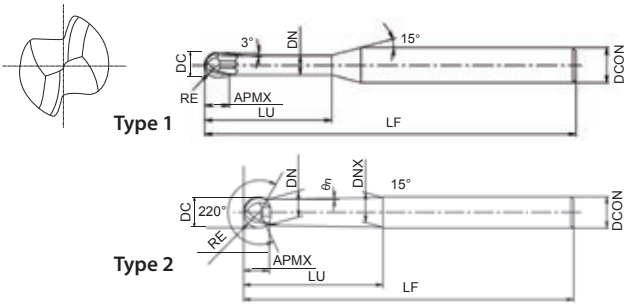
**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, 220 degree ball nose

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC

CARBIDE | FX | SHRINK FIT | 220°

C.989

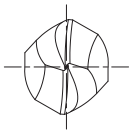
| EDP | DC | RE | θn | LU | APMX | DCON | DN | DNX | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8544005 | 1 | 0,5 | - | 5 | 0,7 | 6 | 0,85 | - | 60 | 2 | 1 |
| 8544010 | 2 | 1 | - | 10 | 1,5 | 6 | 1,7 | - | 60 | 2 | 1 |
| 8544015 | 3 | 1,5 | - | 15 | 2,3 | 6 | 2,7 | - | 70 | 2 | 1 |
| 8544020 | 4 | 2 | - | 20 | 3 | 6 | 3,7 | - | 70 | 2 | 1 |
| 8544030 | 6 | 3 | 1,5 | 30 | 4 | 6 | 4,6 | 5,9 | 90 | 2 | 2 |
| 8544040 | 8 | 4 | 1,5 | 40 | 5,4 | 8 | 6,2 | 7,9 | 100 | 2 | 2 |
| 8544050 | 10 | 5 | 1,5 | 50 | 6,7 | 10 | 7,7 | 9,9 | 110 | 2 | 2 |

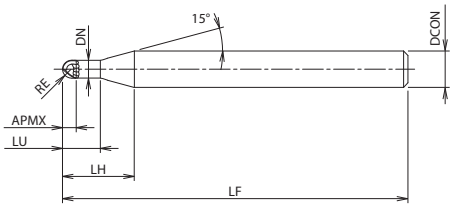
# CBN-FB2

**Milling | CBN**

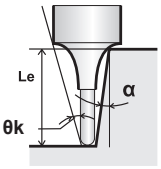
INDEX

**NEW**






- 2 flutes CBN ball end mill
- Excellent ball radius accuracy for high-quality surface finishing
- Optimized shank design for ultra-high precision




P ○ ~45 HRC | P ◉ ~55 HRC | H ◉ ~60 HRC | H ◉ ~68 HRC

CBN | 10° | SHRINK FIT | SHANK -0.001~ -0.003 | R ± 0.003 | C.990

| EDP | RE | LH | LU | LF | APMX | DCON | DN | θk | Effective length by inclined angles Le (α)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 0,5° | 1° | 1,5° | 2° | 3° |
| 8526505 | 0,1 | 7,4 | 0,3 | 38 | 0,12 | 4 | 0,19 | 14,49° | 0,31 | 0,33 | 0,35 | 0,36 | 0,4 |
| 8526506 | 0,1 | 7,6 | 0,5 | 38 | 0,12 | 4 | 0,19 | 14,12° | 0,53 | 0,56 | 0,58 | 0,61 | 0,66 |
| 8526507 | 0,1 | 7,7 | 0,6 | 38 | 0,12 | 4 | 0,19 | 13,95° | 0,63 | 0,67 | 0,7 | 0,73 | 0,78 |
| 8526508 | 0,1 | 8,1 | 1 | 38 | 0,12 | 4 | 0,19 | 13,28° | 1,06 | 1,11 | 1,15 | 1,19 | 1,28 |
| 8526509 | 0,1 | 9,1 | 2 | 38 | 0,12 | 4 | 0,19 | 11,86° | 2,11 | 2,18 | 2,26 | 2,34 | 2,52 |
| 8526510 | 0,15 | 7,3 | 0,3 | 38 | 0,18 | 4 | 0,29 | 14,56° | 0,31 | 0,32 | 0,34 | 0,35 | 0,38 |
| 8526511 | 0,15 | 7,5 | 0,5 | 38 | 0,18 | 4 | 0,29 | 14,18° | 0,52 | 0,55 | 0,58 | 0,6 | 0,64 |
| 8526512 | 0,15 | 7,8 | 0,75 | 38 | 0,18 | 4 | 0,29 | 13,73° | 0,79 | 0,83 | 0,86 | 0,89 | 0,95 |
| 8526513 | 0,15 | 7,9 | 0,9 | 38 | 0,18 | 4 | 0,29 | 13,48° | 0,95 | 0,99 | 1,03 | 1,07 | 1,14 |
| 8526514 | 0,15 | 8,5 | 1,5 | 38 | 0,18 | 4 | 0,29 | 12,54° | 1,58 | 1,64 | 1,7 | 1,76 | 1,89 |
| 8526515 | 0,2 | 7,2 | 0,5 | 38 | 0,24 | 4 | 0,38 | 14,29° | 0,51 | 0,53 | 0,55 | 0,57 | 0,6 |
| 8526516 | 0,2 | 7,5 | 0,75 | 38 | 0,24 | 4 | 0,38 | 13,82° | 0,78 | 0,81 | 0,83 | 0,86 | 0,91 |
| 8526517 | 0,2 | 7,7 | 1 | 38 | 0,24 | 4 | 0,38 | 13,38° | 1,04 | 1,08 | 1,11 | 1,15 | 1,23 |
| 8526518 | 0,2 | 7,9 | 1,2 | 38 | 0,24 | 4 | 0,38 | 13,05° | 1,25 | 1,29 | 1,33 | 1,38 | 1,47 |
| 8526519 | 0,2 | 8,7 | 2 | 38 | 0,24 | 4 | 0,38 | 11,87° | 2,08 | 2,15 | 2,22 | 2,3 | 2,47 |
| 8526520 | 0,2 | 9,7 | 3 | 38 | 0,24 | 4 | 0,38 | 10,66° | 3,12 | 3,22 | 3,33 | 3,45 | 3,71 |
| 8526521 | 0,25 | 7,6 | 1 | 38 | 0,3 | 4 | 0,48 | 13,42° | 1,04 | 1,07 | 1,11 | 1,14 | 1,21 |
| 8526522 | 0,25 | 8,1 | 1,5 | 38 | 0,3 | 4 | 0,48 | 12,59° | 1,56 | 1,61 | 1,66 | 1,72 | 1,84 |
| 8526523 | 0,25 | 9,1 | 2,5 | 38 | 0,3 | 4 | 0,48 | 11,21° | 2,6 | 2,68 | 2,77 | 2,86 | 3,08 |
| 8526524 | 0,25 | 10,1 | 3,5 | 38 | 0,3 | 4 | 0,48 | 10,1° | 3,63 | 3,75 | 3,88 | 4,01 | 4,32 |
| 8526525 | 0,3 | 7,6 | 1,2 | 38 | 0,36 | 4 | 0,58 | 13,1° | 1,24 | 1,29 | 1,32 | 1,36 | 1,45 |
| 8526526 | 0,3 | 7,9 | 1,5 | 38 | 0,36 | 4 | 0,58 | 12,6° | 1,56 | 1,61 | 1,66 | 1,71 | 1,82 |
| 8526527 | 0,3 | 8,2 | 1,8 | 38 | 0,36 | 4 | 0,58 | 12,14° | 1,87 | 1,93 | 1,99 | 2,05 | 2,2 |
| 8526528 | 0,3 | 8,4 | 2 | 38 | 0,36 | 4 | 0,58 | 11,85° | 2,08 | 2,14 | 2,21 | 2,28 | 2,44 |
| 8526529 | 0,3 | 9,4 | 3 | 38 | 0,36 | 4 | 0,58 | 10,59° | 3,11 | 3,21 | 3,32 | 3,43 | 3,69 |
| 8526530 | 0,3 | 10,4 | 4 | 38 | 0,36 | 4 | 0,58 | 9,56° | 4,15 | 4,28 | 4,43 | 4,58 | 4,93 |
| 8526531 | 0,3 | 10,9 | 4,5 | 40 | 0,36 | 4 | 0,58 | 9,12° | 4,67 | 4,82 | 4,98 | 5,16 | 5,55 |
| 8526532 | 0,3 | 11,4 | 5 | 40 | 0,36 | 4 | 0,58 | 8,72° | 5,18 | 5,35 | 5,54 | 5,73 | 6,17 |
| 8526533 | 0,3 | 12,4 | 6 | 40 | 0,36 | 4 | 0,58 | 8,01° | 6,22 | 6,42 | 6,64 | 6,88 | 7,42 |
| 8526534 | 0,4 | 7,5 | 1,5 | 38 | 0,48 | 4 | 0,78 | 12,63° | 1,55 | 1,6 | 1,65 | 1,69 | 1,8 |
| 8526535 | 0,4 | 7,6 | 1,6 | 38 | 0,48 | 4 | 0,78 | 12,46° | 1,66 | 1,71 | 1,76 | 1,81 | 1,92 |
| 8526536 | 0,4 | 8 | 2 | 38 | 0,48 | 4 | 0,78 | 11,83° | 2,07 | 2,14 | 2,2 | 2,27 | 2,42 |
| 8526537 | 0,4 | 8,4 | 2,4 | 38 | 0,48 | 4 | 0,78 | 11,26° | 2,49 | 2,56 | 2,64 | 2,73 | 2,92 |
| 8526538 | 0,4 | 10 | 4 | 40 | 0,48 | 4 | 0,78 | 9,44° | 4,15 | 4,28 | 4,42 | 4,57 | 4,91 |
| 8526539 | 0,4 | 12 | 6 | 40 | 0,48 | 4 | 0,78 | 7,84° | 6,21 | 6,42 | 6,63 | 6,87 | 7,39 |
| 8526540 | 0,5 | 7,6 | 2 | 38 | 0,6 | 4 | 0,98 | 11,81° | 2,07 | 2,13 | 2,19 | 2,25 | 2,4 |
| 8526541 | 0,5 | 8,1 | 2,5 | 38 | 0,6 | 4 | 0,98 | 11,06° | 2,59 | 2,66 | 2,74 | 2,83 | 3,02 |
| 8526542 | 0,5 | 8,6 | 3 | 38 | 0,6 | 4 | 0,98 | 10,41° | 3,11 | 3,2 | 3,3 | 3,4 | 3,64 |
| 8526543 | 0,5 | 9,6 | 4 | 38 | 0,6 | 4 | 0,98 | 9,3° | 4,14 | 4,27 | 4,41 | 4,55 | 4,88 |
| 8526544 | 0,5 | 11,6 | 6 | 45 | 0,6 | 4 | 0,98 | 7,66° | 6,21 | 6,41 | 6,62 | 6,85 | 7,37 |
| 8526545 | 0,5 | 13,6 | 8 | 45 | 0,6 | 4 | 0,98 | 6,51° | 8,28 | 8,55 | 8,84 | 9,15 | 9,86 |
| 8526546 | 0,5 | 15,6 | 10 | 45 | 0,6 | 4 | 0,98 | 5,66° | 10,34 | 10,69 | 11,06 | 11,45 | 12,34 |
| 8526547 | 0,6 | 7,8 | 2,4 | 38 | 0,72 | 4 | 1,18 | 10,91° | 2,55 | 2,68 | 2,78 | 2,88 | 3,07 |
| 8526548 | 0,6 | 8,4 | 3 | 38 | 0,72 | 4 | 1,18 | 10,1° | 3,19 | 3,34 | 3,46 | 3,57 | 3,82 |

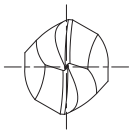
*If there is no value in the actual effective length (Le column) for the work gradient angle α , it indicates no interference.

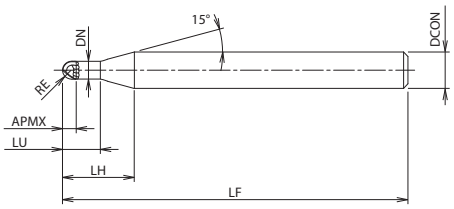
# CBN-FB2

**Milling | CBN**

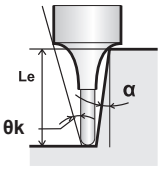
INDEX

**NEW**






- 2 flutes CBN ball end mill
- Excellent ball radius accuracy for high-quality surface finishing
- Optimized shank design for ultra-high precision




P ~45 HRC | P ~55 HRC | H ~60 HRC | H ~68 HRC

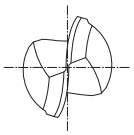
CBN | 10° | SHRINK FIT | SHANK -0.001~-0.003 | R ± 0.003 | C.990

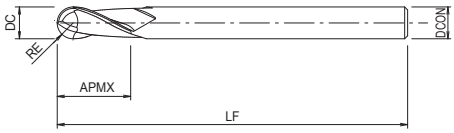
| EDP | RE | LH | LU | LF | APMX | DCON | DN | θk | Effective length by inclined angles Le (α)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 0,5° | 1° | 1,5° | 2° | 3° |
| 8526549 | 0,6 | 11,4 | 6 | 38 | 0,72 | 4 | 1,18 | 7,36° | 6,35 | 6,57 | 6,79 | 7,02 | 7,54 |
| 8526550 | 0,75 | 7,8 | 3 | 38 | 0,9 | 4 | 1,47 | 9,95° | 3,16 | 3,29 | 3,4 | 3,51 | 3,73 |
| 8526551 | 0,75 | 8,6 | 3,8 | 38 | 0,9 | 4 | 1,47 | 8,97° | 4 | 4,16 | 4,29 | 4,43 | 4,73 |
| 8526552 | 0,75 | 12,3 | 7,5 | 38 | 0,9 | 4 | 1,47 | 6,15° | 7,87 | 8,13 | 8,39 | 8,68 | 9,33 |
| 8526553 | 0,75 | 14,8 | 10 | 38 | 0,9 | 4 | 1,47 | 5,07° | 10,46 | 10,8 | 11,17 | 11,56 | 12,44 |
| 8526554 | 0,75 | 19,8 | 15 | 38 | 0,9 | 4 | 1,47 | 3,75° | 15,63 | 16,15 | 16,71 | 17,31 | 18,65 |
| 8526555 | 1 | 8,2 | 4 | 38 | 1,2 | 4 | 1,97 | 7,82° | 4,24 | 4,47 | 4,69 | 4,91 | 5,32 |
| 8526556 | 1 | 9,2 | 5 | 38 | 1,2 | 4 | 1,97 | 6,89° | 5,31 | 5,59 | 5,86 | 6,11 | 6,58 |
| 8526557 | 1 | 10,2 | 6 | 38 | 1,2 | 4 | 1,97 | 6,16° | 6,38 | 6,71 | 7,01 | 7,29 | 7,82 |
| 8526558 | 1 | 12,2 | 8 | 50 | 1,2 | 4 | 1,97 | 5,08° | 8,5 | 8,91 | 9,28 | 9,61 | 10,31 |
| 8526559 | 1 | 14,2 | 10 | 50 | 1,2 | 4 | 1,97 | 4,32° | 10,62 | 11,1 | 11,51 | 11,9 | 12,79 |
| 8526560 | 1 | 18,2 | 14 | 50 | 1,2 | 4 | 1,97 | 3,32° | 14,82 | 15,42 | 15,94 | 16,5 | 17,77 |
| 8526561 | 1 | 24,2 | 20 | 50 | 1,2 | 4 | 1,97 | 2,47° | 21,09 | 21,84 | 22,59 | 23,4 | - |
| 8526562 | 1,5 | 12 | 6 | 50 | 1,7 | 6 | 2,94 | 8,05° | 6,31 | 6,6 | 6,87 | 7,12 | 7,6 |
| 8526563 | 1,5 | 15 | 9 | 50 | 1,7 | 6 | 2,94 | 6,31° | 9,48 | 9,89 | 10,25 | 10,59 | 11,33 |

*If there is no value in the actual effective length (Le column) for the work gradient angle α , it indicates no interference.

# DG-EBD

**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For graphite milling
- 2 flutes, ball nose

GRAPHITE

CARBIDE | DG | 30° | SHRINK FIT | R ±0.01

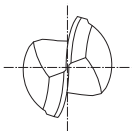
C.991

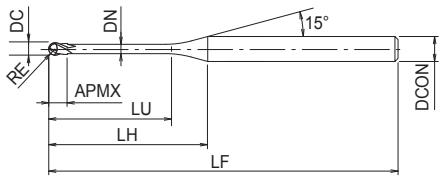
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8553541 | 4 | 2 | 8 | 4 | 80 | 2 |
| 8553561 | 6 | 3 | 12 | 6 | 80 | 2 |
| 8553581 | 8 | 4 | 16 | 8 | 100 | 2 |
| 8553601 | 10 | 5 | 20 | 10 | 100 | 2 |
| 8553621 | 12 | 6 | 36 | 12 | 130 | 2 |

# DG-LN-EBD

INDEX

**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For graphite milling
- 2 flutes, ball nose, long neck for deep reach

GRAPHITE

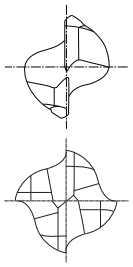
CARBIDE | DG | 30° | SHRINK FIT | ± 0.01 0,5≤R | ± 0.008 0,5>R

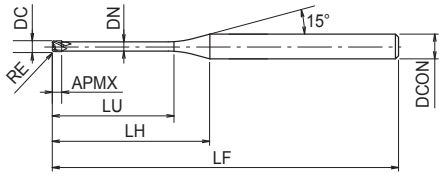
C.992

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ULDR | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 8553701 | 0,4 | 0,2 | 4 | 0,6 | 4 | 0,34 | 50 | 11,17 | - | 2 |
| 8553702 | 0,4 | 0,2 | 8 | 0,6 | 4 | 0,34 | 50 | 15,17 | - | 2 |
| 8553711 | 0,6 | 0,3 | 6 | 0,9 | 4 | 0,54 | 50 | 12,8 | - | 2 |
| 8553712 | 0,6 | 0,3 | 10 | 0,9 | 4 | 0,54 | 50 | 16,8 | - | 2 |
| 48104001 | 0,8 | 0,4 | 15 | 1,2 | 4 | 0,76 | 60 | 21,4 | - | 2 |
| 8553721 | 1 | 0,5 | 4 | 1,5 | 4 | 0,93 | 50 | 10,05 | - | 2 |
| 8553722 | 1 | 0,5 | 6 | 1,5 | 4 | 0,93 | 50 | 12,05 | - | 2 |
| 8553723 | 1 | 0,5 | 10 | 1,5 | 4 | 0,93 | 50 | 16,05 | - | 2 |
| 8553724 | 1 | 0,5 | 16 | 1,5 | 4 | 0,93 | 60 | 22,05 | - | 2 |
| 48249116 | 1 | 0,5 | 16 | 1,5 | 4 | 0,93 | 50 | 21,8 | 16 | 2 |
| 8553725 | 1 | 0,5 | 20 | 1,5 | 4 | 0,93 | 60 | 26,05 | - | 2 |
| 8553726 | 1 | 0,5 | 30 | 1,5 | 4 | 0,93 | 80 | 36,05 | - | 2 |
| 8553731 | 1,5 | 0,75 | 6 | 2,3 | 4 | 1,41 | 50 | 11,07 | - | 2 |
| 8553732 | 1,5 | 0,75 | 10 | 2,3 | 4 | 1,41 | 50 | 15,07 | - | 2 |
| 8553733 | 1,5 | 0,75 | 16 | 2,3 | 4 | 1,41 | 60 | 21,07 | - | 2 |
| 8553742 | 2 | 1 | 10 | 3 | 4 | 1,87 | 50 | 14,35 | - | 2 |
| 8553743 | 2 | 1 | 16 | 3 | 4 | 1,87 | 60 | 20,35 | - | 2 |
| 8553744 | 2 | 1 | 20 | 3 | 4 | 1,87 | 60 | 24,35 | - | 2 |
| 48249220 | 2 | 1 | 20 | 3 | 4 | 1,87 | 50 | 24,2 | 10 | 2 |
| 8553745 | 2 | 1 | 30 | 3 | 4 | 1,87 | 80 | 34,35 | - | 2 |
| 8553761 | 3 | 1,5 | 20 | 4,5 | 4 | 2,87 | 60 | 22,48 | - | 2 |
| 8553762 | 3 | 1,5 | 40 | 4,5 | 4 | 2,87 | 80 | 42,48 | - | 2 |
| 8553781 | 4 | 2 | 20 | 6 | 4 | 3,87 | 60 | - | - | 2 |

# DG-CPR

**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For graphite milling
- Multi flute, long neck for deep reach, corner radius

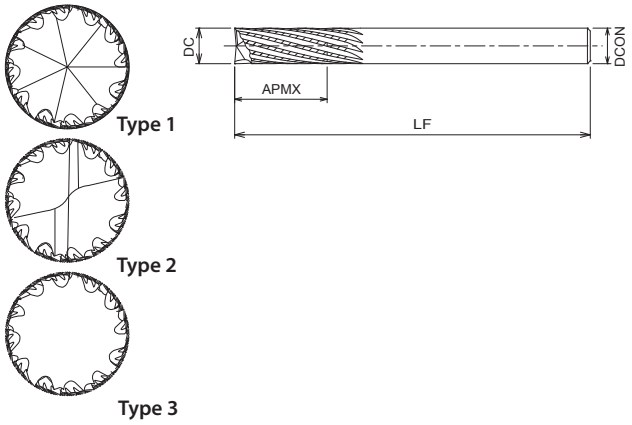
GRAPHITE

CARBIDE | DG | 30° | SHRINK FIT | R ±0.01 | D<1 0~-0.02 | D≥1 0~-0.027 | C.993

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP |
|---|---|---|---|---|---|---|---|---|---|
| 8554511 | 0,5 | 0,1 | 4 | 0,9 | 4 | 0,44 | 50 | 10,98 | 2 |
| 8554512 | 0,5 | 0,1 | 6 | 0,9 | 4 | 0,44 | 50 | 12,98 | 2 |
| 48103001 | 1 | 0,1 | 10 | 1,5 | 4 | 0,96 | 50 | 16,05 | 2 |
| 8554542 | 2 | 0,2 | 10 | 3 | 4 | 1,87 | 60 | 14,35 | 2 |
| 8554544 | 2 | 0,2 | 20 | 3 | 4 | 1,87 | 70 | 24,35 | 2 |
| 48103002 | 4 | 0,3 | 40 | 6 | 6 | 3,9 | 100 | - | 4 |
| 48103004 | 4 | 0,5 | 25 | 6 | 6 | 3,9 | 70 | - | 4 |
| 48103003 | 4 | 0,5 | 40 | 6 | 6 | 3,9 | 100 | - | 4 |
| 48103005 | 4 | 1 | 40 | 6 | 6 | 3,9 | 100 | - | 4 |
| 48103006 | 6 | 0,3 | 30 | 6 | 6 | 5,7 | 100 | - | 4 |
| 8554621 | 6 | 0,5 | 30 | 6 | 6 | 5,7 | 100 | - | 4 |
| 8554622 | 6 | 1 | 30 | 6 | 6 | 5,67 | 100 | - | 4 |
| 48103007 | 8 | 0,3 | 100 | 8 | 8 | 7,6 | 150 | - | 4 |
| 8554661 | 8 | 0,5 | 32 | 8 | 8 | 7,57 | 100 | - | 4 |
| 48103008 | 8 | 0,5 | 100 | 8 | 8 | 7,6 | 150 | - | 4 |
| 48103009 | 8 | 1 | 100 | 8 | 8 | 7,6 | 150 | - | 4 |
| 8554701 | 10 | 0,5 | 40 | 10 | 10 | 9,47 | 125 | - | 4 |
| 8554702 | 10 | 1 | 40 | 10 | 10 | 9,47 | 125 | - | 4 |
| 8554722 | 12 | 1 | 48 | 12 | 12 | 11,37 | 150 | - | 4 |

# DIA-BNC

**Milling | Solid carbide**




- Carbide end mill with diamond coating
- For CFRP milling
- Multi flute, fine nick geometry
- Also available with LH helix

CFRP

CARBIDE | DIA | SHRINK FIT

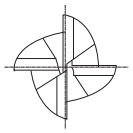
C.994

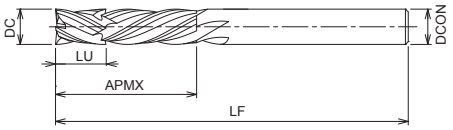
| EDP | DC | APMX | DCON | LF | ZEFP | Type | specification |
|---|---|---|---|---|---|---|---|
| 8809012 | 6 | 18 | 6 | 88 | 10 | 3 | Left helix |
| 48108001 | 6 | 18 | 6 | 68 | 8 | 1 | Trimming |
| 48108011 | 6 | 18 | 6 | 68 | 8 | 2 | Trimming & Plunging |
| 8809013 | 8 | 24 | 8 | 94 | 14 | 3 | Left helix |
| 48108002 | 8 | 24 | 8 | 74 | 10 | 1 | Trimming |
| 48108012 | 8 | 24 | 8 | 74 | 10 | 2 | Trimming & Plunging |
| 48108003 | 10 | 30 | 10 | 80 | 12 | 1 | Trimming |
| 48108013 | 10 | 30 | 10 | 80 | 12 | 2 | Trimming & Plunging |
| 48108004 | 12 | 36 | 12 | 86 | 14 | 1 | Trimming |
| 48108014 | 12 | 36 | 12 | 86 | 14 | 2 | Trimming & Plunging |

# DIA-HBC



**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For CFRP milling
- 4 flutes, left-hand / right-hand flute to suppress delamination

CFRP

CARBIDE | DIA | SHRINK FIT

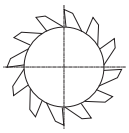
C.994

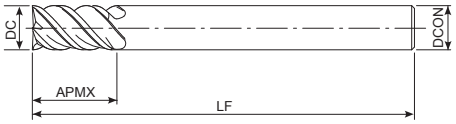
| EDP | DC | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 48109001 | 6 | 15 | 7,5 | 6 | 65 | 4 |
| 48109002 | 8 | 20 | 10 | 8 | 70 | 4 |
| 48109003 | 10 | 25 | 12,5 | 10 | 75 | 4 |
| 48109004 | 12 | 30 | 15 | 12 | 100 | 4 |

# DIA-MFC



**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For CFRP milling
- Multi flute, for excellent surface finishing

CFRP

CARBIDE | DIA | SHRINK FIT

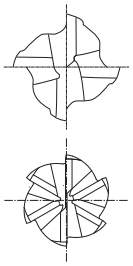
C.994

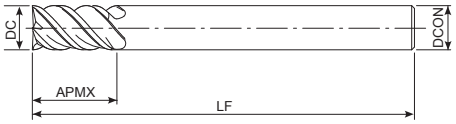
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8809171 | 6 | 18 | 6 | 80 | 8 |
| 8809173 | 8 | 24 | 8 | 90 | 10 |
| 8809175 | 10 | 30 | 10 | 100 | 12 |

# DIA-REC



**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For CFRP milling
- Multi flute, roughing and semi finishing

CFRP

CARBIDE | DIA | SHRINK FIT

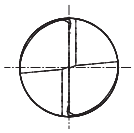
C.994

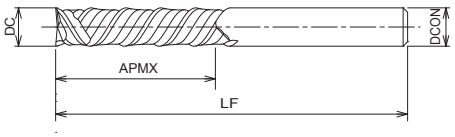
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8809161 | 6 | 18 | 6 | 68 | 4 |
| 8809163 | 8 | 24 | 8 | 74 | 6 |
| 8809165 | 10 | 30 | 10 | 80 | 6 |

# HBC60



**Milling | Solid carbide**






- Carbide end mill, bright finish
- For honeycomb composite materials
- 2 flutes, left-hand / right-hand flute

HONEYCOMB

CARBIDE

60°

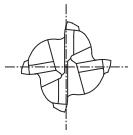
C.994

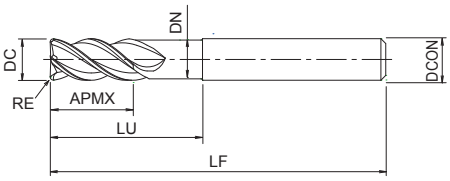
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8809181 | 6 | 18 | 6 | 68 | 2 |
| 8809183 | 8 | 24 | 8 | 74 | 2 |
| 8809185 | 10 | 30 | 10 | 80 | 2 |
| 8809187 | 12 | 36 | 12 | 86 | 2 |

# UVX-TI-4FL

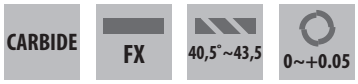


**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 4 flutes, variable helix and unequal spacing, corner radius

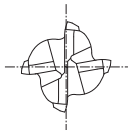


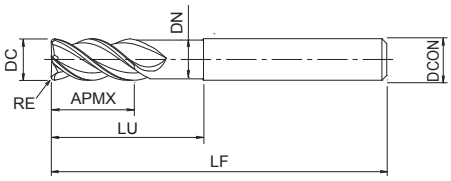
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8555120 | 12 | - | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555121 | 12 | 1 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555122 | 12 | 1,5 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555123 | 12 | 2 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555124 | 12 | 2,5 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555125 | 12 | 3 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555126 | 12 | 4 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555160 | 16 | - | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555161 | 16 | 1 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555162 | 16 | 1,5 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555163 | 16 | 2 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555164 | 16 | 2,5 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555165 | 16 | 3 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555166 | 16 | 4 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555200 | 20 | - | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555201 | 20 | 1 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555202 | 20 | 1,5 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555203 | 20 | 2 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555204 | 20 | 2,5 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555205 | 20 | 3 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555206 | 20 | 4 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555207 | 20 | 5 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555250 | 25 | - | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555251 | 25 | 1 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555252 | 25 | 1,5 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555253 | 25 | 2 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555254 | 25 | 2,5 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555255 | 25 | 3 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555256 | 25 | 4 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555257 | 25 | 5 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555258 | 25 | 6 | 75 | 50 | 25 | 24,5 | 140 | 4 |

# UVX-TI-4FL SAFE LOCK

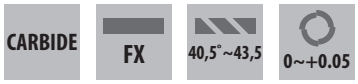
INDEX

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 4 flutes, variable helix and unequal spacing, corner radius
- SafeLock shank

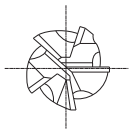


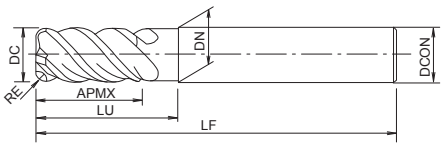
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8555660 | 12 | 1 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555661 | 12 | 3 | 36 | 24 | 12 | 11,5 | 90 | 4 |
| 8555662 | 16 | 1 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555663 | 16 | 3 | 48 | 32 | 16 | 15,5 | 100 | 4 |
| 8555664 | 20 | 1 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555665 | 20 | 3 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555666 | 20 | 5 | 60 | 40 | 20 | 19,5 | 120 | 4 |
| 8555667 | 25 | 1 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555668 | 25 | 3 | 75 | 50 | 25 | 24,5 | 140 | 4 |
| 8555669 | 25 | 5 | 75 | 50 | 25 | 24,5 | 140 | 4 |

# UVX-TI-5FL

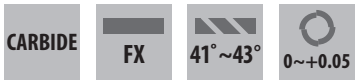
INDEX

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 5 flutes, variable helix and unequal spacing, corner radius

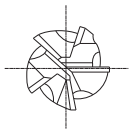


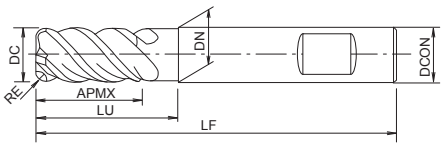
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8555320 | 12 | - | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555321 | 12 | 1 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555322 | 12 | 1,5 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555323 | 12 | 2 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555324 | 12 | 2,5 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555325 | 12 | 3 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555326 | 12 | 4 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555360 | 16 | - | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555361 | 16 | 1 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555362 | 16 | 1,5 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555363 | 16 | 2 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555364 | 16 | 2,5 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555365 | 16 | 3 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555366 | 16 | 4 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555400 | 20 | - | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555401 | 20 | 1 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555402 | 20 | 1,5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555403 | 20 | 2 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555404 | 20 | 2,5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555405 | 20 | 3 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555406 | 20 | 4 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555407 | 20 | 5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555450 | 25 | - | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555451 | 25 | 1 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555452 | 25 | 1,5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555453 | 25 | 2 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555454 | 25 | 2,5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555455 | 25 | 3 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555456 | 25 | 4 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555457 | 25 | 5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555458 | 25 | 6 | 75 | 50 | 25 | 24,5 | 140 | 5 |

# UVX-TI-5FL Weldon

INDEX

**Milling | Solid carbide**





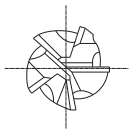

- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 5 flutes, variable helix and unequal spacing, corner radius
- Weldon shank

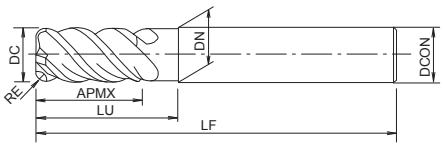
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W1204247 | 12 | - | 36 | 24 | 12 | 11,5 | 90 | 5 |
| W1204248 | 12 | 1 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| W1204249 | 12 | 2,5 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| W1304511 | 12 | 4 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| W1204250 | 16 | - | 48 | 32 | 16 | 15,5 | 100 | 5 |
| W1304512 | 16 | 1 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| W1204251A | 16 | 2,5 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| W1204252A | 16 | 4 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| W1204253 | 20 | - | 52 | 40 | 20 | 19,5 | 105 | 5 |
| W1304513 | 20 | 1 | 52 | 40 | 20 | 19,5 | 105 | 5 |
| W1204254A | 20 | 2,5 | 52 | 40 | 20 | 19,5 | 105 | 5 |
| W1204255A | 20 | 4 | 52 | 40 | 20 | 19,5 | 105 | 5 |
| W1204256A | 20 | 5 | 52 | 40 | 20 | 19,5 | 105 | 5 |
| W1204257 | 20 | 6 | 52 | 40 | 20 | 19,5 | 105 | 5 |

# UVX-TI-5FL SAFE LOCK

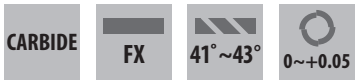
INDEX

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 5 flutes, variable helix and unequal spacing, corner radius
- SafeLock shank

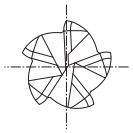


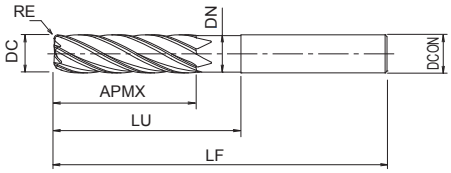
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48247120 | 12 | - | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555670 | 12 | 1 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 48247123 | 12 | 1,5 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 48247124 | 12 | 2 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 48247125 | 12 | 2,5 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 8555671 | 12 | 3 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 48247127 | 12 | 4 | 36 | 24 | 12 | 11,5 | 90 | 5 |
| 48247160 | 16 | - | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555672 | 16 | 1 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 48247163 | 16 | 1,5 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 48247164 | 16 | 2 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 48247165 | 16 | 2,5 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 8555673 | 16 | 3 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 48247167 | 16 | 4 | 48 | 32 | 16 | 15,5 | 100 | 5 |
| 48247200 | 20 | - | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555674 | 20 | 1 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 48247203 | 20 | 1,5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 48247204 | 20 | 2 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 48247205 | 20 | 2,5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555675 | 20 | 3 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 48247207 | 20 | 4 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 8555676 | 20 | 5 | 60 | 40 | 20 | 19,5 | 120 | 5 |
| 48247250 | 25 | - | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555677 | 25 | 1 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 48247253 | 25 | 1,5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 48247254 | 25 | 2 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 48247255 | 25 | 2,5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555678 | 25 | 3 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 48247257 | 25 | 4 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 8555679 | 25 | 5 | 75 | 50 | 25 | 24,5 | 140 | 5 |
| 48247259 | 25 | 6 | 75 | 50 | 25 | 24,5 | 140 | 5 |

# UVXL-TI-5FL



**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 5 flutes, long length of cut, variable helix and unequal spacing, corner radius

M ○ ~35 HRC

S ◉

CARBIDE | FX | 41°~43° | 0~+0.05

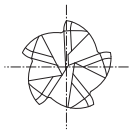
C.995

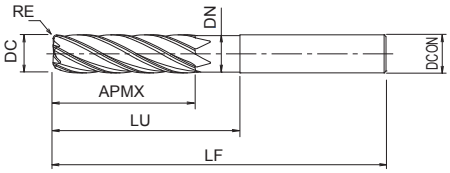
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8555520 | 12 | - | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555521 | 12 | 1 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555522 | 12 | 1,5 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555523 | 12 | 2 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555524 | 12 | 2,5 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555525 | 12 | 3 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555526 | 12 | 4 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555560 | 16 | - | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555561 | 16 | 1 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555562 | 16 | 1,5 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555563 | 16 | 2 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555564 | 16 | 2,5 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555565 | 16 | 3 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555566 | 16 | 4 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555600 | 20 | - | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555601 | 20 | 1 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555602 | 20 | 1,5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555603 | 20 | 2 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555604 | 20 | 2,5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555605 | 20 | 3 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555606 | 20 | 4 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555607 | 20 | 5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555650 | 25 | - | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555651 | 25 | 1 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555652 | 25 | 1,5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555653 | 25 | 2 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555654 | 25 | 2,5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555655 | 25 | 3 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555656 | 25 | 4 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555657 | 25 | 5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555658 | 25 | 6 | 125 | 100 | 25 | 24,5 | 190 | 5 |

# UVXL-TI-5FL SAFE LOCK

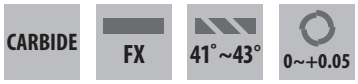
INDEX

**Milling | Solid carbide**






- First choice in quality and performance
- Carbide end mill with TiAlN coating
- For Titanium alloys
- 5 flutes, long length of cut, variable helix and unequal spacing, corner radius
- SafeLock shank

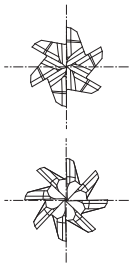


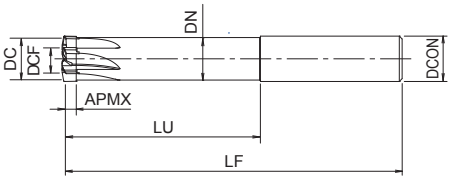
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48248120 | 12 | - | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555680 | 12 | 1 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 48248123 | 12 | 1,5 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 48248124 | 12 | 2 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 48248125 | 12 | 2,5 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 8555681 | 12 | 3 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 48248127 | 12 | 4 | 60 | 48 | 12 | 11,5 | 110 | 5 |
| 48248160 | 16 | - | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555682 | 16 | 1 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 48248163 | 16 | 1,5 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 48248164 | 16 | 2 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 48248165 | 16 | 2,5 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 8555683 | 16 | 3 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 48248167 | 16 | 4 | 80 | 64 | 16 | 15,5 | 130 | 5 |
| 48248200 | 20 | - | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555684 | 20 | 1 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 48248203 | 20 | 1,5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 48248204 | 20 | 2 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 48248205 | 20 | 2,5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555685 | 20 | 3 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 48248207 | 20 | 4 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 8555686 | 20 | 5 | 100 | 80 | 20 | 19,5 | 160 | 5 |
| 48248250 | 25 | - | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555687 | 25 | 1 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 48248253 | 25 | 1,5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 48248254 | 25 | 2 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 48248255 | 25 | 2,5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555688 | 25 | 3 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 48248257 | 25 | 4 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 8555689 | 25 | 5 | 125 | 100 | 25 | 24,5 | 190 | 5 |
| 48248259 | 25 | 6 | 125 | 100 | 25 | 24,5 | 190 | 5 |

# HFC-TI



**Milling | Solid carbide**






- Carbide end mill, bright finish
- For high feed Titanium alloy milling
- Multi flute

S

CARBIDE

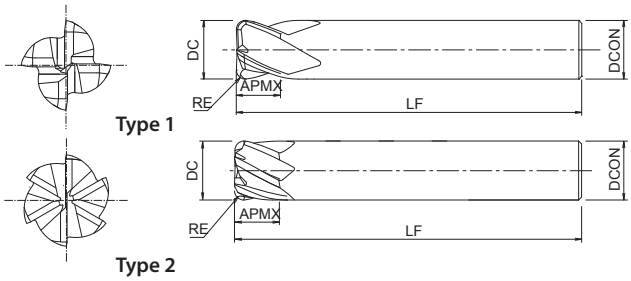
C.996

| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | DCF |
|---|---|---|---|---|---|---|---|---|
| 8555716 | 16 | 70 | 5 | 16 | 15 | 120 | 6 | 7,77 |
| 8555720 | 20 | 70 | 5 | 20 | 19 | 120 | 8 | 9,72 |
| 8555725 | 25 | 70 | 5 | 25 | 24 | 120 | 8 | 12,15 |

# CM-RMS

**Milling | Ceramic**

INDEX




- Ceramic end mill, peripheral cutting edge type
- Optimum flute geometry
- Negative cutter form
- 4 or 6 flutes specification based on your application needs

S
Ni

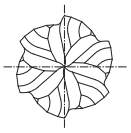
CERAMIC | R ± 0.03 | 0~+0.05 | h6 | 30° | C.996

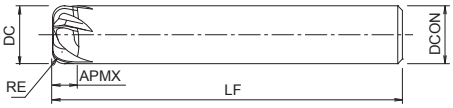
| EDP | DC | RE | APMX | DCON | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8557100 | 6 | 0,75 | 4,5 | 6 | 60 | 4 | 1 |
| 8557200 | 6 | 0,75 | 4,5 | 6 | 60 | 6 | 2 |
| 8557110 | 8 | 1 | 6 | 8 | 60 | 4 | 1 |
| 8557210 | 8 | 1 | 6 | 8 | 60 | 6 | 2 |
| 8557120 | 10 | 1,25 | 7,5 | 10 | 65 | 4 | 1 |
| 8557220 | 10 | 1,25 | 7,5 | 10 | 65 | 6 | 2 |
| 8557130 | 12 | 1,5 | 9 | 12 | 70 | 4 | 1 |
| 8557230 | 12 | 1,5 | 9 | 12 | 70 | 6 | 2 |

# CM-CRE

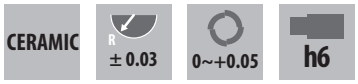
**Milling | Ceramic**

INDEX






- Ceramic end mill, end cutting edge type
- Suitable for 3D machining
- Large-diameter specification
- Regrindable

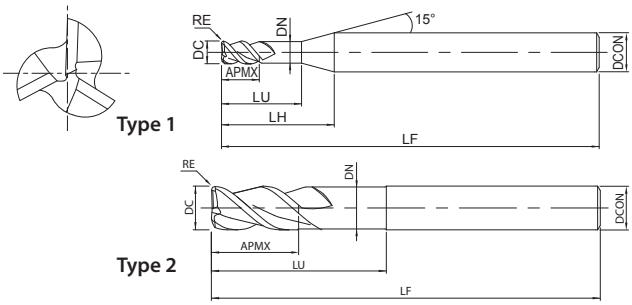


| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8557016 | 16 | 4 | 5 | 16 | 120 | 5 |
| 8557020 | 20 | 4 | 5 | 20 | 120 | 6 |
| 8557025 | 25 | 4 | 5 | 25 | 120 | 7 |

# AE-TS-N

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, short length of cut

N Al

N AC, ADC

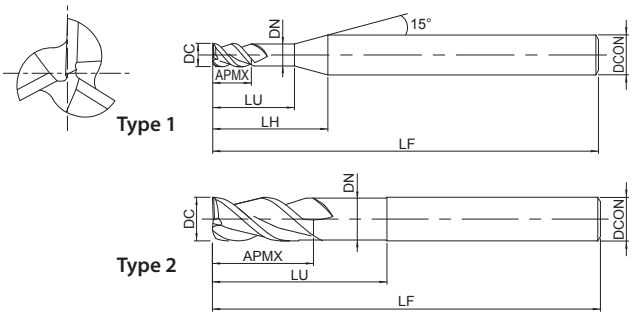
A | CARBIDE | DLC | 0~-0.02 | 41° | SHRINK FIT | C.997

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 8557235 | 1 | - | 3 | 1,5 | 4 | 0,95 | 45 | 8,6 | 3 | 1 |
| 8557236 | 1,5 | - | 4,5 | 2,3 | 4 | 1,45 | 45 | 9,3 | 3 | 1 |
| 8557237 | 2 | - | 6 | 3 | 4 | 1,9 | 45 | 10,1 | 3 | 1 |
| 8557238 | 2,5 | - | 7,5 | 3,8 | 4 | 2,4 | 45 | 10,6 | 3 | 1 |
| 8557330 | 3 | - | 9 | 4,5 | 6 | 2,85 | 55 | 14,9 | 3 | 1 |
| 8557370 | 3 | 0,2 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557371 | 3 | 0,5 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557331 | 4 | - | 12 | 6 | 6 | 3,8 | 55 | 16 | 3 | 1 |
| 8557372 | 4 | 0,2 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557373 | 4 | 0,5 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557374 | 4 | 1 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557332 | 5 | - | 15 | 7,5 | 6 | 4,8 | 55 | 17,1 | 3 | 1 |
| 8557375 | 5 | 0,2 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557376 | 5 | 0,5 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557377 | 5 | 1 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557333 | 6 | - | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557378 | 6 | 0,3 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557379 | 6 | 0,5 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557380 | 6 | 1 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557334 | 8 | - | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557381 | 8 | 0,3 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557382 | 8 | 0,5 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557383 | 8 | 1 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557384 | 8 | 1,5 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557385 | 8 | 2 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557335 | 10 | - | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557386 | 10 | 0,3 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557387 | 10 | 0,5 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557388 | 10 | 1 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557389 | 10 | 1,5 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557390 | 10 | 2 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557391 | 10 | 3 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557336 | 12 | - | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557392 | 12 | 0,3 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557393 | 12 | 0,5 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557394 | 12 | 1 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557395 | 12 | 1,5 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557396 | 12 | 2 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557397 | 12 | 3 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557337 | 16 | - | 48 | 24 | 16 | 15,7 | 110 | - | 3 | 2 |
| 8557338 | 20 | - | 60 | 30 | 20 | 19,7 | 120 | - | 3 | 2 |
| 8557339 | 25 | - | 75 | 37,5 | 25 | 24,7 | 140 | - | 3 | 2 |

# AE-TS-N SP

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, short length of cut
- Sharp corner for milling 90° corner

N AI

N AC, ADC

A CARBIDE | DLC | 0~-0.02 | 41° | SHRINK FIT | SHARP

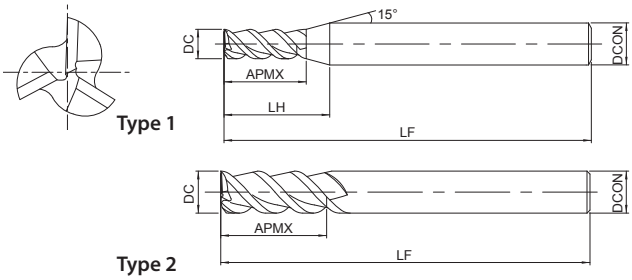
C.997

| EDP | DC | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8557239 | 1 | 3 | 1,5 | 4 | 0,95 | 45 | 8,6 | 3 | 1 |
| 8557240 | 1,5 | 4,5 | 2,3 | 4 | 1,45 | 45 | 9,3 | 3 | 1 |
| 8557241 | 2 | 6 | 3 | 4 | 1,9 | 45 | 10,1 | 3 | 1 |
| 8557242 | 2,5 | 7,5 | 3,8 | 4 | 2,4 | 45 | 10,6 | 3 | 1 |
| 8557430 | 3 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557431 | 4 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557432 | 5 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557433 | 6 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557434 | 8 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557435 | 10 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557436 | 12 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |

# AE-TL-N

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, long length of cut

N Al

N AC, ADC

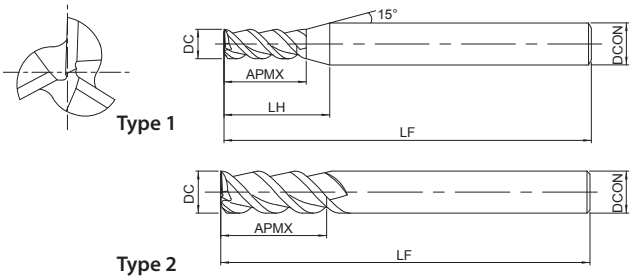
CARBIDE | DLC | 0~-0.02 | 41° | SHRINK FIT | C.1000

| EDP | DC | APMX | DCON | LF | LH | ULDR | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 8557340 | 3 | 9 | 6 | 55 | 17 | 3 | 3 | 1 |
| 8557350 | 3 | 15 | 6 | 55 | 23 | 5 | 3 | 1 |
| 8557341 | 4 | 12 | 6 | 55 | 18,1 | 3 | 3 | 1 |
| 8557351 | 4 | 20 | 6 | 60 | 26,1 | 5 | 3 | 1 |
| 8557342 | 5 | 15 | 6 | 55 | 19,3 | 3 | 3 | 1 |
| 8557352 | 5 | 25 | 6 | 65 | 29,3 | 5 | 3 | 1 |
| 8557343 | 6 | 18 | 6 | 60 | - | 3 | 3 | 2 |
| 8557353 | 6 | 30 | 6 | 75 | - | 5 | 3 | 2 |
| 8557344 | 8 | 24 | 8 | 70 | - | 3 | 3 | 2 |
| 8557354 | 8 | 40 | 8 | 90 | - | 5 | 3 | 2 |
| 8557345 | 10 | 30 | 10 | 75 | - | 3 | 3 | 2 |
| 8557355 | 10 | 50 | 10 | 100 | - | 5 | 3 | 2 |
| 8557346 | 12 | 36 | 12 | 80 | - | 3 | 3 | 2 |
| 8557356 | 12 | 60 | 12 | 110 | - | 5 | 3 | 2 |
| 8557347 | 16 | 48 | 16 | 120 | - | 3 | 3 | 2 |
| 8557357 | 16 | 80 | 16 | 150 | - | 5 | 3 | 2 |
| 8557348 | 20 | 60 | 20 | 135 | - | 3 | 3 | 2 |
| 8557358 | 20 | 100 | 20 | 175 | - | 5 | 3 | 2 |
| 8557349 | 25 | 75 | 25 | 155 | - | 3 | 3 | 2 |
| 8557359 | 25 | 125 | 25 | 205 | - | 5 | 3 | 2 |

# AE-TL-N SP

**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, long length of cut
- Sharp corner for milling 90° corner

N AI

N AC, ADC

A CARBIDE | DLC | 0~-0.02 | 41° | SHRINK FIT | SHARP | C.1000

| EDP | DC | APMX | DCON | LF | LH | ULDR | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 8557440 | 3 | 9 | 6 | 55 | 16,6 | 3 | 3 | 1 |
| 8557450 | 3 | 15 | 6 | 55 | 22,6 | 5 | 3 | 1 |
| 8557441 | 4 | 12 | 6 | 55 | 17,7 | 3 | 3 | 1 |
| 8557451 | 4 | 20 | 6 | 60 | 25,7 | 5 | 3 | 1 |
| 8557442 | 5 | 15 | 6 | 55 | 18,9 | 3 | 3 | 1 |
| 8557452 | 5 | 25 | 6 | 65 | 28,9 | 5 | 3 | 1 |
| 8557443 | 6 | 18 | 6 | 60 | - | 3 | 3 | 2 |
| 8557453 | 6 | 30 | 6 | 75 | - | 5 | 3 | 2 |
| 8557444 | 8 | 24 | 8 | 70 | - | 3 | 3 | 2 |
| 8557454 | 8 | 40 | 8 | 90 | - | 5 | 3 | 2 |
| 8557445 | 10 | 30 | 10 | 75 | - | 3 | 3 | 2 |
| 8557455 | 10 | 50 | 10 | 100 | - | 5 | 3 | 2 |
| 8557446 | 12 | 36 | 12 | 80 | - | 3 | 3 | 2 |
| 8557456 | 12 | 60 | 12 | 110 | - | 5 | 3 | 2 |

# AE-TL-N

**Milling | Solid carbide**

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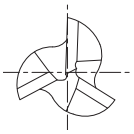
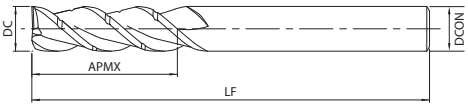
## CHIPBREAKER NEW






- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, long length of cut
- Square with Chipbreaker

N AI

N AC, ADC

A | CARBIDE | DLC | 0~-0.02 | 41° | SHRINK FIT | C.1000

| EDP | DC | APMX | DCON | LF | ULDR | ZEFP |
|---|---|---|---|---|---|---|
| 8558200 | 6 | 18 | 6 | 60 | 3 | 3 |
| 8558210 | 6 | 30 | 6 | 75 | 5 | 3 |
| 8558201 | 8 | 24 | 8 | 70 | 3 | 3 |
| 8558211 | 8 | 40 | 8 | 90 | 5 | 3 |
| 8558202 | 10 | 30 | 10 | 75 | 3 | 3 |
| 8558212 | 10 | 50 | 10 | 100 | 5 | 3 |
| 8558203 | 12 | 36 | 12 | 80 | 3 | 3 |
| 8558213 | 12 | 60 | 12 | 110 | 5 | 3 |
| 8558204 | 16 | 48 | 16 | 120 | 3 | 3 |
| 8558214 | 16 | 80 | 16 | 150 | 5 | 3 |
| 8558205 | 20 | 60 | 20 | 135 | 3 | 3 |
| 8558215 | 20 | 100 | 20 | 175 | 5 | 3 |

# AE-TL-N

**Milling | Solid carbide**

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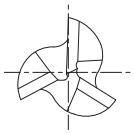
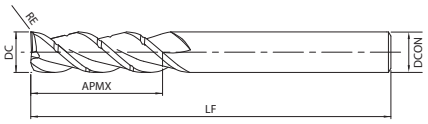
## CHIPBREAKER NEW





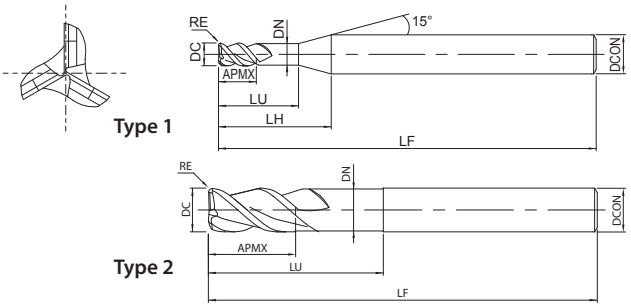

- First choice in quality and performance
- Carbide end mill with DLC coating
- For non-ferrous materials
- 3 flutes, long length of cut
- Radius with Chipbreaker

| EDP | ZEFP | DC | RE | LF | APMX | DCON | ULDR |
|---|---|---|---|---|---|---|---|
| 8558300 | 3 | 6 | 0,3 | 60 | 18 | 6 | 3 |
| 8558350 | 3 | 6 | 0,3 | 75 | 30 | 6 | 5 |
| 8558301 | 3 | 6 | 0,5 | 60 | 18 | 6 | 3 |
| 8558351 | 3 | 6 | 0,5 | 75 | 30 | 6 | 5 |
| 8558302 | 3 | 6 | 1 | 60 | 18 | 6 | 3 |
| 8558352 | 3 | 6 | 1 | 75 | 30 | 6 | 5 |
| 8558303 | 3 | 8 | 0,3 | 70 | 24 | 8 | 3 |
| 8558353 | 3 | 8 | 0,3 | 90 | 40 | 8 | 5 |
| 8558304 | 3 | 8 | 0,5 | 70 | 24 | 8 | 3 |
| 8558354 | 3 | 8 | 0,5 | 90 | 40 | 8 | 5 |
| 8558305 | 3 | 8 | 1 | 70 | 24 | 8 | 3 |
| 8558355 | 3 | 8 | 1 | 90 | 40 | 8 | 5 |
| 8558306 | 3 | 8 | 2 | 70 | 24 | 8 | 3 |
| 8558356 | 3 | 8 | 2 | 90 | 40 | 8 | 5 |
| 8558307 | 3 | 10 | 0,3 | 75 | 30 | 10 | 3 |
| 8558357 | 3 | 10 | 0,3 | 100 | 50 | 10 | 5 |
| 8558308 | 3 | 10 | 0,5 | 75 | 30 | 10 | 3 |
| 8558358 | 3 | 10 | 0,5 | 100 | 50 | 10 | 5 |
| 8558309 | 3 | 10 | 1 | 75 | 30 | 10 | 3 |
| 8558359 | 3 | 10 | 1 | 100 | 50 | 10 | 5 |
| 8558310 | 3 | 10 | 2 | 75 | 30 | 10 | 3 |
| 8558360 | 3 | 10 | 2 | 100 | 50 | 10 | 5 |
| 8558311 | 3 | 10 | 3 | 75 | 30 | 10 | 3 |
| 8558361 | 3 | 10 | 3 | 100 | 50 | 10 | 5 |
| 8558312 | 3 | 12 | 0,3 | 80 | 36 | 12 | 3 |
| 8558362 | 3 | 12 | 0,3 | 110 | 60 | 12 | 5 |
| 8558313 | 3 | 12 | 0,5 | 80 | 36 | 12 | 3 |
| 8558363 | 3 | 12 | 0,5 | 110 | 60 | 12 | 5 |
| 8558314 | 3 | 12 | 1 | 80 | 36 | 12 | 3 |
| 8558364 | 3 | 12 | 1 | 110 | 60 | 12 | 5 |
| 8558315 | 3 | 12 | 2 | 80 | 36 | 12 | 3 |
| 8558365 | 3 | 12 | 2 | 110 | 60 | 12 | 5 |
| 8558316 | 3 | 12 | 3 | 80 | 36 | 12 | 3 |
| 8558366 | 3 | 12 | 3 | 110 | 60 | 12 | 5 |
| 8558317 | 3 | 16 | 0,5 | 120 | 48 | 16 | 3 |
| 8558367 | 3 | 16 | 0,5 | 150 | 80 | 16 | 5 |
| 8558318 | 3 | 20 | 0,5 | 135 | 60 | 20 | 3 |
| 8558368 | 3 | 20 | 0,5 | 175 | 100 | 20 | 5 |

# AE-VTS-N



**^IMilling^I | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC-IGUSS coating
- For non-ferrous materials
- 3 flutes, variable helix and unequal spacing

N Al

N AC, ADC

A CARBIDE | DLC-IGUSS | 0~-0.02 | 40°~43 | SHRINK FIT | C.1004

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 8557243 | 1 | - | 3 | 1,5 | 4 | 0,95 | 45 | 8,6 | 3 | 1 |
| 8557244 | 1,5 | - | 4,5 | 2,3 | 4 | 1,45 | 45 | 9,3 | 3 | 1 |
| 8557245 | 2 | - | 6 | 3 | 4 | 1,95 | 45 | 10,1 | 3 | 1 |
| 8557246 | 2,5 | - | 7,5 | 3,8 | 4 | 2,4 | 45 | 10,6 | 3 | 1 |
| 8557360 | 3 | - | 9 | 4,5 | 6 | 2,85 | 55 | 14,9 | 3 | 1 |
| 8557400 | 3 | 0,2 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557401 | 3 | 0,5 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557361 | 4 | - | 12 | 6 | 6 | 3,8 | 55 | 16 | 3 | 1 |
| 8557402 | 4 | 0,2 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557403 | 4 | 0,5 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557404 | 4 | 1 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557362 | 5 | - | 15 | 7,5 | 6 | 4,8 | 55 | 17,1 | 3 | 1 |
| 8557405 | 5 | 0,2 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557406 | 5 | 0,5 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557407 | 5 | 1 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557363 | 6 | - | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557408 | 6 | 0,3 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557409 | 6 | 0,5 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557410 | 6 | 1 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557364 | 8 | - | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557411 | 8 | 0,3 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557412 | 8 | 0,5 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557413 | 8 | 1 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557414 | 8 | 1,5 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557415 | 8 | 2 | 24 | 12 | 8 | 7,7 | 70 | - | 3 | 2 |
| 8557365 | 10 | - | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557416 | 10 | 0,3 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557417 | 10 | 0,5 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557418 | 10 | 1 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557419 | 10 | 1,5 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557420 | 10 | 2 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557421 | 10 | 3 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557366 | 12 | - | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557422 | 12 | 0,3 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557423 | 12 | 0,5 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557424 | 12 | 1 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557425 | 12 | 1,5 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557426 | 12 | 2 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |
| 8557427 | 12 | 3 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |

# AE-VTS-N SP

**Milling | Solid carbide**

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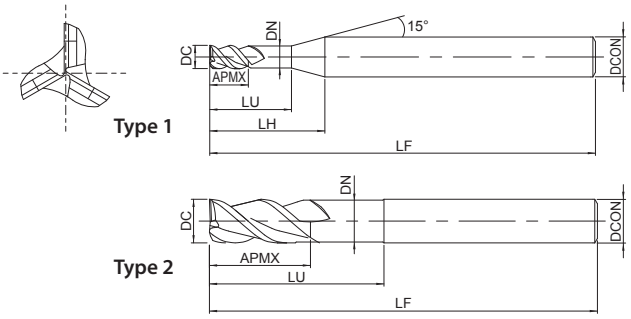


- First choice in quality and performance
- Carbide end mill with DLC-IGUSS coating
- For non-ferrous materials
- 3 flutes, variable helix and unequal spacing
- Sharp corner for milling 90° corner

N Al

N AC, ADC

A | CARBIDE | DLC-IGUSS | 0~-0.02 | 40°~43 | SHRINK FIT | SHARP

C.1004

| EDP | DC | LU | APMX | DCON | DN | LF | LH | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8557247 | 1 | 3 | 1,5 | 4 | 0,95 | 45 | 8,6 | 3 | 1 |
| 8557248 | 1,5 | 4,5 | 2,3 | 4 | 1,45 | 45 | 9,3 | 3 | 1 |
| 8557249 | 2 | 6 | 3 | 4 | 1,95 | 45 | 10,1 | 3 | 1 |
| 8557250 | 2,5 | 7,5 | 3,8 | 4 | 2,4 | 45 | 10,6 | 3 | 1 |
| 8557460 | 3 | 9 | 4,5 | 6 | 2,85 | 55 | 14,8 | 3 | 1 |
| 8557461 | 4 | 12 | 6 | 6 | 3,8 | 55 | 15,9 | 3 | 1 |
| 8557462 | 5 | 15 | 7,5 | 6 | 4,8 | 55 | 16,8 | 3 | 1 |
| 8557463 | 6 | 18 | 9 | 6 | 5,8 | 60 | - | 3 | 2 |
| 8557464 | 8 | 24 | 12 | 8 | 77 | 70 | - | 3 | 2 |
| 8557465 | 10 | 30 | 15 | 10 | 9,7 | 75 | - | 3 | 2 |
| 8557466 | 12 | 36 | 18 | 12 | 11,7 | 80 | - | 3 | 2 |

# AE-VTFE-N

**Milling | Solid carbide**

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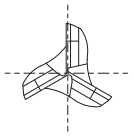

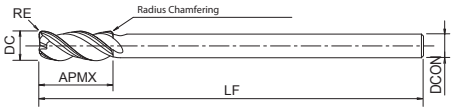


- First choice in quality and performance
- Carbide end mill with DLC-IGUSS coating
- For non-ferrous materials
- 3 flutes, variable helix and unequal spacing
- For deep wall milling

N Al

N AC, ADC

A | CARBIDE | DLC-IGUSS | 0~-0.02 | 40°~43 | SHRINK FIT

C.1007

| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8550126 | 6 | - | 15 | 4 | 100 | 3 |
| 8550156 | 6 | 0,2 | 15 | 4 | 100 | 3 |
| 8550128 | 8 | - | 20 | 6 | 110 | 3 |
| 8550158 | 8 | 0,5 | 20 | 6 | 110 | 3 |
| 8550130 | 10 | - | 25 | 8 | 130 | 3 |
| 8550160 | 10 | 0,5 | 25 | 8 | 130 | 3 |
| 8550161 | 10 | 1 | 25 | 8 | 130 | 3 |
| 8550132 | 12 | - | 30 | 10 | 150 | 3 |
| 8550168 | 12 | 0,5 | 30 | 10 | 150 | 3 |
| 8550169 | 12 | 1 | 30 | 10 | 150 | 3 |
| 8550134 | 14 | - | 35 | 12 | 160 | 3 |
| 8550174 | 14 | 0,5 | 35 | 12 | 160 | 3 |
| 8550175 | 14 | 1 | 35 | 12 | 160 | 3 |
| 8550138 | 18 | - | 45 | 16 | 180 | 3 |
| 8550180 | 18 | 1 | 45 | 16 | 180 | 3 |
| 8550142 | 22 | - | 55 | 20 | 200 | 3 |
| 8550184 | 22 | 1 | 55 | 20 | 200 | 3 |

# SEP-EL

**Milling | Solid carbide | 3/5xD**

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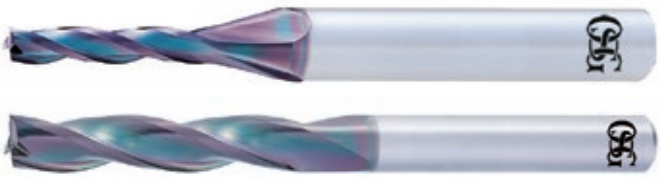
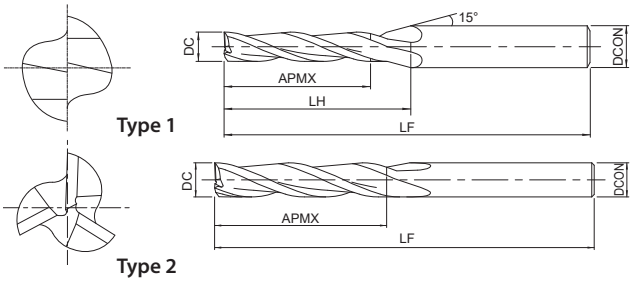
**NEW**






- DLC coated carbide end mill for super engineering plastics
- 2-3 flutes, sharp corner edge
- 12 sizes

N AI | N AC, ADC | O PET | O PEI | O PEEK

CARBIDE | DLC-IGUSS | SHARP | SHRINK FIT | 25°

DC<6 0~-0,015
6=DC -0,005~-0,02

C.1047

### 3xD Cutting length

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Typ |
|---|---|---|---|---|---|---|---|
| 8471005 | 0,5 | 2,5 | 4 | 45 | 9,7 | 2 | 1 |
| 8471010 | 1 | 5 | 4 | 45 | 11,4 | 3 | 1 |
| 8471020 | 2 | 10 | 4 | 50 | 15,2 | 3 | 1 |
| 8471030 | 3 | 15 | 6 | 55 | 22,9 | 3 | 1 |
| 8471040 | 4 | 20 | 6 | 60 | 26,1 | 3 | 1 |
| 8471060 | 6 | 30 | 6 | 75 | - | 3 | 2 |

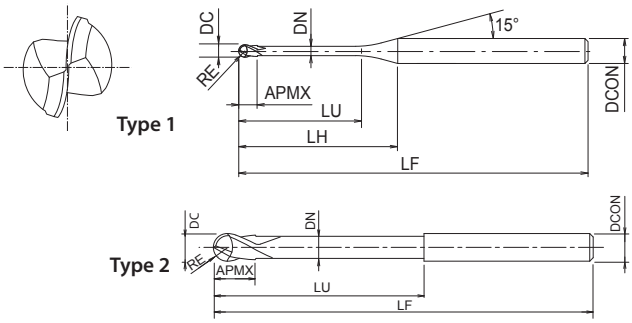
### 5xD Cutting length

| EDP | DC | APMX | DCON | LF | LH | ZEFP | Typ |
|---|---|---|---|---|---|---|---|
| 8471005 | 0,5 | 2,5 | 4 | 45 | 9,7 | 2 | 1 |
| 8471010 | 1 | 5 | 4 | 45 | 11,4 | 3 | 1 |
| 8471020 | 2 | 10 | 4 | 50 | 15,2 | 3 | 1 |
| 8471030 | 3 | 15 | 6 | 55 | 22,9 | 3 | 1 |
| 8471040 | 4 | 20 | 6 | 60 | 26,1 | 3 | 1 |
| 8471060 | 6 | 30 | 6 | 75 | - | 3 | 2 |

# AE-LNBD-N

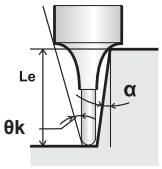
INDEX

**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC coating
- For copper electrodes
- 2 flutes, long neck, ball nose
- 72 sizes

N Cu | N W-Cu | N AC, ADC




A | CARBIDE | DLC-IGUSS | 30° | SHANK h4 | SHRINK FIT | R ± 0.002 RE ≤2 | R ± 0.003 0,2<RE≤1,5 | R ± 0.004 1,5<RE

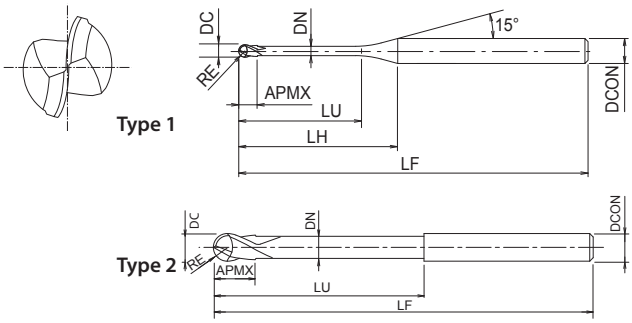
C.1009

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056370 | 0,1 | 0,05 | 0,3 | 0,08 | 4 | 0,09 | 45 | 7,6 | 14,52 | 0,3 | 0,31 | 0,32 | 0,33 | 0,36 | 2 | 1 |
| 3056371 | 0,1 | 0,05 | 0,5 | 0,08 | 4 | 0,09 | 45 | 7,8 | 14,07 | 0,53 | 0,56 | 0,59 | 0,62 | 0,67 | 2 | 1 |
| 3056372 | 0,15 | 0,08 | 0,3 | 0,12 | 4 | 0,14 | 45 | 7,5 | 14,55 | 0,3 | 0,31 | 0,32 | 0,33 | 0,35 | 2 | 1 |
| 3056373 | 0,15 | 0,08 | 0,5 | 0,12 | 4 | 0,14 | 45 | 7,7 | 14,12 | 0,52 | 0,55 | 0,58 | 0,6 | 0,65 | 2 | 1 |
| 3056374 | 0,15 | 0,08 | 1 | 0,12 | 4 | 0,14 | 45 | 8,2 | 13,29 | 1,05 | 1,1 | 1,14 | 1,18 | 1,27 | 2 | 1 |
| 3056375 | 0,2 | 0,1 | 0,3 | 0,16 | 4 | 0,19 | 45 | 7,4 | 14,59 | 0,3 | 0,31 | 0,32 | 0,33 | 0,34 | 2 | 1 |
| 3056376 | 0,2 | 0,1 | 0,5 | 0,16 | 4 | 0,19 | 45 | 7,6 | 14,12 | 0,53 | 0,56 | 0,58 | 0,61 | 0,66 | 2 | 1 |
| 3056377 | 0,2 | 0,1 | 1 | 0,16 | 4 | 0,19 | 45 | 8,1 | 13,28 | 1,06 | 1,11 | 1,15 | 1,19 | 1,28 | 2 | 1 |
| 3056378 | 0,2 | 0,1 | 1,5 | 0,16 | 4 | 0,19 | 45 | 8,6 | 12,53 | 1,58 | 1,65 | 1,7 | 1,76 | 1,9 | 2 | 1 |
| 3056379 | 0,3 | 0,15 | 0,6 | 0,24 | 4 | 0,29 | 45 | 7,5 | 14,02 | 0,63 | 0,65 | 0,68 | 0,7 | 0,75 | 2 | 1 |
| 3056380 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,29 | 45 | 7,9 | 13,33 | 1,05 | 1,09 | 1,13 | 1,17 | 1,25 | 2 | 1 |
| 3056381 | 0,3 | 0,15 | 1,5 | 0,24 | 4 | 0,29 | 45 | 8,4 | 12,56 | 1,57 | 1,63 | 1,68 | 1,74 | 1,87 | 2 | 1 |
| 3056382 | 0,3 | 0,15 | 2 | 0,24 | 4 | 0,29 | 45 | 8,9 | 11,87 | 2,09 | 2,16 | 2,24 | 2,32 | 2,49 | 2 | 1 |
| 3056383 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,38 | 45 | 7,7 | 13,38 | 1,04 | 1,08 | 1,11 | 1,15 | 1,23 | 2 | 1 |
| 3056384 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,38 | 45 | 8,7 | 11,87 | 2,08 | 2,15 | 2,22 | 2,3 | 2,47 | 2 | 1 |
| 3056385 | 0,4 | 0,2 | 3 | 0,3 | 4 | 0,38 | 45 | 9,7 | 10,66 | 3,12 | 3,22 | 3,33 | 3,45 | 3,71 | 2 | 1 |
| 3056386 | 0,4 | 0,2 | 4 | 0,3 | 4 | 0,38 | 45 | 10,7 | 9,68 | 4,15 | 4,29 | 4,44 | 4,6 | 4,95 | 2 | 1 |
| 3056387 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,48 | 45 | 7,6 | 13,43 | 1,03 | 1,07 | 1,1 | 1,13 | 1,2 | 2 | 1 |
| 3056388 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,48 | 45 | 8,6 | 11,87 | 2,07 | 2,14 | 2,21 | 2,28 | 2,45 | 2 | 1 |
| 3056389 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,48 | 45 | 9,6 | 10,63 | 3,11 | 3,21 | 3,32 | 3,43 | 3,69 | 2 | 1 |
| 3056390 | 0,5 | 0,25 | 4 | 0,4 | 4 | 0,48 | 45 | 10,6 | 9,63 | 4,14 | 4,28 | 4,42 | 4,58 | 4,93 | 2 | 1 |
| 3056391 | 0,5 | 0,25 | 5 | 0,4 | 4 | 0,48 | 45 | 11,6 | 8,79 | 5,18 | 5,35 | 5,53 | 5,73 | 6,18 | 2 | 1 |
| 3056392 | 0,6 | 0,3 | 1 | 0,5 | 4 | 0,55 | 45 | 7,3 | 13,5 | 1,02 | 1,05 | 1,07 | 1,1 | 1,17 | 2 | 1 |
| 3056393 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 8,3 | 11,89 | 2,06 | 2,12 | 2,18 | 2,25 | 2,41 | 2 | 1 |
| 3056394 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 9,3 | 10,62 | 3,09 | 3,19 | 3,29 | 3,4 | 3,66 | 2 | 1 |
| 3056395 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 10,3 | 9,59 | 4,12 | 4,26 | 4,4 | 4,55 | 4,9 | 2 | 1 |
| 3056396 | 0,6 | 0,3 | 5 | 0,5 | 4 | 0,55 | 45 | 11,3 | 8,74 | 5,16 | 5,33 | 5,51 | 5,7 | 6,14 | 2 | 1 |
| 3056397 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 12,3 | 8,02 | 6,19 | 6,4 | 6,62 | 6,85 | 7,39 | 2 | 1 |
| 3056398 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 8 | 11,87 | 2,05 | 2,11 | 2,17 | 2,24 | 2,39 | 2 | 1 |
| 3056399 | 0,8 | 0,4 | 3 | 0,6 | 4 | 0,75 | 45 | 9,1 | 10,53 | 3,09 | 3,18 | 3,28 | 3,39 | 3,63 | 2 | 1 |
| 3056400 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 10 | 9,46 | 4,12 | 4,25 | 4,39 | 4,54 | 4,88 | 2 | 1 |
| 3056401 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 12 | 7,86 | 6,19 | 6,39 | 6,61 | 6,84 | 7,36 | 2 | 1 |
| 3056402 | 0,8 | 0,4 | 8 | 0,6 | 4 | 0,75 | 45 | 14 | 6,72 | 8,25 | 8,53 | 8,82 | 9,14 | 9,85 | 2 | 1 |
| 3056403 | 1 | 0,5 | 2 | 0,8 | 4 | 0,95 | 45 | 7,6 | 11,85 | 2,05 | 2,1 | 2,16 | 2,22 | 2,37 | 2 | 1 |
| 3056404 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 8,6 | 10,44 | 3,08 | 3,17 | 3,27 | 3,37 | 3,61 | 2 | 1 |
| 3056405 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,6 | 9,32 | 4,12 | 4,24 | 4,38 | 4,52 | 4,85 | 2 | 1 |
| 3056406 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 10,6 | 8,42 | 5,15 | 5,31 | 5,49 | 5,67 | 6,1 | 2 | 1 |
| 3056407 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 11,6 | 7,68 | 6,18 | 6,38 | 6,59 | 6,82 | 7,34 | 2 | 1 |
| 3056408 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 13,6 | 6,52 | 8,25 | 8,52 | 8,81 | 9,12 | 9,83 | 2 | 1 |
| 3056409 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 15,6 | 5,67 | 10,32 | 10,66 | 11,03 | 11,42 | 12,31 | 2 | 1 |
| 3056410 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 17,6 | 5,01 | 12,39 | 12,8 | 13,24 | 13,72 | 14,8 | 2 | 1 |
| 3056411 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,8 | 8,8 | 4,18 | 4,33 | 4,46 | 4,6 | 4,92 | 2 | 1 |
| 3056412 | 1,5 | 0,75 | 6 | 1,2 | 4 | 1,45 | 45 | 10,8 | 7,09 | 6,27 | 6,47 | 6,68 | 6,9 | 7,4 | 2 | 1 |
| 3056413 | 1,5 | 0,75 | 12 | 1,2 | 4 | 1,45 | 55 | 16,8 | 4,46 | 12,48 | 12,89 | 13,33 | 13,8 | 14,86 | 2 | 1 |
| 3056414 | 1,5 | 0,75 | 18 | 1,2 | 4 | 1,45 | 55 | 22,8 | 3,25 | 18,68 | 19,31 | 19,98 | 20,7 | 22,32 | 2 | 1 |
| 3056415 | 2 | 1 | 4 | 1,6 | 4 | 1,95 | 50 | 8,2 | 7,88 | 4,22 | 4,44 | 4,65 | 4,86 | 5,26 | 2 | 1 |

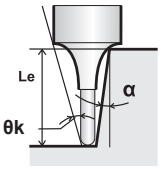
# AE-LNBD-N



**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC coating
- For copper electrodes
- 2 flutes, long neck, ball nose
- 72 sizes




N Cu | N W-Cu | N AC, ADC

CARBIDE | DLC-IGUSS | 30° | SHANK h4 | SHRINK FIT | R ± 0.002 RE ≤ 2 | R ± 0.003 0,2<RE≤1,5 | R ± 0.004 1,5<RE

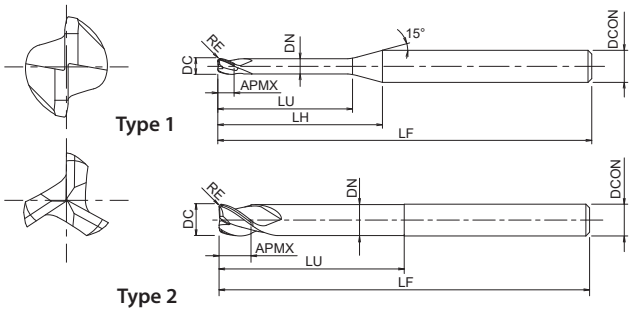
C.1009

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3056416 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 50 | 10,2 | 6,2 | 6,35 | 6,67 | 6,96 | 7,23 | 7,75 | 2 | 1 |
| 3056417 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 50 | 12,2 | 5,1 | 8,47 | 8,87 | 9,22 | 9,54 | 10,24 | 2 | 1 |
| 3056418 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 50 | 14,2 | 4,34 | 10,58 | 11,05 | 11,45 | 11,84 | 12,73 | 2 | 1 |
| 3056419 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 50 | 16,2 | 3,77 | 12,68 | 13,21 | 13,67 | 14,14 | 15,21 | 2 | 1 |
| 3056420 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 18,2 | 3,33 | 14,78 | 15,36 | 15,88 | 16,44 | 17,7 | 2 | 1 |
| 3056421 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 20,2 | 2,99 | 16,87 | 17,5 | 18,1 | 18,74 | - | 2 | 1 |
| 3056422 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 60 | 24,2 | 2,47 | 21,04 | 21,78 | 22,53 | 23,34 | - | 2 | 1 |
| 3056423 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 60 | 29,2 | 2,04 | 26,24 | 27,13 | 28,07 | 29,09 | - | 2 | 1 |
| 3056424 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 55 | 15,8 | 5,95 | 10,44 | 10,83 | 11,18 | 11,55 | 12,37 | 2 | 1 |
| 3056425 | 3 | 1,5 | 12 | 2,4 | 6 | 2,85 | 55 | 17,8 | 5,23 | 12,53 | 12,98 | 13,4 | 13,85 | 14,85 | 2 | 1 |
| 3056426 | 3 | 1,5 | 14 | 2,4 | 6 | 2,85 | 55 | 19,8 | 4,67 | 14,62 | 15,12 | 15,62 | 16,15 | 17,34 | 2 | 1 |
| 3056427 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 21,8 | 4,21 | 16,7 | 17,26 | 17,83 | 18,45 | 19,83 | 2 | 1 |
| 3056428 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 55 | 25,8 | 3,53 | 20,85 | 21,54 | 22,27 | 23,05 | 24,8 | 2 | 1 |
| 3056429 | 3 | 1,5 | 25 | 2,4 | 6 | 2,85 | 65 | 30,8 | 2,93 | 26,03 | 26,89 | 27,81 | 28,8 | - | 2 | 1 |
| 3056430 | 3 | 1,5 | 30 | 2,4 | 6 | 2,85 | 65 | 35,8 | 2,5 | 31,2 | 32,24 | 33,35 | 34,54 | - | 2 | 1 |
| 3056431 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 14 | 4,75 | 10,42 | 10,79 | 11,13 | 11,47 | 12,25 | 2 | 1 |
| 3056432 | 4 | 2 | 15 | 3,2 | 6 | 3,85 | 60 | 19 | 3,37 | 15,64 | 16,16 | 16,67 | 17,22 | 18,47 | 2 | 1 |
| 3056433 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 24 | 2,61 | 20,84 | 21,51 | 22,21 | 22,97 | - | 2 | 1 |
| 3056434 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 65 | 29 | 2,13 | 26,02 | 26,85 | 27,75 | 28,72 | - | 2 | 1 |
| 3056435 | 4 | 2 | 30 | 3,2 | 6 | 3,85 | 80 | 34 | 1,79 | 31,18 | 32,2 | 33,3 | - | - | 2 | 1 |
| 3056436 | 4 | 2 | 40 | 3,2 | 6 | 3,85 | 80 | 44 | 1,37 | 41,52 | 42,9 | - | - | - | 2 | 1 |
| 3056437 | 6 | 3 | 10 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 | 2 |
| 3056438 | 6 | 3 | 15 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 | 2 |
| 3056439 | 6 | 3 | 20 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 | 2 |
| 3056440 | 6 | 3 | 30 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 2 | 2 |
| 3056441 | 6 | 3 | 50 | 4,8 | 6 | 5,85 | 90 | - | - | - | - | - | - | - | 2 | 2 |

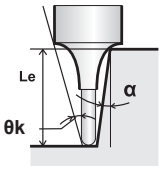
# AE-CPR-N



**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC IGUSS coating
- For copper electrodes
- 2-3 flutes, long neck, corner radius
- 144 sizes

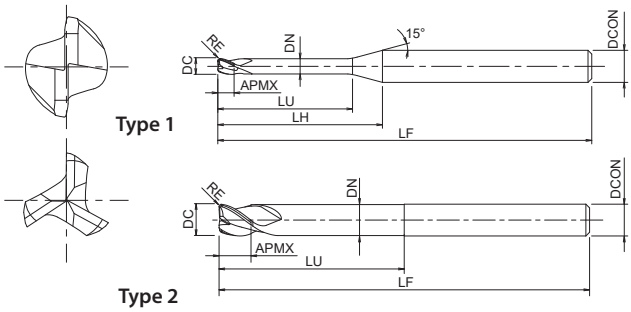


| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557646 | 0,2 | 0,05 | 0,4 | 0,2 | 4 | 0,18 | 45 | 7,5 | 14,28 | 0,41 | 0,43 | 0,45 | 0,47 | 0,51 | 2 | 1 |
| 8557647 | 0,2 | 0,05 | 0,6 | 0,2 | 4 | 0,18 | 45 | 7,7 | 13,92 | 0,62 | 0,65 | 0,68 | 0,7 | 0,75 | 2 | 1 |
| 8557648 | 0,2 | 0,05 | 1 | 0,2 | 4 | 0,18 | 45 | 8,1 | 13,26 | 1,04 | 1,08 | 1,12 | 1,16 | 1,25 | 2 | 1 |
| 8557649 | 0,2 | 0,05 | 1,5 | 0,2 | 4 | 0,18 | 45 | 8,6 | 12,51 | 1,56 | 1,62 | 1,68 | 1,74 | 1,87 | 2 | 1 |
| 8557650 | 0,3 | 0,05 | 0,6 | 0,3 | 4 | 0,28 | 45 | 7,5 | 13,9 | 0,62 | 0,65 | 0,68 | 0,7 | 0,75 | 2 | 1 |
| 8557651 | 0,3 | 0,05 | 1 | 0,3 | 4 | 0,28 | 45 | 7,9 | 13,22 | 1,04 | 1,08 | 1,12 | 1,16 | 1,25 | 2 | 1 |
| 8557652 | 0,3 | 0,05 | 1,5 | 0,3 | 4 | 0,28 | 45 | 8,4 | 12,45 | 1,56 | 1,62 | 1,68 | 1,74 | 1,87 | 2 | 1 |
| 8557653 | 0,3 | 0,05 | 2 | 0,3 | 4 | 0,28 | 45 | 8,9 | 11,77 | 2,08 | 2,15 | 2,23 | 2,31 | 2,5 | 2 | 1 |
| 8557654 | 0,4 | 0,02 | 0,8 | 0,4 | 4 | 0,37 | 45 | 7,5 | 13,47 | 0,83 | 0,86 | 0,9 | 0,93 | 1 | 2 | 1 |
| 8557655 | 0,4 | 0,02 | 2 | 0,4 | 4 | 0,37 | 45 | 8,7 | 11,68 | 2,08 | 2,15 | 2,23 | 2,31 | 2,5 | 2 | 1 |
| 8557656 | 0,4 | 0,05 | 0,8 | 0,4 | 4 | 0,37 | 45 | 7,5 | 13,52 | 0,83 | 0,86 | 0,89 | 0,92 | 1 | 2 | 1 |
| 8557657 | 0,4 | 0,05 | 1,2 | 0,4 | 4 | 0,37 | 45 | 7,9 | 12,86 | 1,25 | 1,29 | 1,34 | 1,38 | 1,49 | 2 | 1 |
| 8557658 | 0,4 | 0,05 | 2 | 0,4 | 4 | 0,37 | 45 | 8,7 | 11,71 | 2,08 | 2,15 | 2,22 | 2,3 | 2,49 | 2 | 1 |
| 8557659 | 0,4 | 0,05 | 3 | 0,4 | 4 | 0,37 | 45 | 9,7 | 10,53 | 3,11 | 3,22 | 3,33 | 3,45 | 3,75 | 2 | 1 |
| 8557660 | 0,4 | 0,05 | 4 | 0,4 | 4 | 0,37 | 45 | 10,7 | 9,75 | 4,14 | 4,29 | 4,44 | 4,6 | 4,97 | 2 | 1 |
| 8557661 | 0,4 | 0,1 | 0,8 | 0,4 | 4 | 0,37 | 45 | 7,5 | 13,6 | 0,83 | 0,86 | 0,89 | 0,92 | 0,98 | 2 | 1 |
| 8557662 | 0,4 | 0,1 | 1,2 | 0,4 | 4 | 0,37 | 45 | 7,9 | 12,93 | 1,24 | 1,29 | 1,33 | 1,38 | 1,48 | 2 | 1 |
| 8557663 | 0,4 | 0,1 | 2 | 0,4 | 4 | 0,37 | 45 | 8,7 | 11,77 | 2,07 | 2,14 | 2,22 | 2,3 | 2,48 | 2 | 1 |
| 8557664 | 0,4 | 0,1 | 3 | 0,4 | 4 | 0,37 | 45 | 9,7 | 10,58 | 3,11 | 3,21 | 3,33 | 3,45 | 3,72 | 2 | 1 |
| 8557665 | 0,4 | 0,1 | 4 | 0,4 | 4 | 0,37 | 45 | 10,7 | 9,61 | 4,14 | 4,28 | 4,43 | 4,6 | 4,96 | 2 | 1 |
| 8557666 | 0,5 | 0,05 | 1 | 0,5 | 4 | 0,45 | 45 | 7,5 | 13,16 | 1,03 | 1,06 | 1,1 | 1,14 | 1,23 | 2 | 1 |
| 8557667 | 0,5 | 0,05 | 2 | 0,5 | 4 | 0,45 | 45 | 8,5 | 11,65 | 2,06 | 2,13 | 2,21 | 2,29 | 2,47 | 2 | 1 |
| 8557668 | 0,5 | 0,05 | 3 | 0,5 | 4 | 0,45 | 45 | 9,5 | 10,45 | 3,1 | 3,2 | 3,32 | 3,44 | 3,72 | 2 | 1 |
| 8557669 | 0,5 | 0,05 | 4 | 0,5 | 4 | 0,45 | 45 | 10,5 | 9,48 | 4,13 | 4,27 | 4,43 | 4,59 | 4,96 | 2 | 1 |
| 8557670 | 0,5 | 0,05 | 5 | 0,5 | 4 | 0,45 | 45 | 11,5 | 8,67 | 5,16 | 5,34 | 5,53 | 5,74 | 6,2 | 2 | 1 |
| 8557671 | 0,5 | 0,1 | 1 | 0,5 | 4 | 0,45 | 45 | 7,5 | 13,23 | 1,03 | 1,06 | 1,1 | 1,13 | 1,22 | 2 | 1 |
| 8557672 | 0,5 | 0,1 | 2 | 0,5 | 4 | 0,45 | 45 | 8,5 | 11,71 | 2,06 | 2,13 | 2,2 | 2,28 | 2,46 | 2 | 1 |
| 8557673 | 0,5 | 0,1 | 3 | 0,5 | 4 | 0,45 | 45 | 9,5 | 10,5 | 3,1 | 3,2 | 3,31 | 3,43 | 3,7 | 2 | 1 |
| 8557674 | 0,5 | 0,1 | 4 | 0,5 | 4 | 0,45 | 45 | 10,5 | 9,52 | 4,13 | 4,27 | 4,42 | 4,58 | 4,95 | 2 | 1 |
| 8557675 | 0,5 | 0,1 | 5 | 0,5 | 4 | 0,55 | 45 | 11,5 | 8,7 | 5,16 | 5,34 | 5,53 | 5,73 | 6,19 | 2 | 1 |
| 8557676 | 0,6 | 0,05 | 1,2 | 0,6 | 4 | 0,55 | 45 | 7,5 | 7,5 | 1,24 | 1,28 | 1,32 | 1,37 | 1,48 | 2 | 1 |
| 8557677 | 0,6 | 0,05 | 2 | 0,6 | 4 | 0,55 | 45 | 8,3 | 8,3 | 2,06 | 2,13 | 2,21 | 2,29 | 2,47 | 2 | 1 |
| 8557678 | 0,6 | 0,05 | 4 | 0,6 | 4 | 0,55 | 45 | 10,3 | 10,3 | 4,13 | 4,27 | 4,43 | 4,59 | 4,96 | 2 | 1 |
| 8557679 | 0,6 | 0,05 | 6 | 0,6 | 4 | 0,55 | 45 | 12,3 | 12,3 | 6,2 | 6,41 | 6,64 | 6,89 | 7,45 | 2 | 1 |
| 8557680 | 0,6 | 0,1 | 1,2 | 0,6 | 4 | 0,55 | 45 | 7,5 | 7,5 | 1,23 | 1,27 | 1,32 | 1,36 | 1,47 | 2 | 1 |
| 8557681 | 0,6 | 0,1 | 2 | 0,6 | 4 | 0,55 | 45 | 8,3 | 8,3 | 2,06 | 2,13 | 2,2 | 2,28 | 2,46 | 2 | 1 |
| 8557682 | 0,6 | 0,1 | 3 | 0,6 | 4 | 0,55 | 45 | 9,3 | 9,3 | 3,1 | 3,2 | 3,31 | 3,43 | 3,7 | 2 | 1 |
| 8557683 | 0,6 | 0,1 | 4 | 0,6 | 4 | 0,55 | 45 | 10,3 | 10,3 | 4,13 | 4,27 | 4,42 | 4,58 | 4,95 | 2 | 1 |
| 8557684 | 0,6 | 0,1 | 6 | 0,6 | 4 | 0,55 | 45 | 12,3 | 12,3 | 6,2 | 6,41 | 6,64 | 6,88 | 7,43 | 2 | 1 |
| 8557685 | 0,6 | 0,2 | 1,2 | 0,6 | 4 | 0,55 | 45 | 7,5 | 7,5 | 1,23 | 1,27 | 1,31 | 1,35 | 1,44 | 2 | 1 |
| 8557686 | 0,6 | 0,2 | 4 | 0,6 | 4 | 0,55 | 45 | 10,3 | 10,3 | 4,13 | 4,26 | 4,41 | 4,57 | 4,92 | 2 | 1 |
| 8557687 | 0,8 | 0,05 | 1,6 | 0,8 | 4 | 0,75 | 45 | 7,6 | 7,6 | 1,65 | 1,71 | 1,77 | 1,83 | 1,98 | 2 | 1 |
| 8557688 | 0,8 | 0,05 | 4 | 0,8 | 4 | 0,75 | 45 | 10 | 10 | 4,13 | 4,27 | 4,43 | 4,59 | 4,96 | 2 | 1 |
| 8557689 | 0,8 | 0,05 | 6 | 0,8 | 4 | 0,75 | 45 | 12 | 12 | 6,2 | 6,41 | 6,64 | 6,89 | 7,45 | 2 | 1 |
| 8557690 | 0,8 | 0,05 | 8 | 0,8 | 4 | 0,75 | 45 | 14 | 14 | 8,27 | 8,55 | 8,86 | 9,19 | 9,93 | 2 | 1 |
| 8557691 | 0,8 | 0,1 | 1,6 | 0,8 | 4 | 0,75 | 45 | 7,6 | 7,6 | 1,65 | 1,7 | 1,76 | 1,82 | 1,96 | 2 | 1 |

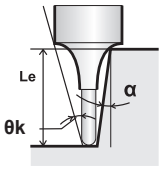
# AE-CPR-N



**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC IGUSS coating
- For copper electrodes
- 2-3 flutes, long neck, corner radius
- 144 sizes

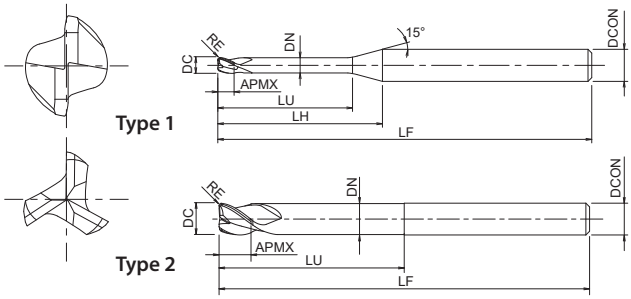


| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557692 | 0,8 | 0,1 | 4 | 0,8 | 4 | 0,75 | 45 | 10 | 10 | 4,13 | 4,27 | 4,42 | 4,58 | 4,95 | 2 | 1 |
| 8557693 | 0,8 | 0,1 | 6 | 0,8 | 4 | 0,75 | 45 | 12 | 12 | 6,2 | 6,41 | 6,64 | 6,88 | 7,43 | 2 | 1 |
| 8557694 | 0,8 | 0,1 | 8 | 0,8 | 4 | 0,75 | 45 | 14 | 14 | 8,26 | 8,55 | 8,85 | 9,18 | 9,92 | 2 | 1 |
| 8557695 | 1 | 0,02 | 2 | 1 | 4 | 0,95 | 45 | 7,6 | 7,6 | 2,06 | 2,14 | 2,21 | 2,29 | 2,48 | 3 | 1 |
| 8557696 | 1 | 0,02 | 3 | 1 | 4 | 0,95 | 45 | 8,6 | 8,6 | 3,1 | 3,21 | 3,32 | 3,44 | 3,72 | 3 | 1 |
| 8557697 | 1 | 0,1 | 2 | 1 | 4 | 0,95 | 45 | 7,6 | 7,6 | 2,06 | 2,13 | 2,2 | 2,28 | 2,46 | 3 | 1 |
| 8557698 | 1 | 0,1 | 3 | 1 | 4 | 0,95 | 45 | 8,6 | 8,6 | 3,1 | 3,2 | 3,31 | 3,43 | 3,7 | 3 | 1 |
| 8557699 | 1 | 0,1 | 4 | 1 | 4 | 0,95 | 45 | 9,6 | 9,6 | 4,13 | 4,27 | 4,42 | 4,58 | 4,95 | 3 | 1 |
| 8557700 | 1 | 0,1 | 5 | 1 | 4 | 0,95 | 45 | 10,6 | 10,6 | 5,16 | 5,34 | 5,53 | 5,73 | 6,19 | 3 | 1 |
| 8557701 | 1 | 0,1 | 6 | 1 | 4 | 0,95 | 45 | 11,6 | 11,6 | 6,2 | 6,41 | 6,64 | 6,88 | 7,43 | 3 | 1 |
| 8557702 | 1 | 0,1 | 8 | 1 | 4 | 0,95 | 45 | 13,6 | 13,6 | 8,26 | 8,55 | 8,85 | 9,18 | 9,92 | 3 | 1 |
| 8557703 | 1 | 0,1 | 10 | 1 | 4 | 0,95 | 45 | 15,6 | 15,6 | 10,33 | 10,69 | 11,07 | 11,48 | 12,41 | 3 | 1 |
| 8557704 | 1 | 0,2 | 2 | 1 | 4 | 0,95 | 45 | 7,6 | 7,6 | 2,06 | 2,12 | 2,19 | 2,27 | 2,44 | 3 | 1 |
| 8557705 | 1 | 0,2 | 3 | 1 | 4 | 0,95 | 45 | 8,6 | 8,6 | 3,09 | 3,19 | 3,3 | 3,42 | 3,68 | 3 | 1 |
| 8557706 | 1 | 0,2 | 4 | 1 | 4 | 0,95 | 45 | 9,6 | 9,6 | 4,13 | 4,26 | 4,41 | 4,57 | 4,92 | 3 | 1 |
| 8557707 | 1 | 0,2 | 5 | 1 | 4 | 0,95 | 45 | 10,6 | 10,6 | 5,16 | 5,33 | 5,52 | 5,72 | 6,17 | 3 | 1 |
| 8557708 | 1 | 0,2 | 6 | 1 | 4 | 0,95 | 45 | 11,6 | 11,6 | 6,19 | 6,14 | 6,63 | 6,87 | 7,41 | 3 | 1 |
| 8557709 | 1 | 0,2 | 8 | 1 | 4 | 0,95 | 45 | 13,6 | 13,6 | 8,26 | 8,54 | 8,84 | 9,17 | 9,9 | 3 | 1 |
| 8557710 | 1 | 0,2 | 10 | 1 | 4 | 0,95 | 45 | 15,6 | 15,6 | 10,33 | 10,68 | 11,06 | 11,47 | 12,38 | 3 | 1 |
| 8557711 | 1 | 0,3 | 2 | 1 | 4 | 0,95 | 45 | 7,6 | 7,6 | 2,06 | 2,12 | 2,18 | 2,25 | 2,41 | 3 | 1 |
| 8557712 | 1 | 0,3 | 3 | 1 | 4 | 0,95 | 45 | 8,6 | 8,6 | 3,09 | 3,19 | 3,29 | 3,4 | 3,66 | 3 | 1 |
| 8557713 | 1,5 | 0,3 | 3 | 1,5 | 4 | 1,45 | 45 | 7,8 | 9,48 | 3,15 | 3,28 | 3,4 | 3,52 | 3,78 | 3 | 1 |
| 8557714 | 1,5 | 0,5 | 3 | 1,5 | 4 | 1,45 | 45 | 7,8 | 9,71 | 3,14 | 3,27 | 3,38 | 3,49 | 3,73 | 3 | 1 |
| 8557715 | 1,5 | 0,5 | 10 | 1,5 | 4 | 1,45 | 45 | 14,8 | 5 | 10,42 | 10,77 | 11,14 | 11,54 | 12,43 | 3 | 1 |
| 8557716 | 1,5 | 0,5 | 12 | 1,5 | 4 | 1,45 | 60 | 16,8 | 4,39 | 12,49 | 13,91 | 13,35 | 13,84 | 14,92 | 3 | 1 |
| 8557717 | 1,5 | 0,5 | 20 | 1,5 | 4 | 1,45 | 60 | 24,8 | 2,95 | 20,76 | 21,46 | 22,22 | 23,04 | - | 3 | 1 |
| 8557718 | 2 | 0,1 | 4 | 2 | 4 | 1,95 | 50 | 8,2 | 7,07 | 4,28 | 4,55 | 4,79 | 5,03 | 5,48 | 3 | 1 |
| 8557719 | 2 | 0,1 | 6 | 2 | 4 | 1,95 | 50 | 10,2 | 5,68 | 6,41 | 6,76 | 7,08 | 7,37 | 7,97 | 3 | 1 |
| 8557720 | 2 | 0,1 | 8 | 2 | 4 | 1,95 | 50 | 12,2 | 4,74 | 8,52 | 8,95 | 9,32 | 9,67 | 10,45 | 3 | 1 |
| 8557721 | 2 | 0,1 | 10 | 2 | 4 | 1,95 | 50 | 14,2 | 4,07 | 10,63 | 11,12 | 11,54 | 11,97 | 12,94 | 3 | 1 |
| 8557722 | 2 | 0,1 | 15 | 2 | 4 | 1,95 | 50 | 19,2 | 3,01 | 15,87 | 16,49 | 17,09 | 17,72 | 19,15 | 3 | 1 |
| 8557723 | 2 | 0,1 | 16 | 2 | 4 | 1,95 | 60 | 20,2 | 2,86 | 16,91 | 17,56 | 18,19 | 18,87 | - | 3 | 1 |
| 8557724 | 2 | 0,1 | 20 | 2 | 4 | 1,95 | 60 | 24,2 | 2,38 | 21,08 | 21,84 | 22,63 | 23,47 | - | 3 | 1 |
| 8557725 | 2 | 0,2 | 4 | 2 | 4 | 1,95 | 50 | 8,8 | 7,15 | 4,28 | 4,53 | 4,78 | 5,01 | 5,46 | 3 | 1 |
| 8557726 | 2 | 0,2 | 10 | 2 | 4 | 1,95 | 50 | 14,2 | 4,1 | 10,62 | 11,11 | 11,53 | 11,96 | 12,91 | 3 | 1 |
| 8557727 | 2 | 0,2 | 16 | 2 | 4 | 1,95 | 60 | 20,2 | 2,87 | 16,91 | 17,56 | 18,18 | 18,86 | - | 3 | 1 |
| 8557728 | 2 | 0,2 | 20 | 2 | 4 | 1,95 | 60 | 24,2 | 2,39 | 21,08 | 21,84 | 22,62 | 23,46 | - | 3 | 1 |
| 8557729 | 2 | 0,3 | 4 | 2 | 4 | 1,95 | 50 | 8,2 | 7,24 | 4,27 | 4,52 | 4,76 | 4,99 | 5,43 | 3 | 1 |
| 8557730 | 2 | 0,3 | 6 | 2 | 4 | 1,95 | 50 | 10,2 | 5,79 | 6,39 | 6,74 | 7,05 | 7,34 | 7,92 | 3 | 1 |
| 8557731 | 2 | 0,3 | 8 | 2 | 4 | 1,95 | 50 | 12,2 | 4,82 | 8,51 | 8,93 | 9,3 | 9,64 | 10,4 | 3 | 1 |
| 8557732 | 2 | 0,3 | 10 | 2 | 4 | 1,95 | 50 | 14,2 | 4,13 | 10,62 | 11,1 | 11,52 | 11,94 | 12,89 | 3 | 1 |
| 8557733 | 2 | 0,3 | 15 | 2 | 4 | 1,95 | 50 | 19,2 | 3,04 | 15,86 | 16,48 | 17,06 | 17,69 | 19,11 | 3 | 1 |
| 8557734 | 2 | 0,3 | 16 | 2 | 4 | 1,95 | 60 | 20,2 | 2,89 | 16,9 | 17,55 | 18,17 | 18,84 | - | 3 | 1 |
| 8557735 | 2 | 0,3 | 20 | 2 | 4 | 1,95 | 60 | 24,2 | 2,4 | 21,07 | 21,83 | 22,61 | 23,44 | - | 3 | 1 |
| 8557736 | 2,5 | 0,5 | 5 | 2,5 | 4 | 2,4 | 55 | 8,1 | 5,61 | 5,28 | 5,54 | 5,79 | 6,03 | 6,49 | 3 | 1 |
| 8557737 | 2,5 | 0,5 | 20 | 2,5 | 4 | 2,4 | 55 | 23,1 | 1,9 | 20,97 | 21,7 | 22,46 | - | - | 3 | 1 |

# AE-CPR-N

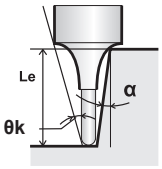


**Milling | Solid carbide**




- First choice in quality and performance
- Carbide end mill with DLC IGUSS coating
- For copper electrodes
- 2-3 flutes, long neck, corner radius
- 144 sizes

N Cu | N W-Cu | N AC, ADC



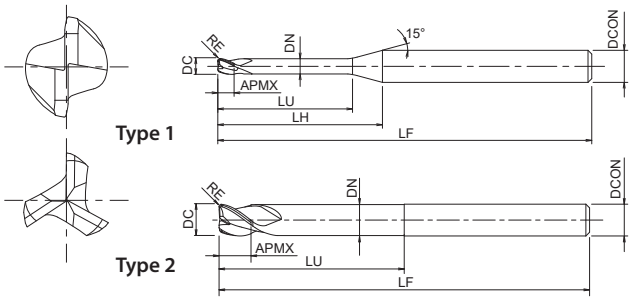

A | CARBIDE | DLC-IGUSS | 38° | SHANK h4 | SHRINK FIT | D≤1 0~-0.006 | 1<D 0~-0.01 | C.1010

| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=3°) | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8557738 | 3 | 0,2 | 6 | 3 | 6 | 2,85 | 55 | 11,8 | 7,34 | 6,31 | 6,6 | 6,88 | 7,14 | 7,7 | 3 | 1 |
| 8557739 | 3 | 0,2 | 12 | 3 | 6 | 2,85 | 55 | 17,8 | 4,86 | 12,59 | 13,07 | 13,54 | 14,04 | 15,16 | 3 | 1 |
| 8557740 | 3 | 0,2 | 18 | 3 | 6 | 2,85 | 55 | 23,8 | 3,64 | 18,83 | 19,49 | 20,19 | 20,94 | 22,92 | 3 | 1 |
| 8557741 | 3 | 0,2 | 21 | 3 | 6 | 2,85 | 70 | 26,8 | 3,23 | 21,94 | 22,7 | 23,51 | 24,39 | 26,35 | 3 | 1 |
| 8557742 | 3 | 0,2 | 24 | 3 | 6 | 2,85 | 70 | 29,8 | 2,9 | 25,04 | 25,91 | 26,84 | 27,84 | - | 3 | 1 |
| 8557743 | 3 | 0,3 | 6 | 3 | 6 | 2,85 | 55 | 11,8 | 7,4 | 6,31 | 6,6 | 6,87 | 7,12 | 7,68 | 3 | 1 |
| 8557744 | 3 | 0,3 | 8 | 3 | 6 | 2,85 | 55 | 13,8 | 6,32 | 8,4 | 8,77 | 9,09 | 9,42 | 10,17 | 3 | 1 |
| 8557745 | 3 | 0,3 | 12 | 3 | 6 | 2,85 | 55 | 17,8 | 4,89 | 12,58 | 13,07 | 13,53 | 14,02 | 15,14 | 3 | 1 |
| 8557746 | 3 | 0,3 | 20 | 3 | 6 | 2,85 | 55 | 25,8 | 3,37 | 20,9 | 21,62 | 22,39 | 23,22 | 25,08 | 3 | 1 |
| 8557747 | 3 | 0,5 | 6 | 3 | 6 | 2,85 | 55 | 11,8 | 7,52 | 6,3 | 6,58 | 6,84 | 7,1 | 7,63 | 3 | 1 |
| 8557748 | 3 | 0,5 | 12 | 3 | 6 | 2,85 | 55 | 17,8 | 4,94 | 12,57 | 13,05 | 13,51 | 13,99 | 15,09 | 3 | 1 |
| 8557749 | 3 | 0,5 | 15 | 3 | 6 | 2,85 | 55 | 20,8 | 4,22 | 15,7 | 16,26 | 16,83 | 17,44 | 18,82 | 3 | 1 |
| 8557750 | 3 | 0,5 | 18 | 3 | 6 | 2,85 | 55 | 23,8 | 3,68 | 18,82 | 19,47 | 20,16 | 20,89 | 22,55 | 3 | 1 |
| 8557751 | 3 | 0,5 | 21 | 3 | 6 | 2,85 | 70 | 26,8 | 3,26 | 21,93 | 22,68 | 23,48 | 24,34 | 26,28 | 3 | 1 |
| 8557752 | 3 | 0,5 | 25 | 3 | 6 | 2,85 | 70 | 30,8 | 2,83 | 26,07 | 26,96 | 27,91 | 28,94 | - | 3 | 1 |
| 8557753 | 3 | 0,5 | 30 | 3 | 6 | 2,85 | 70 | 35,8 | 2,43 | 31,24 | 32,31 | 33,46 | 34,69 | - | 3 | 1 |
| 8557754 | 4 | 0,2 | 8 | 4 | 6 | 3,85 | 60 | 12 | 4,86 | 8,41 | 8,77 | 9,11 | 9,44 | 10,19 | 3 | 1 |
| 8557755 | 4 | 0,2 | 16 | 4 | 6 | 3,85 | 60 | 20 | 2,9 | 16,75 | 17,35 | 17,97 | 18,64 | - | 3 | 1 |
| 8557756 | 4 | 0,2 | 20 | 4 | 6 | 3,85 | 60 | 24 | 2,41 | 20,9 | 21,63 | 22,4 | 23,24 | - | 3 | 1 |
| 8557757 | 4 | 0,2 | 24 | 4 | 6 | 3,85 | 60 | 28 | 2,07 | 25,04 | 25,91 | 26,84 | 27,84 | - | 3 | 1 |
| 8557758 | 4 | 0,2 | 28 | 4 | 6 | 3,85 | 75 | 32 | 1,81 | 29,18 | 30,19 | 31,27 | - | - | 3 | 1 |
| 8557759 | 4 | 0,2 | 32 | 4 | 6 | 3,85 | 75 | 36 | 1,61 | 33,31 | 34,47 | 35,7 | - | - | 3 | 1 |
| 8557760 | 4 | 0,3 | 8 | 4 | 6 | 3,85 | 60 | 12 | 4,9 | 8,4 | 8,77 | 9,09 | 9,42 | 10,17 | 3 | 1 |
| 8557761 | 4 | 0,3 | 20 | 4 | 6 | 3,85 | 60 | 24 | 2,42 | 20,9 | 21,62 | 22,39 | 23,22 | - | 3 | 1 |
| 8557762 | 4 | 0,5 | 8 | 4 | 6 | 3,85 | 60 | 12 | 4,98 | 8,39 | 8,75 | 9,07 | 9,4 | 10,12 | 3 | 1 |
| 8557763 | 4 | 0,5 | 12 | 4 | 6 | 3,85 | 60 | 16 | 3,7 | 12,57 | 13,05 | 13,51 | 13,99 | 15,09 | 3 | 1 |
| 8557764 | 4 | 0,5 | 16 | 4 | 6 | 3,85 | 60 | 20 | 2,94 | 16,74 | 17,33 | 17,94 | 18,59 | - | 3 | 1 |
| 8557765 | 4 | 0,5 | 20 | 4 | 6 | 3,85 | 60 | 24 | 2,44 | 20,89 | 21,61 | 22,37 | 23,19 | - | 3 | 1 |
| 8557766 | 4 | 0,5 | 24 | 4 | 6 | 3,85 | 60 | 28 | 2,09 | 25,03 | 25,89 | 26,81 | 27,79 | - | 3 | 1 |
| 8557767 | 4 | 0,5 | 25 | 4 | 6 | 3,85 | 60 | 29 | 2,02 | 26,07 | 26,96 | 27,91 | 28,94 | - | 3 | 1 |
| 8557768 | 4 | 0,5 | 28 | 4 | 6 | 3,85 | 75 | 32 | 1,82 | 29,17 | 30,17 | 31,24 | - | - | 3 | 1 |
| 8557769 | 4 | 0,5 | 32 | 4 | 6 | 3,85 | 75 | 36 | 1,62 | 33,3 | 34,45 | 35,67 | - | - | 3 | 1 |
| 8557770 | 4 | 1 | 8 | 4 | 6 | 3,85 | 60 | 12 | 5,19 | 8,37 | 8,71 | 9,02 | 9,32 | 10 | 3 | 1 |
| 8557771 | 4 | 1 | 16 | 4 | 6 | 3,85 | 60 | 20 | 3,02 | 16,72 | 17,3 | 17,89 | 18,52 | 19,95 | 3 | 1 |
| 8557772 | 4 | 1 | 24 | 4 | 6 | 3,85 | 60 | 28 | 2,13 | 25,02 | 25,85 | 26,75 | 27,72 | - | 3 | 1 |
| 8557773 | 4 | 1 | 28 | 4 | 6 | 3,85 | 75 | 32 | 1,85 | 29,15 | 30,13 | 31,19 | - | - | 3 | 1 |
| 8557774 | 4 | 1 | 32 | 4 | 6 | 3,85 | 75 | 36 | 1,64 | 33,29 | 34,41 | 35,62 | - | - | 3 | 1 |
| 8557775 | 6 | 0,1 | 12 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557776 | 6 | 0,1 | 24 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557777 | 6 | 0,2 | 12 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557778 | 6 | 0,2 | 24 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557779 | 6 | 0,2 | 32 | 6 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 3 | 2 |
| 8557780 | 6 | 0,2 | 48 | 6 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 3 | 2 |
| 8557781 | 6 | 0,5 | 12 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557782 | 6 | 0,5 | 24 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |
| 8557783 | 6 | 0,5 | 30 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 3 | 2 |

# AE-CPR-N

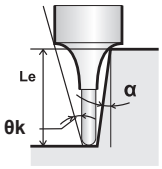
**Milling | Solid carbide**

INDEX




- First choice in quality and performance
- Carbide end mill with DLC IGUSS coating
- For copper electrodes
- 2-3 flutes, long neck, corner radius
- 144 sizes

N Cu | N W-Cu | N AC, ADC




A | CARBIDE | DLC-IGUSS | 38° | SHANK h4 | SHRINK FIT | D≤1 0~-0.006 | 1<D 0~-0.01

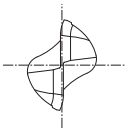
C.1010

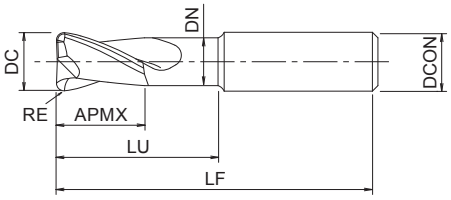
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 8557784 | 6 | 0,5 | 32 | 6 | 6 | 5,85 | 80 | 3 | 2 |
| 8557785 | 6 | 0,5 | 48 | 6 | 6 | 5,85 | 80 | 3 | 2 |
| 8557786 | 6 | 1 | 12 | 6 | 6 | 5,85 | 60 | 3 | 2 |
| 8557787 | 6 | 1 | 24 | 6 | 6 | 5,85 | 60 | 3 | 2 |
| 8557788 | 6 | 1 | 32 | 6 | 6 | 5,85 | 80 | 3 | 2 |
| 8557789 | 6 | 1 | 48 | 6 | 6 | 5,85 | 80 | 3 | 2 |

# DLC-AIR-EDS



**Milling | Solid carbide**






- Carbide end mill with DLC coating
- For high volume milling of aluminium alloys
- 2 flutes, short length of cut, corner radius

CARBIDE | DLC | 25° | 0~-0.02

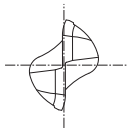
C.1012

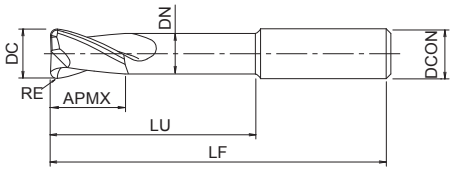
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8528822 | 12 | 1 | 40 | 14 | 12 | 11 | 90 | 2 |
| 8528823 | 12 | 1,6 | 40 | 14 | 12 | 11 | 90 | 2 |
| 8528826 | 12 | 3 | 40 | 14 | 12 | 11 | 90 | 2 |
| 8528862 | 16 | 1 | 45 | 18 | 16 | 14,4 | 100 | 2 |
| 8528863 | 16 | 1,6 | 45 | 18 | 16 | 14,4 | 100 | 2 |
| 8528866 | 16 | 3 | 45 | 18 | 16 | 14,4 | 100 | 2 |
| 8528902 | 20 | 1 | 56 | 22 | 20 | 18 | 110 | 2 |
| 8528903 | 20 | 1,6 | 56 | 22 | 20 | 18 | 110 | 2 |
| 8528906 | 20 | 3 | 56 | 22 | 20 | 18 | 110 | 2 |
| 8528952 | 25 | 1 | 56 | 27 | 25 | 23 | 110 | 2 |
| 8528953 | 25 | 1,6 | 56 | 27 | 25 | 23 | 110 | 2 |
| 8528956 | 25 | 3 | 56 | 27 | 25 | 23 | 110 | 2 |

# AERO-LN-EDS

**Milling | Solid carbide**

INDEX






- Carbide end mill with DLC coating
- For ultra high volume milling of aluminium alloys
- 2 flutes, long neck, corner radius

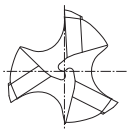
C.1012

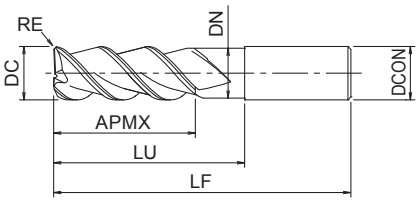
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48239166 | 16 | 3 | 80 | 18 | 16 | 14,4 | 130 | 2 |
| 48239167 | 16 | 4 | 80 | 18 | 16 | 14,4 | 130 | 2 |
| 48239206 | 20 | 3 | 80 | 22 | 20 | 18 | 130 | 2 |
| 48239207 | 20 | 4 | 80 | 22 | 20 | 18 | 130 | 2 |
| 48239256 | 25 | 3 | 80 | 27 | 25 | 23 | 130 | 2 |
| 48239257 | 25 | 4 | 80 | 27 | 25 | 23 | 130 | 2 |

# AERO-ETS



**Milling | Solid carbide**





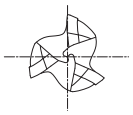

- Carbide end mill with DLC coating
- For ultra high volume milling of aluminium alloys
- 3 flutes, short length of cut, corner radius

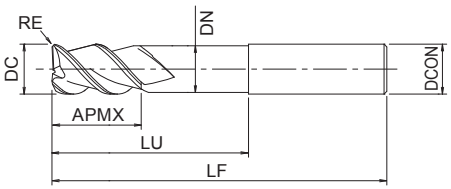
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8533249 | 12 | - | 55 | 18 | 12 | 11 | 100 | 3 |
| 8533250 | 12 | 1 | 55 | 18 | 12 | 11 | 100 | 3 |
| 48238126 | 12 | 3 | 35 | 18 | 12 | 11 | 80 | 3 |
| 48238999 | 12 | 3 | 45 | 18 | 12 | 11 | 90 | 3 |
| 8533252 | 12 | 3 | 55 | 18 | 12 | 11 | 100 | 3 |
| 8533253 | 16 | - | 55 | 24 | 16 | 14,4 | 100 | 3 |
| 8533254 | 16 | 1 | 55 | 24 | 16 | 14,4 | 100 | 3 |
| 8533256 | 16 | 3 | 55 | 24 | 16 | 14,4 | 100 | 3 |
| 8533257 | 16 | 4 | 55 | 24 | 16 | 14,4 | 100 | 3 |
| 8533258 | 16 | 5 | 55 | 24 | 16 | 14,4 | 100 | 3 |
| 8533259 | 20 | - | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533260 | 20 | 1 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533262 | 20 | 3 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533263 | 20 | 4 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533264 | 20 | 5 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533265 | 25 | - | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533266 | 25 | 1 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533268 | 25 | 3 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533269 | 25 | 4 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533270 | 25 | 5 | 55 | 37,5 | 25 | 23 | 100 | 3 |

# AERO-LN-ETS

**Milling | Solid carbide**

INDEX





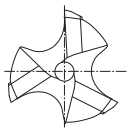

- Carbide end mill with DLC coating
- For ultra high volume milling of aluminium alloys
- 3 flutes, long neck, corner radius

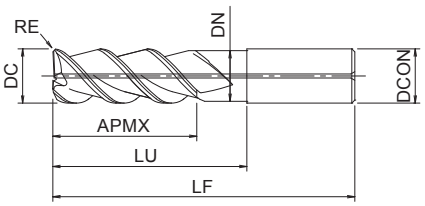
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 48237166 | 16 | 3 | 80 | 24 | 16 | 14,4 | 130 | 3 |
| 48237167 | 16 | 4 | 80 | 24 | 16 | 14,4 | 130 | 3 |
| 48237206 | 20 | 3 | 80 | 30 | 20 | 18 | 130 | 3 |
| 48237207 | 20 | 4 | 80 | 30 | 20 | 18 | 130 | 3 |
| 48237256 | 25 | 3 | 80 | 37,5 | 25 | 23 | 130 | 3 |
| 48237257 | 25 | 4 | 80 | 37,5 | 25 | 23 | 130 | 3 |

# AERO-O-ETS



**Milling | Solid carbide**






- Carbide end mill with oil hole, DLC coating
- For ultra high volume milling of aluminium alloys
- 3 flutes, short length of cut, corner radius

N

CARBIDE | DLC | 30° | 0~-0.02

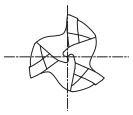
C.1013

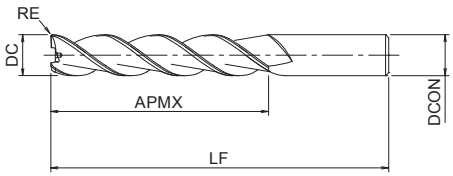
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8533301 | 20 | 1 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533303 | 20 | 3 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533304 | 20 | 4 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533305 | 20 | 5 | 55 | 30 | 20 | 18 | 100 | 3 |
| 8533307 | 25 | 1 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533309 | 25 | 3 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533310 | 25 | 4 | 55 | 37,5 | 25 | 23 | 100 | 3 |
| 8533311 | 25 | 5 | 55 | 37,5 | 25 | 23 | 100 | 3 |

# AERO-ETL



**Milling | Solid carbide**






- Carbide end mill with DLC coating
- For ultra high volume milling of aluminium alloys
- 3 flutes, long length of cut, corner radius

N

CARBIDE | DLC | 35° | 0~-0.02

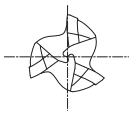
C.1013

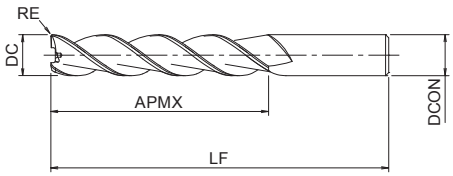
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8533350 | 12 | - | 50 | 12 | 110 | 3 |
| 8533351 | 12 | 1 | 50 | 12 | 110 | 3 |
| 8533353 | 12 | 3 | 50 | 12 | 110 | 3 |
| 8533354 | 12 | 4 | 50 | 12 | 110 | 3 |
| 8533355 | 16 | - | 50 | 16 | 110 | 3 |
| 8533356 | 16 | 1 | 50 | 16 | 110 | 3 |
| 8533358 | 16 | 3 | 50 | 16 | 110 | 3 |
| 8533359 | 16 | 4 | 50 | 16 | 110 | 3 |
| 8533360 | 16 | 5 | 50 | 16 | 110 | 3 |
| 8533361 | 20 | - | 50 | 20 | 110 | 3 |
| 8533362 | 20 | 1 | 50 | 20 | 110 | 3 |
| 8533364 | 20 | 3 | 50 | 20 | 110 | 3 |
| 8533365 | 20 | 4 | 50 | 20 | 110 | 3 |
| 8533366 | 20 | 5 | 50 | 20 | 110 | 3 |

# AERO-EXTL

**Milling | Solid carbide**

INDEX






- Carbide end mill with DLC coating
- For ultra high volume milling of aluminium alloys
- 3 flutes, extra long length of cut, corner radius

N

CARBIDE | DLC | 35° | 0~-0.02

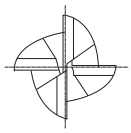
C.1013

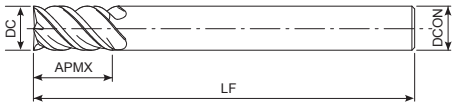
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8533401 | 20 | 1 | 100 | 20 | 160 | 3 |
| 8533403 | 20 | 3 | 100 | 20 | 160 | 3 |
| 8533404 | 20 | 4 | 100 | 20 | 160 | 3 |
| 8533405 | 20 | 5 | 100 | 20 | 160 | 3 |

# UP-PHS

**Milling | Solid carbide**

INDEX

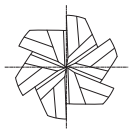





- Carbide end mill with FX coating
- For steels, stainless, Titanium alloys
- 4 flutes, anti-vibration

| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8529030 | 3 | 8 | 6 | 60 | 4 |
| 8529040 | 4 | 11 | 6 | 60 | 4 |
| 8529050 | 5 | 13 | 6 | 60 | 4 |
| 8529060 | 6 | 13 | 6 | 60 | 4 |
| 8529080 | 8 | 19 | 8 | 80 | 4 |
| 8529100 | 10 | 22 | 10 | 80 | 4 |
| 8529120 | 12 | 26 | 12 | 100 | 4 |

# NEO-CR-EMS



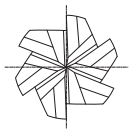
- Carbide end mill with TiAlN coating
- For exotic materials
- 6 flutes, variable helix and unequal spacing, corner radius

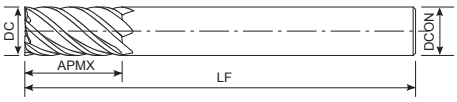
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8519662 | 6 | 0,3 | 12 | 6 | 50 | 6 |
| 8519663 | 6 | 0,5 | 12 | 6 | 50 | 6 |
| 8519665 | 6 | 1 | 12 | 6 | 50 | 6 |
| 8519682 | 8 | 0,3 | 16 | 8 | 60 | 6 |
| 8519683 | 8 | 0,5 | 16 | 8 | 60 | 6 |
| 8519685 | 8 | 1 | 16 | 8 | 60 | 6 |
| 8519687 | 8 | 1,5 | 16 | 8 | 60 | 6 |
| 8519689 | 8 | 2 | 16 | 8 | 60 | 6 |
| 8519702 | 10 | 0,3 | 20 | 10 | 70 | 6 |
| 8519703 | 10 | 0,5 | 20 | 10 | 70 | 6 |
| 8519705 | 10 | 1 | 20 | 10 | 70 | 6 |
| 8519707 | 10 | 1,5 | 20 | 10 | 70 | 6 |
| 8519709 | 10 | 2 | 20 | 10 | 70 | 6 |
| 8519713 | 10 | 3 | 20 | 10 | 70 | 6 |
| 8519733 | 12 | 0,5 | 24 | 12 | 75 | 6 |
| 8519735 | 12 | 1 | 24 | 12 | 75 | 6 |
| 8519737 | 12 | 1,5 | 24 | 12 | 75 | 6 |
| 8519739 | 12 | 2 | 24 | 12 | 75 | 6 |
| 8519743 | 12 | 3 | 24 | 12 | 75 | 6 |
| 8519762 | 16 | 1 | 32 | 16 | 100 | 6 |
| 8519763 | 16 | 1,5 | 32 | 16 | 100 | 6 |
| 8519764 | 16 | 2 | 32 | 16 | 100 | 6 |
| 8519765 | 16 | 3 | 32 | 16 | 100 | 6 |
| 8519782 | 20 | 1 | 40 | 20 | 105 | 6 |
| 8519784 | 20 | 2 | 40 | 20 | 105 | 6 |
| 8519785 | 20 | 3 | 40 | 20 | 105 | 6 |
| 8519786 | 20 | 4 | 40 | 20 | 105 | 6 |
| 8519787 | 20 | 5 | 40 | 20 | 105 | 6 |

# NEO-EMS

**Milling | Solid carbide**

INDEX






- Carbide end mill with TiAlN coating
- For exotic materials
- 6 flutes, variable helix and unequal spacing

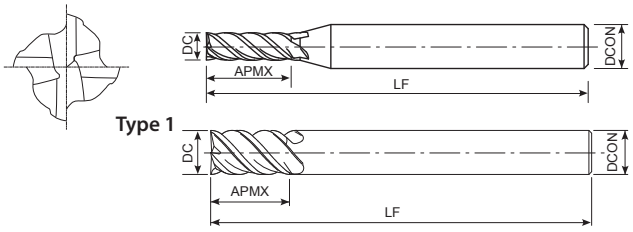
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8519360 | 6 | 12 | 6 | 50 | 6 |
| 8519380 | 8 | 16 | 8 | 60 | 6 |
| 8519400 | 10 | 20 | 10 | 70 | 6 |
| 8519420 | 12 | 24 | 12 | 75 | 6 |
| 8519460 | 16 | 32 | 16 | 100 | 6 |
| 8519500 | 20 | 40 | 20 | 105 | 6 |

# NEO-PHS

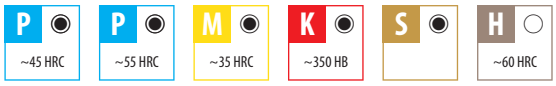
**Milling | Solid carbide**



**WHILE STOCK LASTS**




- Carbide end mill with TiAlN coating
- For exotic materials
- 4 flutes, variable helix and unequal spacing



| EDP | DC | APMX | DCON | LF | ZEFP | Type |
|---|---|---|---|---|---|---|
| 8529230 | 3 | 6 | 6 | 50 | 4 | 1 |
| 8529240 | 4 | 8 | 6 | 50 | 4 | 1 |
| 8529250 | 5 | 10 | 6 | 50 | 4 | 1 |
| 8529260 | 6 | 12 | 6 | 50 | 4 | 2 |
| 8529280 | 8 | 16 | 8 | 60 | 4 | 2 |
| 8529300 | 10 | 20 | 10 | 70 | 4 | 2 |
| 8529320 | 12 | 24 | 12 | 75 | 4 | 2 |
| 8529360 | 16 | 32 | 16 | 100 | 4 | 2 |
| 8529400 | 20 | 40 | 20 | 105 | 4 | 2 |

# NEO-CR-PHS

Milling | Solid carbide

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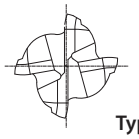
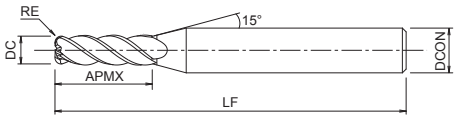
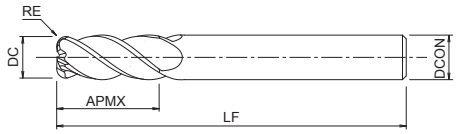
**WHILE STOCK LASTS**



Type 1




Type 2




- Carbide end mill with TiAlN coating
- For exotic materials
- 4 flutes, variable helix and unequal spacing, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC

CARBIDE | FX | 36°~39° | SHRINK FIT | D>12 0~-0.03 | D≤12 0~-0.02

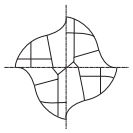
C.1014

| EDP | DC | RE | APMX | DCON | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|
| 8529531 | 3 | 0,2 | 6 | 6 | 50 | 4 | 1 |
| 8529533 | 3 | 0,5 | 6 | 6 | 50 | 4 | 1 |
| 8529541 | 4 | 0,2 | 8 | 6 | 50 | 4 | 1 |
| 8529543 | 4 | 0,5 | 8 | 6 | 50 | 4 | 1 |
| 8529545 | 4 | 1 | 8 | 6 | 50 | 4 | 1 |
| 8529551 | 5 | 0,2 | 10 | 6 | 50 | 4 | 1 |
| 8529553 | 5 | 0,5 | 10 | 6 | 50 | 4 | 1 |
| 8529555 | 5 | 1 | 10 | 6 | 50 | 4 | 1 |
| 8529562 | 6 | 0,3 | 12 | 6 | 50 | 4 | 2 |
| 8529563 | 6 | 0,5 | 12 | 6 | 50 | 4 | 2 |
| 8529565 | 6 | 1 | 12 | 6 | 50 | 4 | 2 |
| 8529582 | 8 | 0,3 | 16 | 8 | 60 | 4 | 2 |
| 8529583 | 8 | 0,5 | 16 | 8 | 60 | 4 | 2 |
| 8529585 | 8 | 1 | 16 | 8 | 60 | 4 | 2 |
| 8529587 | 8 | 1,5 | 16 | 8 | 60 | 4 | 2 |
| 8529589 | 8 | 2 | 16 | 8 | 60 | 4 | 2 |
| 8529602 | 10 | 0,3 | 20 | 10 | 70 | 4 | 2 |
| 8529603 | 10 | 0,5 | 20 | 10 | 70 | 4 | 2 |
| 8529605 | 10 | 1 | 20 | 10 | 70 | 4 | 2 |
| 8529607 | 10 | 1,5 | 20 | 10 | 70 | 4 | 2 |
| 8529609 | 10 | 2 | 20 | 10 | 70 | 4 | 2 |
| 8529613 | 10 | 3 | 20 | 10 | 70 | 4 | 2 |
| 8529633 | 12 | 0,5 | 24 | 12 | 75 | 4 | 2 |
| 8529635 | 12 | 1 | 24 | 12 | 75 | 4 | 2 |
| 8529637 | 12 | 1,5 | 24 | 12 | 75 | 4 | 2 |
| 8529639 | 12 | 2 | 24 | 12 | 75 | 4 | 2 |
| 8529643 | 12 | 3 | 24 | 12 | 75 | 4 | 2 |
| 8529662 | 16 | 1 | 32 | 16 | 100 | 4 | 2 |
| 8529663 | 16 | 1,5 | 32 | 16 | 100 | 4 | 2 |
| 8529664 | 16 | 2 | 32 | 16 | 100 | 4 | 2 |
| 8529665 | 16 | 3 | 32 | 16 | 100 | 4 | 2 |
| 8529682 | 20 | 1 | 40 | 20 | 105 | 4 | 2 |
| 8529684 | 20 | 2 | 40 | 20 | 105 | 4 | 2 |
| 8529685 | 20 | 3 | 40 | 20 | 105 | 4 | 2 |
| 8529686 | 20 | 4 | 40 | 20 | 105 | 4 | 2 |
| 8529687 | 20 | 5 | 40 | 20 | 105 | 4 | 2 |

# FX-CR-MG-EMS

INDEX

**Milling | Solid carbide**



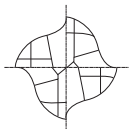
- Carbide end mill with TiAlN coating
- For general applications and cast iron
- 4 flutes, short length of cut, corner radius

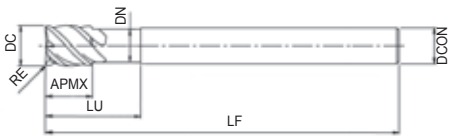
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W0280011A | 4 | 0,5 | 12 | 4 | 6 | 3,8 | 45 | 4 |
| W0280012A | 6 | 0,5 | 18 | 6 | 6 | 5,8 | 50 | 4 |
| W0280013A | 6 | 1 | 18 | 6 | 6 | 5,8 | 50 | 4 |
| W0280014A | 8 | 0,5 | 24 | 8 | 8 | 7,8 | 60 | 4 |
| W0280015A | 8 | 1 | 24 | 8 | 8 | 7,8 | 60 | 4 |
| W0280016A | 10 | 0,5 | 30 | 10 | 10 | 9,7 | 70 | 4 |
| W0280017A | 10 | 1 | 30 | 10 | 10 | 9,7 | 70 | 4 |
| W0280018A | 12 | 1 | 36 | 12 | 12 | 11,7 | 75 | 4 |

# FXS-PKE

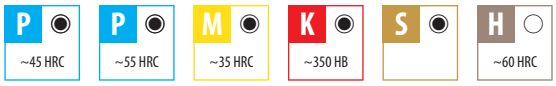


**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, corner radius, for pocketing

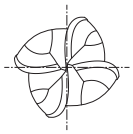


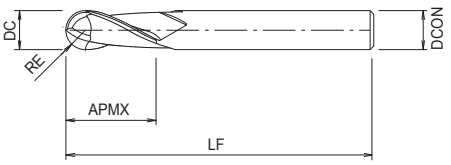
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 8547803 | 3 | 0,2 | 9 | 5 | 6 | 2,85 | 60 | 4 |
| 8547853 | 3 | 0,2 | 15 | 5 | 6 | 2,85 | 70 | 4 |
| 8548003 | 3 | 0,5 | 9 | 5 | 6 | 2,85 | 60 | 4 |
| 8548053 | 3 | 0,5 | 15 | 5 | 6 | 2,85 | 70 | 4 |
| 8547804 | 4 | 0,2 | 12 | 6 | 6 | 3,8 | 70 | 4 |
| 8547854 | 4 | 0,2 | 20 | 6 | 6 | 3,8 | 80 | 4 |
| 8548004 | 4 | 0,5 | 12 | 6 | 6 | 3,8 | 70 | 4 |
| 8548054 | 4 | 0,5 | 20 | 6 | 6 | 3,8 | 80 | 4 |
| 8547805 | 5 | 0,2 | 15 | 8 | 6 | 4,8 | 80 | 4 |
| 8547855 | 5 | 0,2 | 25 | 8 | 6 | 4,8 | 90 | 4 |
| 8548005 | 5 | 0,5 | 15 | 8 | 6 | 4,8 | 80 | 4 |
| 8548055 | 5 | 0,5 | 25 | 8 | 6 | 4,8 | 90 | 4 |
| 8548006 | 6 | 0,5 | 18 | 9 | 6 | 5,8 | 90 | 4 |
| 8548056 | 6 | 0,5 | 30 | 9 | 6 | 5,8 | 100 | 4 |
| 8548206 | 6 | 1 | 18 | 9 | 6 | 5,8 | 90 | 4 |
| 8548256 | 6 | 1 | 30 | 9 | 6 | 5,8 | 100 | 4 |
| 8548008 | 8 | 0,5 | 24 | 12 | 8 | 7,7 | 100 | 4 |
| 8548058 | 8 | 0,5 | 40 | 12 | 8 | 7,7 | 110 | 4 |
| 8548208 | 8 | 1 | 24 | 12 | 8 | 7,7 | 100 | 4 |
| 8548258 | 8 | 1 | 40 | 12 | 8 | 7,7 | 110 | 4 |
| 8548010 | 10 | 0,5 | 30 | 15 | 10 | 9,7 | 100 | 4 |
| 8548060 | 10 | 0,5 | 50 | 15 | 10 | 9,7 | 120 | 4 |
| 8548210 | 10 | 1 | 30 | 15 | 10 | 9,7 | 100 | 4 |
| 8548260 | 10 | 1 | 50 | 15 | 10 | 9,7 | 120 | 4 |
| 8548610 | 10 | 2 | 30 | 15 | 10 | 9,7 | 100 | 4 |
| 8548660 | 10 | 2 | 50 | 15 | 10 | 9,7 | 120 | 4 |
| 8548012 | 12 | 0,5 | 36 | 18 | 12 | 11,7 | 110 | 4 |
| 8548062 | 12 | 0,5 | 60 | 18 | 12 | 11,7 | 130 | 4 |
| 8548212 | 12 | 1 | 36 | 18 | 12 | 11,7 | 110 | 4 |
| 8548262 | 12 | 1 | 60 | 18 | 12 | 11,7 | 130 | 4 |
| 8548612 | 12 | 2 | 36 | 18 | 12 | 11,7 | 110 | 4 |
| 8548662 | 12 | 2 | 60 | 18 | 12 | 11,7 | 130 | 4 |

# FXS-HS-EBM



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For high speed milling in hardened steels
- 4 flutes, ball nose, shorter overall length

P ~45 HRC | P ~55 HRC | H ~60 HRC | H ~65 HRC

CARBIDE | FX | 30° | SHRINK FIT | 0~-0.015

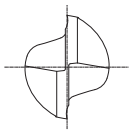
C.1018

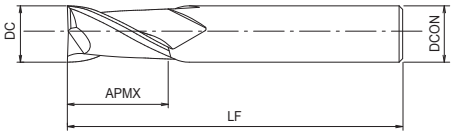
| EDP | DC | RE | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| 8521706 | 6 | 3 | 12 | 6 | 50 | 4 |
| 8521708 | 8 | 4 | 14 | 8 | 50 | 4 |
| 8521710 | 10 | 5 | 18 | 10 | 70 | 4 |
| 8521712 | 12 | 6 | 22 | 12 | 80 | 4 |
| 8521716 | 16 | 8 | 30 | 16 | 100 | 4 |
| 8521720 | 20 | 10 | 38 | 20 | 110 | 4 |

# CA-RG-EDS



**Milling | Solid carbide**






- Carbide end mill, bright finish
- For aluminium and copper alloys
- 2 flutes, short length of cut

N

CARBIDE | 30° | SHRINK FIT | 0~-0.03

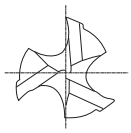
C.1019

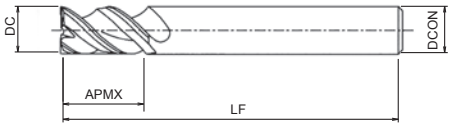
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8502010 | 1 | 2,5 | 4 | 40 | 2 |
| 8502015 | 1,5 | 4 | 4 | 40 | 2 |
| 8502020 | 2 | 6 | 4 | 40 | 2 |
| 8502025 | 2,5 | 8 | 4 | 40 | 2 |
| 8502030 | 3 | 8 | 6 | 45 | 2 |
| 8502035 | 3,5 | 10 | 6 | 45 | 2 |
| 8502040 | 4 | 11 | 6 | 45 | 2 |
| 8502045 | 4,5 | 11 | 6 | 45 | 2 |
| 8502050 | 5 | 13 | 6 | 50 | 2 |
| 8502055 | 5,5 | 13 | 6 | 50 | 2 |
| 8502060 | 6 | 13 | 6 | 50 | 2 |
| 8502065 | 6,5 | 16 | 8 | 60 | 2 |
| 8502070 | 7 | 16 | 8 | 60 | 2 |
| 8502075 | 7,5 | 16 | 8 | 60 | 2 |
| 8502080 | 8 | 19 | 8 | 60 | 2 |
| 8502085 | 8,5 | 19 | 10 | 70 | 2 |
| 8502090 | 9 | 19 | 10 | 70 | 2 |
| 8502095 | 9,5 | 19 | 10 | 70 | 2 |
| 8502100 | 10 | 22 | 10 | 70 | 2 |
| 8502105 | 10,5 | 22 | 12 | 75 | 2 |
| 8502110 | 11 | 22 | 12 | 75 | 2 |
| 8502115 | 11,5 | 22 | 12 | 75 | 2 |
| 8502120 | 12 | 26 | 12 | 75 | 2 |
| 8502130 | 13 | 26 | 12 | 85 | 2 |
| 8502140 | 14 | 26 | 12 | 85 | 2 |
| 8502150 | 15 | 26 | 16 | 90 | 2 |
| 8502160 | 16 | 32 | 16 | 100 | 2 |
| 8502170 | 17 | 32 | 16 | 100 | 2 |
| 8502180 | 18 | 32 | 16 | 100 | 2 |
| 8502190 | 19 | 32 | 20 | 100 | 2 |
| 8502200 | 20 | 38 | 20 | 105 | 2 |

# CA-ETS



**Milling | Solid carbide**






- Carbide end mill, bright finish
- For aluminium and copper alloys
- 3 flutes, short length of cut

N

CARBIDE | ±40° | SHRINK FIT | 0~-0.02 | C.1020

| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 8502806 | 3 | 8 | 6 | 50 | 3 |
| 8502808 | 4 | 11 | 6 | 50 | 3 |
| 8502810 | 5 | 13 | 6 | 50 | 3 |
| 8502812 | 6 | 13 | 6 | 50 | 3 |
| 8502816 | 8 | 19 | 8 | 60 | 3 |
| 8502820 | 10 | 22 | 10 | 70 | 3 |
| 8502822 | 12 | 26 | 12 | 75 | 3 |
| 8502826 | 16 | 32 | 16 | 100 | 3 |
| 8502830 | 20 | 38 | 20 | 105 | 3 |

# EPL-HP-4FL

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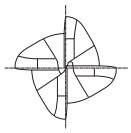
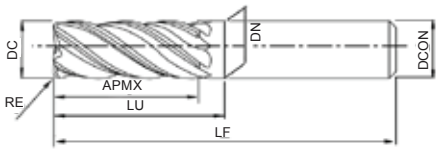
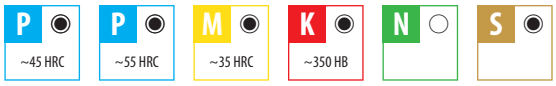
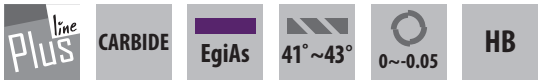
**Milling | Solid carbide**






- Carbide end mill with EgiAs coating
- For general applications and exotic materials
- 4 flutes, variable helix and unequal spacing, corner radius
- Weldon shank




C.1021

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP01930399 | 3 | - | 11 | 8 | 6 | - | 57 | 4 |
| EP01930300 | 3 | 0,25 | 11 | 8 | 6 | - | 57 | 4 |
| EP01930301 | 3 | 0,5 | 11 | 8 | 6 | - | 57 | 4 |
| EP01930499 | 4 | - | 13 | 11 | 6 | - | 57 | 4 |
| EP01930400 | 4 | 0,25 | 13 | 11 | 6 | - | 57 | 4 |
| EP01930401 | 4 | 0,5 | 13 | 11 | 6 | - | 57 | 4 |
| EP01930402 | 4 | 1 | 13 | 11 | 6 | - | 57 | 4 |
| EP01930599 | 5 | - | 15 | 13 | 6 | - | 57 | 4 |
| EP01930500 | 5 | 0,25 | 15 | 13 | 6 | - | 57 | 4 |
| EP01930501 | 5 | 0,5 | 15 | 13 | 6 | - | 57 | 4 |
| EP01930502 | 5 | 1 | 15 | 13 | 6 | - | 57 | 4 |
| EP01930699 | 6 | - | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01930600 | 6 | 0,25 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01930601 | 6 | 0,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01930602 | 6 | 1 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01930603 | 6 | 1,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01930899 | 8 | - | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01930800 | 8 | 0,25 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01930801 | 8 | 0,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01930802 | 8 | 1 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01930803 | 8 | 1,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01931099 | 10 | - | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931000 | 10 | 0,25 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931001 | 10 | 0,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931002 | 10 | 1 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931003 | 10 | 1,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931004 | 10 | 2 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931006 | 10 | 3 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01931299 | 12 | - | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931200 | 12 | 0,25 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931201 | 12 | 0,5 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931202 | 12 | 1 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931204 | 12 | 2 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931206 | 12 | 3 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931207 | 12 | 4 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01931499 | 14 | - | 38 | 26 | 14 | 13,8 | 83 | 4 |
| EP01931400 | 14 | 0,25 | 38 | 26 | 14 | 13,8 | 83 | 4 |
| EP01931402 | 14 | 1 | 38 | 26 | 14 | 13,8 | 83 | 4 |
| EP01931699 | 16 | - | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931600 | 16 | 0,25 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931601 | 16 | 0,5 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931602 | 16 | 1 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931604 | 16 | 2 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931606 | 16 | 3 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01931607 | 16 | 4 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01932099 | 20 | - | 54 | 38 | 20 | 19,8 | 104 | 4 |

# EPL-HP-4FL

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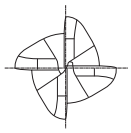
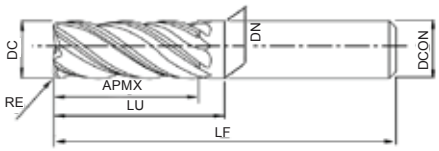
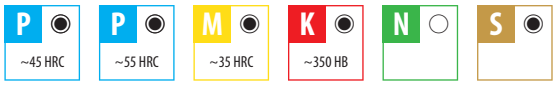
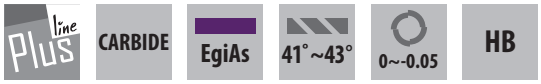
**Milling | Solid carbide**






- Carbide end mill with EgiAs coating
- For general applications and exotic materials
- 4 flutes, variable helix and unequal spacing, corner radius
- Weldon shank



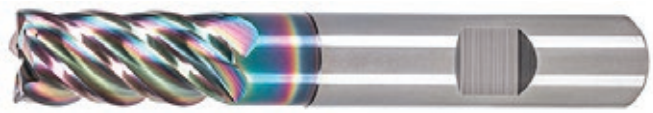



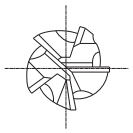
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP01932000 | 20 | 0,25 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01932001 | 20 | 0,5 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01932002 | 20 | 1 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01932004 | 20 | 2 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01932006 | 20 | 3 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01932007 | 20 | 4 | 54 | 38 | 20 | 19,8 | 104 | 4 |

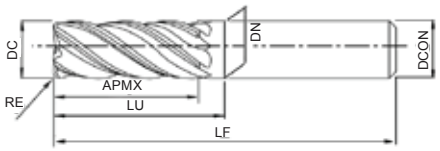
# EPL-HP-5FL



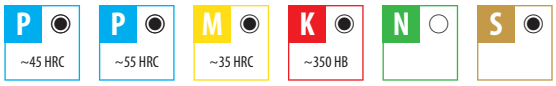
**Milling | Solid carbide**

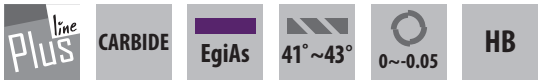







- Carbide end mill with EgiAs coating
- For general applications and exotic materials
- 5 flutes, variable helix and unequal spacing, corner radius
- Weldon shank



| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP01940699 | 6 | - | 20 | 13 | 6 | 5,8 | 57 | 5 |
| EP01940600 | 6 | 0,25 | 20 | 13 | 6 | 5,8 | 57 | 5 |
| EP01940601 | 6 | 0,5 | 20 | 13 | 6 | 5,8 | 57 | 5 |
| EP01940602 | 6 | 1 | 20 | 13 | 6 | 5,8 | 57 | 5 |
| EP01940899 | 8 | - | 25 | 19 | 8 | 7,8 | 63 | 5 |
| EP01940800 | 8 | 0,25 | 25 | 19 | 8 | 7,8 | 63 | 5 |
| EP01940801 | 8 | 0,5 | 25 | 19 | 8 | 7,8 | 63 | 5 |
| EP01940802 | 8 | 1 | 25 | 19 | 8 | 7,8 | 63 | 5 |
| EP01940803 | 8 | 1,5 | 25 | 19 | 8 | 7,8 | 63 | 5 |
| EP01941099 | 10 | - | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941000 | 10 | 0,25 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941001 | 10 | 0,5 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941002 | 10 | 1 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941003 | 10 | 1,5 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941004 | 10 | 2 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941006 | 10 | 3 | 30 | 22 | 10 | 9,8 | 72 | 5 |
| EP01941299 | 12 | - | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941200 | 12 | 0,25 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941201 | 12 | 0,5 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941202 | 12 | 1 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941204 | 12 | 2 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941206 | 12 | 3 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941207 | 12 | 4 | 38 | 26 | 12 | 11,8 | 83 | 5 |
| EP01941699 | 16 | - | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941600 | 16 | 0,25 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941601 | 16 | 0,5 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941602 | 16 | 1 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941604 | 16 | 2 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941606 | 16 | 3 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01941607 | 16 | 4 | 44 | 32 | 16 | 15,8 | 92 | 5 |
| EP01942099 | 20 | - | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942000 | 20 | 0,25 | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942001 | 20 | 0,5 | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942002 | 20 | 1 | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942004 | 20 | 2 | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942006 | 20 | 3 | 54 | 38 | 20 | 19,8 | 104 | 5 |
| EP01942007 | 20 | 4 | 54 | 38 | 20 | 19,8 | 104 | 5 |

# EPL-TI-7FL

**Milling | Solid carbide**

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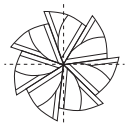
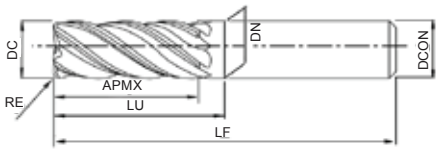
**NEW**






- Carbide end mills with AlCrN coating
- For Aerospace Alloys
- 7 flutes, centre cutting, square end and corner radius

| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP | DN |
|---|---|---|---|---|---|---|---|---|
| EP02141099 | 10 | - | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02141001 | 10 | 0,5 | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02141002 | 10 | 1 | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02141299 | 12 | - | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02141201 | 12 | 0,5 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02141202 | 12 | 1 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02141204 | 12 | 2 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02141699 | 16 | - | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02141601 | 16 | 0,5 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02141602 | 16 | 1 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02141604 | 16 | 2 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02141606 | 16 | 3 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02141607 | 16 | 4 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02142099 | 20 | - | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02142001 | 20 | 0,5 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02142002 | 20 | 1 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02142004 | 20 | 2 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02142006 | 20 | 3 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02142008 | 20 | 5 | 72 | 62 | 20 | 125 | 7 | 19,6 |

# EPL-TI-7FL

**Milling | Solid carbide**

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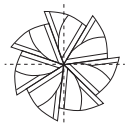
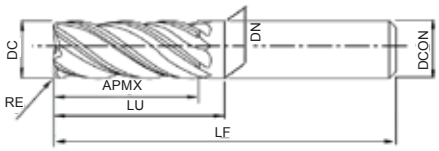
## CHIPBREAKER NEW





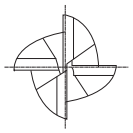

- Carbide end mills with AlCrN coating
- For Aerospace Alloys
- 7 flutes, centre cutting, square end and corner radius
- With Chipbreaker

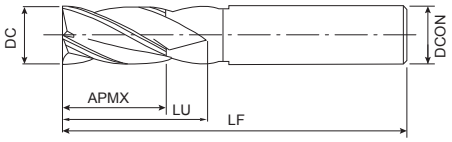
| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP | DN |
|---|---|---|---|---|---|---|---|---|
| EP02151099 | 10 | - | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02151001 | 10 | 0,5 | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02151002 | 10 | 1 | 27 | 22 | 10 | 73 | 7 | 9,8 |
| EP02151299 | 12 | - | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02151201 | 12 | 0,5 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02151202 | 12 | 1 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02151204 | 12 | 2 | 38 | 32 | 12 | 84 | 7 | 11,8 |
| EP02151601 | 16 | - | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02151602 | 16 | 0,5 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02151604 | 16 | 1 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02151606 | 16 | 2 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02151607 | 16 | 3 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02151699 | 16 | 4 | 50 | 42 | 16 | 110 | 7 | 15,8 |
| EP02152099 | 20 | - | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02152001 | 20 | 0,5 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02152002 | 20 | 1 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02152004 | 20 | 2 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02152006 | 20 | 3 | 72 | 62 | 20 | 125 | 7 | 19,6 |
| EP02152008 | 20 | 5 | 72 | 62 | 20 | 125 | 7 | 19,6 |

# EPL-HI-EMS



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | TiAlN | 35° | 38°

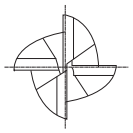
C.1022

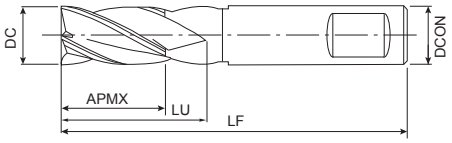
| EDP | DC | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| EP00990400 | 4 | - | 11 | 6 | 57 | 4 |
| EP00990500 | 5 | - | 13 | 6 | 57 | 4 |
| EP00990600 | 6 | 20 | 13 | 6 | 57 | 4 |
| EP00990800 | 8 | 25 | 19 | 8 | 63 | 4 |
| EP00991000 | 10 | 30 | 22 | 10 | 72 | 4 |
| EP01001000 | 10 | 60 | 40 | 10 | 100 | 4 |
| EP00991200 | 12 | 38 | 26 | 12 | 83 | 4 |
| EP01001200 | 12 | 65 | 45 | 12 | 150 | 4 |
| EP00991600 | 16 | 45 | 32 | 16 | 92 | 4 |
| EP01001600 | 16 | 100 | 65 | 16 | 150 | 4 |
| EP00992000 | 20 | 60 | 38 | 20 | 104 | 4 |
| EP01002000 | 20 | 100 | 65 | 20 | 150 | 4 |

# EPL-HI-WEMS



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing
- Weldon shank

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | TiAlN | 35° | 38° | HB

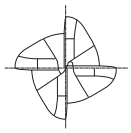
C.1022

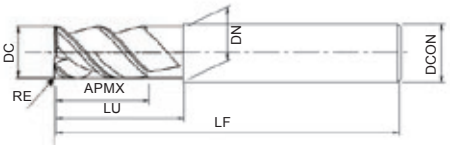
| EDP | DC | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|
| EP01010400 | 4 | - | 11 | 6 | 57 | 4 |
| EP01010500 | 5 | - | 13 | 6 | 57 | 4 |
| EP01010600 | 6 | 20 | 13 | 6 | 57 | 4 |
| EP01010800 | 8 | 25 | 19 | 8 | 63 | 4 |
| EP01011000 | 10 | 30 | 22 | 10 | 72 | 4 |
| EP01181000 | 10 | 60 | 40 | 10 | 100 | 4 |
| EP01011200 | 12 | 38 | 26 | 12 | 83 | 4 |
| EP01181200 | 12 | 65 | 45 | 12 | 150 | 4 |
| EP01011600 | 16 | 44 | 32 | 16 | 92 | 4 |
| EP01181600 | 16 | 100 | 65 | 16 | 150 | 4 |
| EP01012000 | 20 | 54 | 38 | 20 | 104 | 4 |
| EP01182000 | 20 | 100 | 65 | 20 | 150 | 4 |

# EPL-HI-CR-EMS



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | TiAlN | 35° | 38°

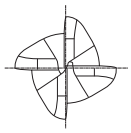
C.1022

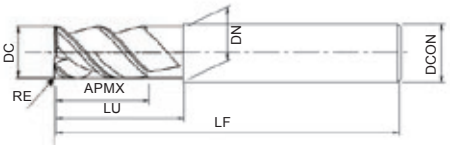
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP01760400 | 4 | 0,25 | - | 11 | 6 | - | 57 | 4 |
| EP01760401 | 4 | 0,5 | - | 11 | 6 | - | 57 | 4 |
| EP01760402 | 4 | 1 | - | 11 | 6 | - | 57 | 4 |
| EP01760500 | 5 | 0,25 | - | 13 | 6 | - | 57 | 4 |
| EP01760501 | 5 | 0,5 | - | 13 | 6 | - | 57 | 4 |
| EP01760600 | 6 | 0,25 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01760601 | 6 | 0,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01760602 | 6 | 1 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01760603 | 6 | 1,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01760800 | 8 | 0,25 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01760801 | 8 | 0,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01760802 | 8 | 1 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01760803 | 8 | 1,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01761000 | 10 | 0,25 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01761001 | 10 | 0,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01761002 | 10 | 1 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01761003 | 10 | 2 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01761200 | 12 | 0,25 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01761201 | 12 | 0,5 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01761202 | 12 | 1 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01761203 | 12 | 2 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01761600 | 16 | 0,25 | 45 | 32 | 16 | 15,8 | 92 | 4 |
| EP01761601 | 16 | 1 | 45 | 32 | 16 | 15,8 | 92 | 4 |
| EP01761602 | 16 | 2 | 45 | 32 | 16 | 15,8 | 92 | 4 |

# EPL-HI-CR-WEMS

INDEX

**Milling | Solid carbide**






- Carbide end mill with WXL coating
- For general applications
- 4 flutes, variable helix and unequal spacing, corner radius
- Weldon shank

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | WXL | 35° | 38° | HB

C.1022

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP01020400 | 4 | 0,25 | - | 11 | 6 | - | 57 | 4 |
| EP01020401 | 4 | 0,5 | - | 11 | 6 | - | 57 | 4 |
| EP01020402 | 4 | 1 | - | 11 | 6 | - | 57 | 4 |
| EP01020500 | 5 | 0,25 | - | 13 | 6 | - | 57 | 4 |
| EP01020501 | 5 | 0,5 | - | 13 | 6 | - | 57 | 4 |
| EP01020502 | 5 | 1 | - | 13 | 6 | - | 57 | 4 |
| EP01020600 | 6 | 0,25 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01020601 | 6 | 0,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01020602 | 6 | 1 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01020603 | 6 | 1,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| EP01020800 | 8 | 0,25 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01020801 | 8 | 0,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01020802 | 8 | 1 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01020803 | 8 | 1,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| EP01021000 | 10 | 0,25 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01021001 | 10 | 0,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01021002 | 10 | 1 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01021003 | 10 | 1,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01021004 | 10 | 2 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| EP01021200 | 12 | 0,25 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01021201 | 12 | 0,5 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01021202 | 12 | 1 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01021203 | 12 | 2 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| EP01021600 | 16 | 0,25 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01021601 | 16 | 1 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01021602 | 16 | 2 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| EP01022000 | 20 | 1 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| EP01022001 | 20 | 2 | 54 | 38 | 20 | 19,8 | 104 | 4 |

# EPL-WRESF

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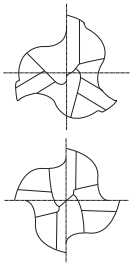
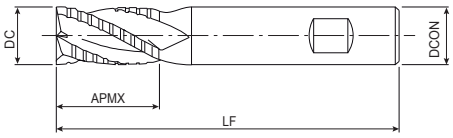
**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 3-4 flutes, roughing
- Weldon shank

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N

Plus line | CARBIDE | TiAlN | 30° | HB

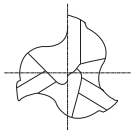
C.1023

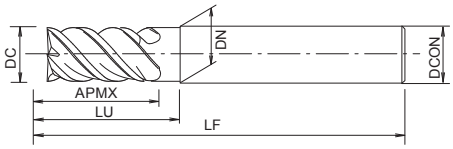
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| EP01200400 | 4 | 11 | 6 | 50 | 3 |
| EP01200500 | 5 | 13 | 6 | 50 | 3 |
| EP01200600 | 6 | 19 | 6 | 64 | 4 |
| EP01200800 | 8 | 21 | 8 | 64 | 4 |
| EP01201000 | 10 | 22 | 10 | 70 | 4 |
| EP01201200 | 12 | 25 | 12 | 76 | 4 |
| EP01201600 | 16 | 32 | 16 | 89 | 4 |
| EP01202000 | 20 | 38 | 20 | 102 | 4 |
| EP01202500 | 25 | 38 | 25 | 102 | 4 |

# EPL-ETS



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 3 flutes, square

| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| EP01860400 | 4 | 8,4 | 6 | 6 | 4 | 57 | 3 |
| EP01860450 | 4,5 | 8,9 | 6,5 | 6 | 4,5 | 57 | 3 |
| EP01860500 | 5 | 9,9 | 7,5 | 6 | 5 | 57 | 3 |
| EP01860550 | 5,5 | 10,9 | 8,5 | 6 | 5,5 | 57 | 3 |
| EP01860600 | 6 | 21 | 9 | 6 | 5,7 | 57 | 3 |
| EP01860700 | 7 | 24 | 10,5 | 8 | 6,6 | 63 | 3 |
| EP01860800 | 8 | 27 | 12 | 8 | 7,6 | 63 | 3 |
| EP01860900 | 9 | 30 | 13,5 | 10 | 8,5 | 72 | 3 |
| EP01861000 | 10 | 32 | 15 | 10 | 9,5 | 72 | 3 |
| EP01861200 | 12 | 38 | 18 | 12 | 11,5 | 83 | 3 |
| EP01861600 | 16 | 44 | 24 | 16 | 15 | 92 | 3 |

# EPL-SB-EBD

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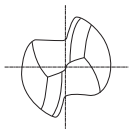
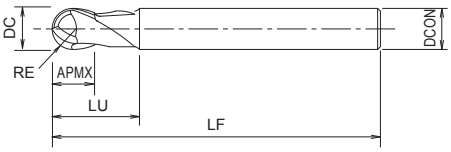
**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, ball nose

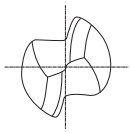
C.1024

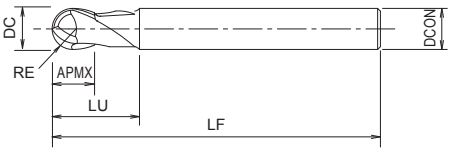
| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| EP01190100 | 1 | 0,5 | 3 | 1,5 | 6 | 40 | 2 |
| EP01190150 | 1,5 | 0,75 | 4 | 2 | 6 | 40 | 2 |
| EP01190200 | 2 | 1 | 6 | 3 | 6 | 40 | 2 |
| EP01190300 | 3 | 1,5 | 9 | 4 | 6 | 40 | 2 |
| EP01190400 | 4 | 2 | 12 | 5 | 6 | 45 | 2 |
| EP01190500 | 5 | 2,5 | 15 | 6 | 6 | 55 | 2 |
| EP01190600 | 6 | 3 | 18 | 7 | 6 | 55 | 2 |
| EP01190800 | 8 | 4 | 20 | 9 | 8 | 60 | 2 |
| EP01191000 | 10 | 5 | 25 | 11 | 10 | 65 | 2 |
| EP01191200 | 12 | 6 | 25 | 13 | 12 | 70 | 2 |
| EP01191600 | 16 | 8 | 40 | 18 | 16 | 92 | 2 |
| EP01192000 | 20 | 10 | 40 | 20 | 20 | 104 | 2 |

# EPL-SB-LN-EBD

INDEX

**Milling | Solid carbide**





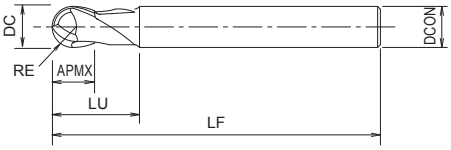

- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, ball nose

| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| EP01770100 | 1 | 0,5 | 3 | 1,5 | 6 | 75 | 2 |
| EP01770150 | 1,5 | 0,75 | 4,5 | 2 | 6 | 75 | 2 |
| EP01770200 | 2 | 1 | 6 | 3 | 6 | 75 | 2 |
| EP01770300 | 3 | 1,5 | 9 | 4 | 6 | 60 | 2 |
| EP01770301 | 3 | 1,5 | 9 | 4 | 6 | 75 | 2 |
| EP01770400 | 4 | 2 | 12 | 5 | 6 | 60 | 2 |
| EP01770401 | 4 | 2 | 12 | 5 | 6 | 90 | 2 |
| EP01770500 | 5 | 2,5 | 15 | 6 | 6 | 90 | 2 |
| EP01770600 | 6 | 3 | 18 | 7 | 6 | 90 | 2 |
| EP01770800 | 8 | 4 | 24 | 9 | 8 | 100 | 2 |
| EP01771000 | 10 | 5 | 30 | 11 | 10 | 100 | 2 |
| EP01771200 | 12 | 6 | 36 | 13 | 12 | 110 | 2 |
| EP01771600 | 16 | 8 | 40 | 18 | 16 | 150 | 2 |
| EP01772000 | 20 | 10 | 40 | 20 | 20 | 150 | 2 |

# EPL-SB-EBM



**Milling | Solid carbide**




- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, ball nose

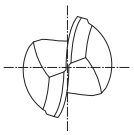
C.1026

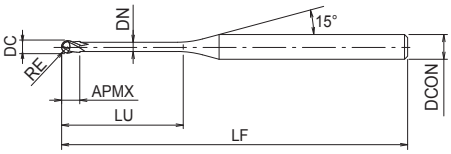
| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| EP01160400 | 4 | 2 | 12 | 5 | 4 | 50 | 4 |
| EP01160500 | 5 | 2,5 | 15 | 6 | 6 | 57 | 4 |
| EP01160600 | 6 | 3 | 18 | 7 | 6 | 57 | 4 |
| EP01160800 | 8 | 4 | 24 | 9 | 8 | 63 | 4 |
| EP01161000 | 10 | 5 | 30 | 11 | 10 | 72 | 4 |
| EP01161200 | 12 | 6 | 36 | 13 | 12 | 80 | 4 |

# EPS-LN-EBD

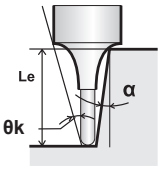
INDEX

**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For hardened steels up to 65 HRC
- 2 flutes, long neck, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005

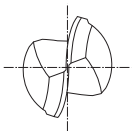
C.1027

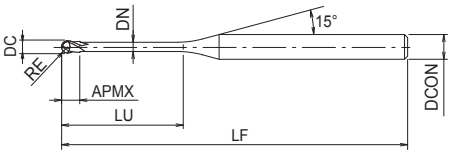
| EDP | DC | RE | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP01951201 | 0,2 | 0,1 | 0,5 | 0,16 | 4 | 0,18 | 45 | 14,16 | 0,53 | 0,55 | 0,61 | 0,57 | 0,63 | 0,59 | 2 |
| EP01951202 | 0,2 | 0,1 | 0,75 | 0,16 | 4 | 0,18 | 45 | 13,72 | 0,79 | 0,82 | 0,91 | 0,85 | 0,94 | 0,88 | 2 |
| EP01951205 | 0,2 | 0,1 | 1 | 0,16 | 4 | 0,18 | 45 | 13,31 | 1,05 | 1,09 | 1,21 | 1,13 | 1,26 | 1,17 | 2 |
| EP01951203 | 0,2 | 0,1 | 1,25 | 0,16 | 4 | 0,18 | 45 | 12,92 | 1,31 | 1,36 | 1,51 | 1,41 | 1,57 | 1,46 | 2 |
| EP01951204 | 0,2 | 0,1 | 1,75 | 0,16 | 4 | 0,18 | 45 | 12,21 | 1,83 | 1,9 | 2,11 | 1,96 | 2,19 | 2,03 | 2 |
| EP01951206 | 0,2 | 0,1 | 2 | 0,16 | 4 | 0,18 | 45 | 11,88 | 2,09 | 2,16 | 2,4 | 2,24 | 2,5 | 2,32 | 2 |
| EP01950001 | 0,3 | 0,15 | 0,6 | 0,16 | 4 | 0,28 | 45 | 14,03 | 0,63 | 0,65 | 0,68 | 0,7 | 0,72 | 0,75 | 2 |
| EP01950002 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,28 | 45 | 13,34 | 1,05 | 1,09 | 1,12 | 1,16 | 1,2 | 1,24 | 2 |
| EP01950003 | 0,3 | 0,15 | 1,5 | 0,24 | 4 | 0,28 | 45 | 12,57 | 1,57 | 1,63 | 1,68 | 1,74 | 1,8 | 1,87 | 2 |
| EP01950004 | 0,3 | 0,15 | 2 | 0,24 | 4 | 0,28 | 45 | 11,87 | 2,09 | 2,16 | 2,4 | 2,23 | 2,49 | 2,31 | 2 |
| EP01950006 | 0,3 | 0,15 | 3 | 0,24 | 4 | 0,28 | 45 | 10,69 | 3,13 | 3,23 | 3,59 | 3,34 | 3,73 | 3,46 | 2 |
| EP01950101 | 0,4 | 0,2 | 0,8 | 0,3 | 4 | 0,37 | 45 | 13,74 | 0,83 | 0,86 | 0,88 | 0,91 | 0,94 | 0,97 | 2 |
| EP01950102 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,37 | 45 | 13,39 | 1,04 | 1,07 | 1,11 | 1,14 | 1,18 | 1,22 | 2 |
| EP01950103 | 0,4 | 0,2 | 1,5 | 0,3 | 4 | 0,37 | 45 | 12,59 | 1,56 | 1,61 | 1,66 | 1,72 | 1,77 | 1,84 | 2 |
| EP01950104 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,37 | 45 | 11,88 | 2,08 | 2,14 | 2,21 | 2,29 | 2,37 | 2,46 | 2 |
| EP01950105 | 0,4 | 0,2 | 2,5 | 0,3 | 4 | 0,37 | 45 | 11,24 | 2,6 | 2,68 | 2,97 | 2,77 | 3,08 | 2,87 | 2 |
| EP01950106 | 0,4 | 0,2 | 3 | 0,3 | 4 | 0,37 | 45 | 10,67 | 3,11 | 3,21 | 3,57 | 3,32 | 3,7 | 3,44 | 2 |
| EP01950107 | 0,4 | 0,2 | 3,5 | 0,3 | 4 | 0,37 | 45 | 10,15 | 3,63 | 3,75 | 4,16 | 3,88 | 4,33 | 4,02 | 2 |
| EP01950108 | 0,4 | 0,2 | 4 | 0,3 | 4 | 0,37 | 45 | 9,68 | 4,15 | 4,28 | 4,76 | 4,43 | 4,95 | 4,59 | 2 |
| EP01950201 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,45 | 45 | 13,45 | 1,03 | 1,06 | 1,09 | 1,12 | 1,15 | 1,19 | 2 |
| EP01950202 | 0,5 | 0,25 | 1,5 | 0,4 | 4 | 0,45 | 45 | 12,62 | 1,55 | 1,59 | 1,64 | 1,69 | 1,75 | 1,81 | 2 |
| EP01950203 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,45 | 45 | 11,89 | 2,06 | 2,13 | 2,2 | 2,27 | 2,35 | 2,43 | 2 |
| EP01950204 | 0,5 | 0,25 | 2,5 | 0,4 | 4 | 0,45 | 45 | 11,23 | 2,58 | 2,66 | 2,75 | 2,84 | 2,94 | 3,05 | 2 |
| EP01950208 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,45 | 45 | 10,65 | 3,1 | 3,2 | 3,54 | 3,3 | 3,68 | 3,42 | 2 |
| EP01950205 | 0,5 | 0,25 | 3,5 | 0,4 | 4 | 0,45 | 45 | 10,12 | 3,61 | 3,73 | 3,86 | 3,99 | 4,14 | 4,3 | 2 |
| EP01950206 | 0,5 | 0,25 | 4 | 0,4 | 4 | 0,45 | 45 | 9,64 | 4,13 | 4,27 | 4,41 | 4,57 | 4,74 | 4,92 | 2 |
| EP01950209 | 0,5 | 0,25 | 5 | 0,4 | 4 | 0,45 | 45 | 8,8 | 5,17 | 5,34 | 5,93 | 5,52 | 6,16 | 5,72 | 2 |
| EP01950207 | 0,5 | 0,25 | 6 | 0,4 | 4 | 0,45 | 45 | 8,1 | 6,2 | 6,41 | 6,63 | 6,87 | 7,13 | 7,41 | 2 |
| EP01950301 | 0,6 | 0,3 | 1,2 | 0,5 | 4 | 0,55 | 45 | 13,14 | 1,24 | 1,27 | 1,3 | 1,34 | 1,38 | 1,43 | 2 |
| EP01950302 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 11,88 | 2,06 | 2,12 | 2,19 | 2,26 | 2,34 | 2,42 | 2 |
| EP01950307 | 0,6 | 0,3 | 2,5 | 0,5 | 4 | 0,55 | 45 | 11,21 | 2,58 | 2,66 | 2,94 | 2,74 | 3,04 | 2,84 | 2 |
| EP01950303 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 10,61 | 3,1 | 3,19 | 3,3 | 3,41 | 3,53 | 3,66 | 2 |
| EP01950304 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 9,58 | 4,13 | 4,26 | 4,41 | 4,56 | 4,73 | 4,91 | 2 |
| EP01950305 | 0,6 | 0,3 | 5 | 0,5 | 4 | 0,55 | 45 | 8,73 | 5,16 | 5,33 | 5,51 | 5,71 | 5,92 | 6,15 | 2 |
| EP01950306 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 8,02 | 6,2 | 6,4 | 7,12 | 6,62 | 7,39 | 6,86 | 2 |
| EP01950308 | 0,6 | 0,3 | 8 | 0,5 | 4 | 0,55 | 45 | 6,89 | 8,26 | 8,54 | 9,51 | 8,84 | 9,88 | 9,16 | 2 |
| EP01950401 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 11,86 | 2,06 | 2,12 | 2,18 | 2,25 | 2,32 | 2,4 | 2 |
| EP01950402 | 0,8 | 0,4 | 3 | 0,6 | 4 | 0,75 | 45 | 10,52 | 3,09 | 3,19 | 3,29 | 3,4 | 3,51 | 3,64 | 2 |
| EP01950403 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 9,45 | 4,13 | 4,26 | 4,4 | 4,55 | 4,71 | 4,88 | 2 |
| EP01950404 | 0,8 | 0,4 | 5 | 0,6 | 4 | 0,75 | 45 | 8,58 | 5,16 | 5,33 | 5,5 | 5,7 | 5,9 | 6,13 | 2 |
| EP01950405 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 7,85 | 6,19 | 6,4 | 7,1 | 6,61 | 7,37 | 6,85 | 2 |
| EP01950406 | 0,8 | 0,4 | 10 | 0,6 | 4 | 0,75 | 45 | 5,86 | 10,33 | 10,67 | 11,88 | 11,05 | 12,34 | 11,45 | 2 |
| EP01950501 | 1 | 0,5 | 2 | 0,8 | 4 | 0,95 | 45 | 11,84 | 2,06 | 2,11 | 2,17 | 2,23 | 2,3 | 2,37 | 2 |
| EP01950502 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 10,43 | 3,09 | 3,18 | 3,28 | 3,38 | 3,49 | 3,62 | 2 |
| EP01950503 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,32 | 4,12 | 4,25 | 4,39 | 4,53 | 4,69 | 4,86 | 2 |
| EP01950508 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 8,41 | 5,16 | 5,32 | 5,88 | 5,49 | 6,1 | 5,68 | 2 |

# EPS-LN-EBD

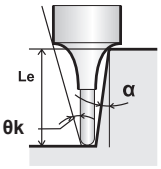
INDEX

**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For hardened steels up to 65 HRC
- 2 flutes, long neck, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005

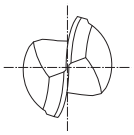
C.1027

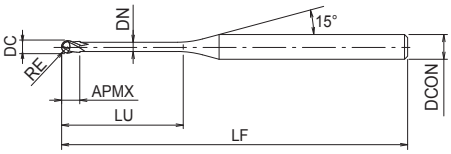
| EDP | DC | RE | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP01950504 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 7,67 | 6,19 | 6,39 | 6,6 | 6,83 | 7,08 | 7,35 | 2 |
| EP01950509 | 1 | 0,5 | 7 | 0,8 | 4 | 0,95 | 45 | 7,05 | 7,22 | 7,46 | 8,27 | 7,71 | 8,59 | 7,98 | 2 |
| EP01950505 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 6,52 | 8,26 | 8,53 | 8,82 | 9,13 | 9,47 | 9,83 | 2 |
| EP01950506 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 5,66 | 10,33 | 10,67 | 11,04 | 11,43 | 11,86 | 12,32 | 2 |
| EP01950507 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 5,01 | 12,39 | 12,81 | 13,25 | 13,73 | 14,25 | 14,81 | 2 |
| EP01950510 | 1 | 0,5 | 14 | 0,8 | 4 | 0,95 | 50 | 4,49 | 14,46 | 14,95 | 16,64 | 15,47 | 17,29 | 16,03 | 2 |
| EP01950511 | 1 | 0,5 | 16 | 0,8 | 4 | 0,95 | 50 | 4,06 | 16,53 | 17,09 | 19,03 | 17,69 | 19,78 | 18,33 | 2 |
| EP01951301 | 1,2 | 0,6 | 2,4 | 1 | 4 | 1,15 | 45 | 11,03 | 2,51 | 2,61 | 2,87 | 2,7 | 2,96 | 2,78 | 2 |
| EP01951302 | 1,2 | 0,6 | 4 | 1 | 4 | 1,15 | 45 | 9,07 | 4,19 | 4,34 | 4,78 | 4,48 | 4,95 | 4,62 | 2 |
| EP01951303 | 1,2 | 0,6 | 6 | 1 | 4 | 1,15 | 45 | 7,41 | 6,27 | 6,48 | 7,17 | 6,69 | 7,44 | 6,92 | 2 |
| EP01951304 | 1,2 | 0,6 | 8 | 1 | 4 | 1,15 | 45 | 6,26 | 8,35 | 8,62 | 9,56 | 8,91 | 9,93 | 9,22 | 2 |
| EP01950601 | 1,5 | 0,75 | 3 | 1,2 | 4 | 1,45 | 45 | 10,01 | 3,13 | 3,25 | 3,35 | 3,45 | 3,56 | 3,67 | 2 |
| EP01950602 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,8 | 4,18 | 4,33 | 4,46 | 4,6 | 4,75 | 4,92 | 2 |
| EP01950603 | 1,5 | 0,75 | 6 | 1,2 | 4 | 1,45 | 45 | 7,08 | 6,27 | 6,47 | 6,68 | 6,9 | 7,14 | 7,4 | 2 |
| EP01950604 | 1,5 | 0,75 | 8 | 1,2 | 4 | 1,45 | 45 | 5,92 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| EP01950606 | 1,5 | 0,75 | 10 | 1,2 | 4 | 1,45 | 45 | 5,09 | 10,41 | 10,75 | 11,92 | 11,11 | 12,38 | 11,5 | 2 |
| EP01950605 | 1,5 | 0,75 | 12 | 1,2 | 4 | 1,45 | 45 | 4,46 | 12,48 | 12,89 | 13,33 | 13,8 | 14,31 | 14,86 | 2 |
| EP01950607 | 1,5 | 0,75 | 16 | 1,2 | 4 | 1,45 | 50 | 3,57 | 16,62 | 17,17 | 19,09 | 17,76 | 19,83 | 18,4 | 2 |
| EP01950608 | 1,5 | 0,75 | 20 | 1,2 | 4 | 1,45 | 55 | 2,98 | 20,75 | 21,45 | 23,87 | 22,19 | - | 23 | 2 |
| EP01951401 | 1,6 | 0,8 | 8 | 1,3 | 4 | 1,55 | 45 | 5,8 | 8,34 | 8,61 | 9,52 | 8,89 | 9,88 | 9,19 | 2 |
| EP01951402 | 1,6 | 0,8 | 12 | 1,3 | 4 | 1,55 | 45 | 4,34 | 12,48 | 12,89 | 14,3 | 13,32 | 14,85 | 13,79 | 2 |
| EP01950701 | 2 | 1 | 4 | 1,6 | 4 | 1,95 | 45 | 7,87 | 4,18 | 4,33 | 4,46 | 4,6 | 4,75 | 4,92 | 2 |
| EP01950702 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 45 | 6,19 | 6,27 | 6,47 | 6,68 | 6,9 | 7,14 | 7,4 | 2 |
| EP01950703 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 45 | 5,1 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| EP01950704 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 45 | 4,33 | 10,41 | 10,75 | 11,11 | 11,5 | 11,92 | 12,38 | 2 |
| EP01950705 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 45 | 3,77 | 12,48 | 12,89 | 13,33 | 13,8 | 14,31 | 14,86 | 2 |
| EP01950706 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 3,33 | 14,55 | 15,03 | 15,55 | 16,1 | 16,7 | 17,35 | 2 |
| EP01950707 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 2,98 | 16,62 | 17,17 | 17,76 | 18,4 | 19,09 | 19,83 | 2 |
| EP01950708 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 55 | 2,47 | 21,05 | 21,78 | - | 22,54 | - | 23,34 | 2 |
| EP01950709 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 65 | 2,03 | 26,24 | 27,13 | - | 28,08 | - | 29,09 | 2 |
| EP01950710 | 2 | 1 | 30 | 1,6 | 4 | 1,95 | 70 | 1,73 | 31,42 | 32,48 | - | 33,62 | - | - | 2 |
| EP01950801 | 2,5 | 1,25 | 10 | 2 | 4 | 2,35 | 45 | 3,63 | 10,46 | 10,85 | 11,21 | 11,59 | 11,99 | 12,43 | 2 |
| EP01950802 | 2,5 | 1,25 | 20 | 2 | 4 | 2,35 | 55 | 1,97 | 20,87 | 21,56 | - | 22,3 | - | - | 2 |
| EP01950901 | 3 | 1,5 | 6 | 2,4 | 6 | 2,85 | 50 | 8,17 | 6,25 | 6,49 | 6,72 | 6,95 | 7,17 | 7,4 | 2 |
| EP01950902 | 3 | 1,5 | 8 | 2,4 | 6 | 2,85 | 50 | 6,88 | 8,35 | 8,67 | 8,97 | 9,25 | 9,55 | 9,88 | 2 |
| EP01950903 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 50 | 5,94 | 10,44 | 10,83 | 11,19 | 11,55 | 11,94 | 12,37 | 2 |
| EP01950904 | 3 | 1,5 | 12 | 2,4 | 6 | 2,85 | 55 | 5,22 | 12,53 | 12,98 | 13,4 | 13,85 | 14,33 | 14,86 | 2 |
| EP01950908 | 3 | 1,5 | 14 | 2,4 | 6 | 2,85 | 55 | 4,66 | 14,62 | 15,13 | 16,72 | 15,62 | 17,34 | 16,15 | 2 |
| EP01950905 | 3 | 1,5 | 15 | 2,4 | 6 | 2,85 | 55 | 4,42 | 15,66 | 16,2 | 16,73 | 17,3 | 17,92 | 18,59 | 2 |
| EP01950906 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 4,21 | 16,7 | 17,26 | 17,84 | 18,45 | 19,11 | 19,83 | 2 |
| EP01950907 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 60 | 3,52 | 20,86 | 21,54 | 22,27 | 23,05 | 23,89 | 24,8 | 2 |
| EP01950909 | 3 | 1,5 | 25 | 2,4 | 6 | 2,85 | 65 | 2,92 | 26,04 | 26,89 | 29,86 | 27,81 | - | 28,8 | 2 |
| EP01950910 | 3 | 1,5 | 30 | 2,4 | 6 | 2,85 | 70 | 2,5 | 31,2 | 32,24 | - | 33,35 | - | 34,55 | 2 |
| EP01951501 | 3,5 | 1,75 | 20 | 2,8 | 6 | 3,35 | 60 | 3,08 | 20,85 | 21,53 | 23,84 | 22,24 | 24,74 | 23,01 | 2 |
| EP01951001 | 4 | 2 | 8 | 3,2 | 6 | 3,85 | 55 | 5,67 | 8,33 | 8,63 | 8,91 | 9,18 | 9,46 | 9,77 | 2 |
| EP01951002 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 4,74 | 10,42 | 10,79 | 11,13 | 11,48 | 11,85 | 12,25 | 2 |

# EPS-LN-EBD

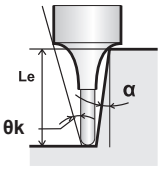


**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For hardened steels up to 65 HRC
- 2 flutes, long neck, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005

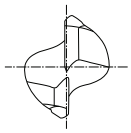
C.1027

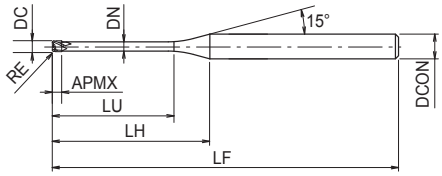
| EDP | DC | RE | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP01951003 | 4 | 2 | 12 | 3,2 | 6 | 3,85 | 60 | 4,07 | 12,51 | 12,95 | 13,35 | 13,78 | 14,24 | 14,74 | 2 |
| EP01951006 | 4 | 2 | 15 | 3,2 | 6 | 3,85 | 60 | 3,36 | 15,64 | 16,16 | 17,82 | 16,67 | 18,47 | 17,23 | 2 |
| EP01951004 | 4 | 2 | 16 | 3,2 | 6 | 3,85 | 60 | 3,18 | 16,68 | 17,23 | 17,78 | 18,38 | 19,02 | 19,71 | 2 |
| EP01951005 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 2,6 | 20,84 | 21,51 | 22,22 | 22,98 | 23,8 | - | 2 |
| EP01951007 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 70 | 2,12 | 26,02 | 26,86 | - | 27,76 | - | 28,72 | 2 |
| EP01951601 | 5 | 2,5 | 20 | 4 | 6 | 4,85 | 70 | 1,46 | 20,82 | 21,47 | - | - | - | - | 2 |
| EP01951602 | 5 | 2,5 | 40 | 4 | 6 | 4,85 | 90 | 0,72 | 41,51 | - | - | - | - | - | 2 |
| EP01951101 | 6 | 3 | 12 | 4,8 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 2 |
| EP01951102 | 6 | 3 | 20 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 |
| EP01951103 | 6 | 3 | 25 | 4,8 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 |
| EP01951104 | 6 | 3 | 30 | 4,8 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 2 |

# EPS-CPR



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For hardened steels up to 65 HRC
- 2 flutes, long neck, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005 | D<0.5 0~-0.01 | D≥0.5 0~-0.015

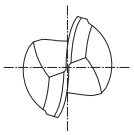
C.1029

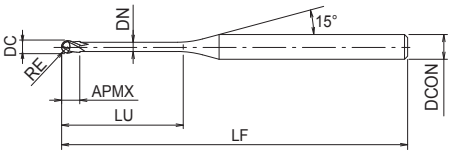
| EDP | DC | RE | LU | APMX | DCON | DN | LF | LH | ZEFP |
|---|---|---|---|---|---|---|---|---|---|
| EP01960001 | 1 | 0,05 | 4 | 0,8 | 4 | 0,94 | 50 | 9,69 | 2 |
| EP01960002 | 1 | 0,1 | 4 | 0,8 | 4 | 0,94 | 50 | 9,69 | 2 |
| EP01960003 | 1 | 0,1 | 6 | 0,8 | 4 | 0,94 | 50 | 11,69 | 2 |
| EP01960004 | 1 | 0,2 | 6 | 0,8 | 4 | 0,94 | 50 | 11,69 | 2 |
| EP01960005 | 1 | 0,3 | 4 | 0,8 | 4 | 0,94 | 50 | 9,69 | 2 |
| EP01960101 | 1,5 | 0,2 | 6 | 1,2 | 4 | 1,43 | 50 | 10,75 | 2 |
| EP01960102 | 1,5 | 0,2 | 10 | 1,2 | 4 | 1,43 | 50 | 14,75 | 2 |
| EP01960103 | 1,5 | 0,2 | 16 | 1,2 | 4 | 1,43 | 50 | 20,75 | 2 |
| EP01960104 | 1,5 | 0,3 | 6 | 1,2 | 4 | 1,43 | 50 | 10,75 | 2 |
| EP01960201 | 2 | 0,1 | 8 | 1,6 | 4 | 1,92 | 50 | 11,82 | 2 |
| EP01960202 | 2 | 0,2 | 10 | 1,6 | 4 | 1,92 | 50 | 13,82 | 2 |
| EP01960203 | 2 | 0,2 | 12 | 1,6 | 4 | 1,92 | 50 | 15,82 | 2 |
| EP01960204 | 2 | 0,3 | 8 | 1,6 | 4 | 1,92 | 50 | 11,82 | 2 |
| EP01960205 | 2 | 0,5 | 8 | 1,6 | 4 | 1,92 | 50 | 11,82 | 2 |
| EP01960206 | 2 | 0,5 | 12 | 1,6 | 4 | 1,92 | 50 | 15,82 | 2 |
| EP01960301 | 3 | 0,2 | 8 | 2,5 | 6 | 2,85 | 60 | 13,87 | 2 |
| EP01960302 | 3 | 0,3 | 12 | 2,5 | 6 | 2,85 | 60 | 17,87 | 2 |
| EP01960303 | 3 | 0,3 | 16 | 2,5 | 6 | 2,85 | 60 | 21,87 | 2 |
| EP01960401 | 4 | 0,2 | 16 | 4 | 6 | 3,84 | 60 | 20,01 | 4 |
| EP01960402 | 4 | 0,2 | 20 | 4 | 6 | 3,84 | 60 | 24,01 | 4 |
| EP01960403 | 4 | 0,5 | 16 | 4 | 6 | 3,84 | 60 | 20,01 | 4 |

# EPL-LN-EBD

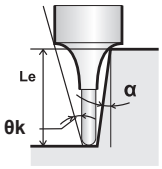


**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

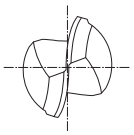
Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005 | C.1030

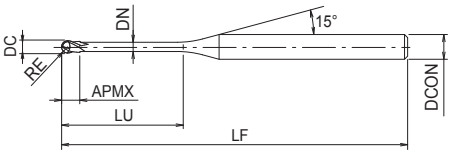
| EDP | DC | RE | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP48165001 | 0,3 | 0,15 | 0,5 | 0,24 | 4 | 0,28 | 45 | 14,22 | 0,52 | 0,54 | 0,56 | 0,58 | 0,6 | 0,62 | 2 |
| EP48165002 | 0,3 | 0,15 | 1 | 0,24 | 4 | 0,28 | 45 | 13,34 | 1,05 | 1,09 | 1,12 | 1,16 | 1,2 | 1,24 | 2 |
| EP48165003 | 0,4 | 0,2 | 1 | 0,3 | 4 | 0,37 | 45 | 13,39 | 1,04 | 1,07 | 1,11 | 1,14 | 1,18 | 1,22 | 2 |
| EP48165004 | 0,4 | 0,2 | 2 | 0,3 | 4 | 0,37 | 45 | 11,88 | 2,08 | 2,14 | 2,21 | 2,29 | 2,37 | 2,46 | 2 |
| EP48165005 | 0,5 | 0,25 | 1 | 0,4 | 4 | 0,45 | 45 | 13,45 | 1,03 | 1,06 | 1,09 | 1,12 | 1,15 | 1,19 | 2 |
| EP48165006 | 0,5 | 0,25 | 2 | 0,4 | 4 | 0,45 | 45 | 11,89 | 2,06 | 2,13 | 2,2 | 2,27 | 2,35 | 2,43 | 2 |
| EP48165007 | 0,5 | 0,25 | 3 | 0,4 | 4 | 0,45 | 45 | 10,65 | 3,1 | 3,2 | 3,3 | 3,42 | 3,54 | 3,68 | 2 |
| EP48165008 | 0,5 | 0,25 | 4 | 0,5 | 4 | 0,45 | 45 | 9,64 | 4,13 | 4,27 | 4,41 | 4,57 | 4,74 | 4,92 | 2 |
| EP48165009 | 0,6 | 0,3 | 1 | 0,5 | 4 | 0,55 | 45 | 13,49 | 1,03 | 1,05 | 1,08 | 1,11 | 1,14 | 1,18 | 2 |
| EP48165010 | 0,6 | 0,3 | 2 | 0,5 | 4 | 0,55 | 45 | 11,88 | 2,06 | 2,12 | 2,19 | 2,26 | 2,34 | 2,42 | 2 |
| EP48165011 | 0,6 | 0,3 | 3 | 0,5 | 4 | 0,55 | 45 | 10,61 | 3,1 | 3,19 | 3,3 | 3,41 | 3,53 | 3,66 | 2 |
| EP48165012 | 0,6 | 0,3 | 4 | 0,5 | 4 | 0,55 | 45 | 9,58 | 4,13 | 4,26 | 4,41 | 4,56 | 4,73 | 4,91 | 2 |
| EP48165013 | 0,6 | 0,3 | 6 | 0,5 | 4 | 0,55 | 45 | 8,02 | 6,2 | 6,4 | 6,62 | 6,86 | 7,12 | 7,39 | 2 |
| EP48165014 | 0,8 | 0,4 | 2 | 0,6 | 4 | 0,75 | 45 | 11,86 | 2,06 | 2,12 | 2,18 | 2,25 | 2,32 | 2,4 | 2 |
| EP48165015 | 0,8 | 0,4 | 4 | 0,6 | 4 | 0,75 | 45 | 9,45 | 4,13 | 4,26 | 4,4 | 4,55 | 4,71 | 4,88 | 2 |
| EP48165016 | 0,8 | 0,4 | 6 | 0,6 | 4 | 0,75 | 45 | 7,85 | 6,19 | 6,4 | 6,61 | 6,85 | 7,1 | 7,37 | 2 |
| EP48165017 | 1 | 0,5 | 2,5 | 0,8 | 4 | 0,95 | 45 | 11,09 | 2,57 | 2,64 | 2,72 | 2,81 | 2,9 | 3 | 2 |
| EP48165018 | 1 | 0,5 | 3 | 0,8 | 4 | 0,95 | 45 | 10,43 | 3,09 | 3,18 | 3,28 | 3,38 | 3,49 | 3,62 | 2 |
| EP48165019 | 1 | 0,5 | 4 | 0,8 | 4 | 0,95 | 45 | 9,32 | 4,12 | 4,25 | 4,39 | 4,53 | 4,69 | 4,86 | 2 |
| EP48165020 | 1 | 0,5 | 5 | 0,8 | 4 | 0,95 | 45 | 8,41 | 5,16 | 5,32 | 5,49 | 5,68 | 5,88 | 6,1 | 2 |
| EP48165021 | 1 | 0,5 | 6 | 0,8 | 4 | 0,95 | 45 | 7,67 | 6,19 | 6,39 | 6,6 | 6,83 | 7,08 | 7,35 | 2 |
| EP48165022 | 1 | 0,5 | 8 | 0,8 | 4 | 0,95 | 45 | 6,52 | 8,26 | 8,53 | 8,82 | 9,13 | 9,47 | 9,83 | 2 |
| EP48165023 | 1 | 0,5 | 10 | 0,8 | 4 | 0,95 | 45 | 5,66 | 10,33 | 10,67 | 11,04 | 11,43 | 11,86 | 12,32 | 2 |
| EP48165024 | 1 | 0,5 | 12 | 0,8 | 4 | 0,95 | 45 | 5,01 | 12,39 | 12,81 | 13,25 | 13,73 | 14,25 | 14,81 | 2 |
| EP48165025 | 1,5 | 0,75 | 4 | 1,2 | 4 | 1,45 | 45 | 8,8 | 4,18 | 4,33 | 4,46 | 4,6 | 4,75 | 4,92 | 2 |
| EP48165026 | 1,5 | 0,75 | 8 | 1,2 | 4 | 1,45 | 45 | 5,92 | 8,34 | 8,61 | 8,9 | 9,2 | 9,53 | 9,89 | 2 |
| EP48165027 | 2 | 1 | 6 | 1,6 | 4 | 1,95 | 45 | 6,19 | 6,36 | 6,67 | 6,96 | 7,23 | 7,49 | 7,76 | 2 |
| EP48165028 | 2 | 1 | 8 | 1,6 | 4 | 1,95 | 45 | 5,1 | 8,48 | 8,87 | 9,22 | 9,55 | 9,88 | 10,24 | 2 |
| EP48165029 | 2 | 1 | 10 | 1,6 | 4 | 1,95 | 45 | 4,33 | 10,59 | 11,05 | 11,45 | 11,85 | 12,27 | 12,73 | 2 |
| EP48165030 | 2 | 1 | 12 | 1,6 | 4 | 1,95 | 45 | 3,77 | 12,69 | 13,21 | 13,67 | 14,15 | 14,66 | 15,22 | 2 |
| EP48165031 | 2 | 1 | 14 | 1,6 | 4 | 1,95 | 50 | 3,33 | 14,78 | 15,36 | 15,89 | 16,45 | 17,05 | 17,7 | 2 |
| EP48165032 | 2 | 1 | 16 | 1,6 | 4 | 1,95 | 50 | 2,98 | 16,88 | 17,51 | 18,1 | 18,75 | 19,44 | - | 2 |
| EP48165033 | 2 | 1 | 20 | 1,6 | 4 | 1,95 | 55 | 2,47 | 21,05 | 21,78 | 22,54 | 23,34 | - | - | 2 |
| EP48165034 | 2 | 1 | 25 | 1,6 | 4 | 1,95 | 65 | 2,03 | 26,24 | 27,13 | 28,08 | 29,09 | - | - | 2 |
| EP48165035 | 3 | 1,5 | 8 | 2,4 | 6 | 2,85 | 50 | 6,88 | 8,35 | 8,67 | 8,97 | 9,25 | 9,55 | 9,88 | 2 |
| EP48165036 | 3 | 1,5 | 10 | 2,4 | 6 | 2,85 | 50 | 5,94 | 10,44 | 10,83 | 11,19 | 11,55 | 11,94 | 12,37 | 2 |
| EP48165037 | 3 | 1,5 | 16 | 2,4 | 6 | 2,85 | 55 | 4,21 | 16,7 | 17,26 | 17,84 | 18,45 | 19,11 | 19,83 | 2 |
| EP48165038 | 3 | 1,5 | 20 | 2,4 | 6 | 2,85 | 60 | 3,52 | 20,86 | 21,54 | 22,27 | 23,05 | 23,89 | 24,8 | 2 |

# EPL-LN-EBD

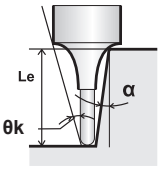


**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, ball nose




P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | TiAlN | 30° | SHRINK FIT | R ± 0.005

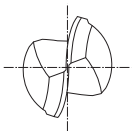
C.1030

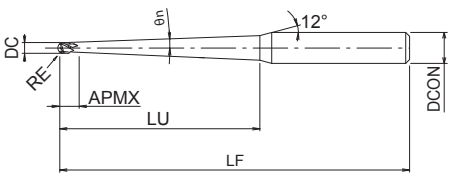
| EDP | DC | RE | LU | APMX | DCON | DN | LF | θk | Le(α=0,5°) | Le(α=1°) | Le(α=1,5°) | Le(α=2°) | Le(α=2,5°) | Le(α=3°) | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EP48165039 | 4 | 2 | 10 | 3,2 | 6 | 3,85 | 60 | 4,74 | 10,42 | 10,79 | 11,13 | 11,48 | 11,85 | 12,25 | 2 |
| EP48165040 | 4 | 2 | 16 | 3,2 | 6 | 3,85 | 60 | 3,18 | 16,68 | 17,23 | 17,78 | 18,38 | 19,02 | 19,71 | 2 |
| EP48165041 | 4 | 2 | 20 | 3,2 | 6 | 3,85 | 65 | 2,6 | 20,84 | 21,51 | 22,22 | 22,98 | 23,8 | - | 2 |
| EP48165042 | 4 | 2 | 25 | 3,2 | 6 | 3,85 | 70 | 2,12 | 26,02 | 26,86 | 27,76 | 28,72 | - | - | 2 |
| EP48165043 | 4 | 2 | 30 | 3,2 | 6 | 3,85 | 80 | 1,79 | 31,19 | 32,21 | 33,3 | - | - | - | 2 |
| EP48165044 | 6 | 3 | 10 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 2 |
| EP48165045 | 6 | 3 | 12 | 6 | 6 | 5,85 | 60 | - | - | - | - | - | - | - | 2 |
| EP48165046 | 6 | 3 | 20 | 6 | 6 | 5,85 | 70 | - | - | - | - | - | - | - | 2 |
| EP48165047 | 6 | 3 | 30 | 6 | 6 | 5,85 | 80 | - | - | - | - | - | - | - | 2 |

# EPL-PC-EBD

INDEX

**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, pencil neck, ball nose

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

Plus line | CARBIDE | TiAlN

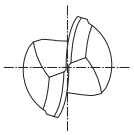
C.1032

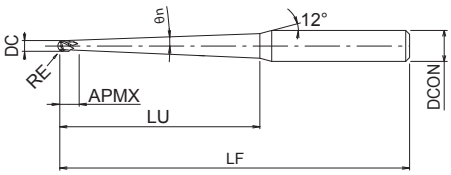
| EDP | DC | RE | θn | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W0900958 | 1 | 0,5 | 0,9 | 10 | 3 | 6 | 55 | 2 |
| W0900959 | 1 | 0,5 | 0,9 | 15 | 3 | 6 | 60 | 2 |
| W0900960 | 1 | 0,5 | 0,9 | 20 | 3 | 6 | 65 | 2 |
| W0900962 | 1,5 | 0,75 | 0,9 | 20 | 4 | 6 | 65 | 2 |
| W0900988 | 1,5 | 0,75 | 1,4 | 20 | 4 | 6 | 65 | 2 |
| W0900963 | 1,5 | 0,75 | 0,9 | 30 | 4 | 6 | 70 | 2 |
| W0900964 | 2 | 1 | 0,9 | 20 | 6 | 6 | 65 | 2 |
| W0900989 | 2 | 1 | 1,4 | 20 | 6 | 6 | 65 | 2 |
| W0900965 | 2 | 1 | 0,9 | 30 | 6 | 6 | 70 | 2 |
| W0900990 | 2 | 1 | 1,4 | 30 | 6 | 6 | 70 | 2 |
| W0900991 | 2 | 1 | 1,4 | 40 | 6 | 6 | 80 | 2 |
| W0900967 | 3 | 1,5 | 0,9 | 20 | 8 | 6 | 65 | 2 |
| W0900992 | 3 | 1,5 | 1,4 | 20 | 8 | 6 | 65 | 2 |
| W0900968 | 3 | 1,5 | 0,9 | 30 | 8 | 6 | 70 | 2 |
| W0900993 | 3 | 1,5 | 1,4 | 30 | 8 | 6 | 70 | 2 |
| W0900969 | 3 | 1,5 | 0,9 | 40 | 8 | 6 | 80 | 2 |
| W0900994 | 3 | 1,5 | 1,4 | 40 | 8 | 6 | 80 | 2 |
| W0900971 | 4 | 2 | 0,9 | 30 | 10 | 8 | 90 | 2 |
| W0900972 | 4 | 2 | 0,9 | 40 | 10 | 8 | 100 | 2 |
| W0900995 | 4 | 2 | 1,4 | 40 | 10 | 8 | 100 | 2 |
| W0900973 | 4 | 2 | 0,9 | 50 | 10 | 8 | 120 | 2 |
| W0900996 | 4 | 2 | 1,4 | 50 | 10 | 8 | 120 | 2 |
| W0900974 | 4 | 2 | 0,9 | 60 | 10 | 8 | 120 | 2 |
| W0900997 | 4 | 2 | 1,4 | 60 | 10 | 8 | 120 | 2 |
| W0900975 | 4 | 2 | 0,9 | 70 | 10 | 8 | 130 | 2 |
| W0900978 | 6 | 3 | 0,9 | 50 | 12 | 10 | 120 | 2 |
| W0900979 | 6 | 3 | 0,9 | 60 | 12 | 10 | 120 | 2 |
| W0900998 | 6 | 3 | 1,4 | 60 | 12 | 10 | 120 | 2 |
| W0900980 | 6 | 3 | 0,9 | 70 | 12 | 10 | 130 | 2 |
| W0900981 | 6 | 3 | 0,9 | 80 | 12 | 10 | 130 | 2 |
| W0900984 | 8 | 4 | 0,9 | 60 | 20 | 10 | 150 | 2 |
| W0900999 | 8 | 4 | 1,4 | 60 | 20 | 12 | 150 | 2 |
| W0900985 | 8 | 4 | 0,9 | 80 | 20 | 10 | 150 | 2 |
| W0901000 | 8 | 4 | 1,4 | 80 | 20 | 12 | 150 | 2 |

# EPL-PC-EBD-DIA

INDEX

**Milling | Solid carbide**






- Carbide end mill with diamond coating
- For graphite milling
- 2 flutes, pencil neck, ball nose

GRAPHITE

Plus line | CARBIDE | DIA

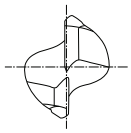
C.1031

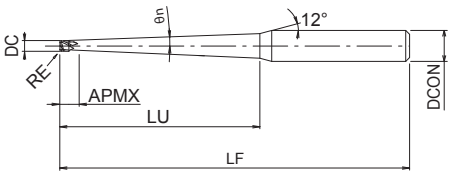
| EDP | DC | RE | θn | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W0900961 | 1 | 0,5 | 0,9 | 35 | 3 | 6 | 80 | 2 |
| W0900966 | 2 | 1 | 0,9 | 50 | 6 | 6 | 90 | 2 |
| W0900970 | 3 | 1,5 | 0,9 | 60 | 8 | 6 | 100 | 2 |
| W0900976 | 4 | 2 | 0,9 | 80 | 10 | 8 | 130 | 2 |
| W0900977 | 4 | 2 | 0,9 | 110 | 10 | 8 | 160 | 2 |
| W0900982 | 6 | 3 | 0,9 | 100 | 12 | 10 | 160 | 2 |
| W0900983 | 6 | 3 | 0,9 | 150 | 12 | 12 | 220 | 2 |
| W0900986 | 8 | 4 | 0,9 | 100 | 20 | 12 | 170 | 2 |
| W0900987 | 8 | 4 | 0,9 | 150 | 20 | 12 | 220 | 2 |

# EPL-CPR



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN

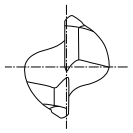
C.1033

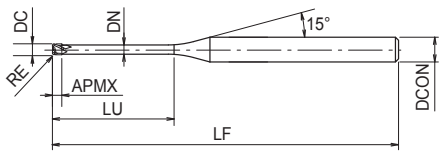
| EDP | DC | RE | θn | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W0901001 | 2 | 0,5 | 0,9 | 20 | 6 | 6 | 65 | 2 |
| W0901002 | 2 | 0,5 | 0,9 | 30 | 6 | 6 | 70 | 2 |
| W0901003 | 3 | 0,5 | 0,9 | 20 | 8 | 6 | 65 | 2 |
| W0901034 | 3 | 0,5 | 1,4 | 20 | 8 | 6 | 65 | 2 |
| W0901004 | 3 | 0,5 | 0,9 | 30 | 8 | 6 | 70 | 2 |
| W0901035 | 3 | 0,5 | 1,4 | 30 | 8 | 6 | 70 | 2 |
| W0901005 | 3 | 0,5 | 0,9 | 40 | 8 | 6 | 80 | 2 |
| W0901006 | 3 | 1 | 0,9 | 20 | 8 | 6 | 65 | 2 |
| W0901036 | 3 | 1 | 1,4 | 20 | 8 | 6 | 65 | 2 |
| W0901007 | 3 | 1 | 0,9 | 30 | 8 | 6 | 70 | 2 |
| W0901037 | 3 | 1 | 1,4 | 30 | 8 | 6 | 70 | 2 |
| W0901008 | 3 | 1 | 0,9 | 40 | 8 | 6 | 80 | 2 |
| W0901038 | 3 | 1 | 1,4 | 40 | 8 | 6 | 80 | 2 |
| W0901009 | 4 | 0,5 | 0,9 | 30 | 10 | 8 | 90 | 2 |
| W0901039 | 4 | 0,5 | 1,4 | 30 | 10 | 8 | 100 | 2 |
| W0901010 | 4 | 0,5 | 0,9 | 40 | 10 | 8 | 100 | 2 |
| W0901040 | 4 | 0,5 | 1,4 | 40 | 10 | 8 | 100 | 2 |
| W0901011 | 4 | 0,5 | 0,9 | 50 | 10 | 8 | 120 | 2 |
| W0901012 | 4 | 1 | 0,9 | 30 | 10 | 8 | 90 | 2 |
| W0901041 | 4 | 1 | 1,4 | 30 | 10 | 8 | 100 | 2 |
| W0901013 | 4 | 1 | 0,9 | 40 | 10 | 8 | 100 | 2 |
| W0901042 | 4 | 1 | 1,4 | 40 | 10 | 8 | 100 | 2 |
| W0901014 | 4 | 1 | 0,9 | 50 | 10 | 8 | 120 | 2 |
| W0901015 | 4 | 1 | 0,9 | 60 | 10 | 8 | 120 | 2 |
| W0901018 | 6 | 0,5 | 0,9 | 50 | 12 | 10 | 120 | 2 |
| W0901019 | 6 | 0,5 | 0,9 | 60 | 12 | 10 | 120 | 2 |
| W0901020 | 6 | 0,5 | 0,9 | 70 | 12 | 10 | 130 | 2 |
| W0901021 | 6 | 1 | 0,9 | 50 | 12 | 10 | 120 | 2 |
| W0901022 | 6 | 1 | 0,9 | 60 | 12 | 10 | 120 | 2 |
| W0901023 | 6 | 1 | 0,9 | 70 | 12 | 10 | 130 | 2 |
| W0901024 | 6 | 1 | 0,9 | 80 | 12 | 10 | 130 | 2 |
| W0901027 | 8 | 0,5 | 0,9 | 60 | 20 | 10 | 150 | 2 |
| W0901028 | 8 | 0,5 | 0,9 | 80 | 20 | 10 | 150 | 2 |
| W0901029 | 8 | 1 | 0,9 | 60 | 20 | 10 | 150 | 2 |
| W0901030 | 8 | 1 | 0,9 | 80 | 20 | 10 | 150 | 2 |
| W0901033 | 8 | 2 | 0,9 | 80 | 20 | 10 | 150 | 2 |

# EPL-CPR



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN

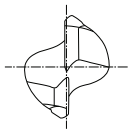
C.1033

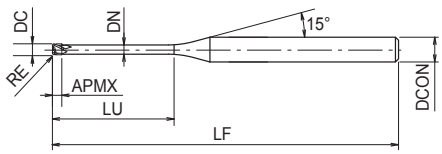
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP48166001 | 1 | 0,1 | 4 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166002 | 1 | 0,1 | 6 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166003 | 1 | 0,1 | 8 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166004 | 1 | 0,2 | 4 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166005 | 1 | 0,2 | 6 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166006 | 1 | 0,2 | 8 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166007 | 1 | 0,2 | 10 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166008 | 1 | 0,3 | 4 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166009 | 1 | 0,3 | 6 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166010 | 1 | 0,3 | 8 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166011 | 1 | 0,3 | 10 | 0,8 | 4 | 0,95 | 50 | 2 |
| EP48166012 | 2 | 0,2 | 6 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166013 | 2 | 0,2 | 8 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166014 | 2 | 0,2 | 10 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166015 | 2 | 0,2 | 12 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166016 | 2 | 0,2 | 16 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166017 | 2 | 0,5 | 6 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166018 | 2 | 0,5 | 8 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166019 | 2 | 0,5 | 10 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166020 | 2 | 0,5 | 12 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166021 | 2 | 0,5 | 16 | 1,6 | 4 | 1,95 | 50 | 2 |
| EP48166022 | 3 | 0,2 | 6 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166023 | 3 | 0,2 | 8 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166024 | 3 | 0,2 | 10 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166025 | 3 | 0,2 | 12 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166026 | 3 | 0,2 | 16 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166027 | 3 | 0,5 | 6 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166028 | 3 | 0,5 | 8 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166029 | 3 | 0,5 | 10 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166030 | 3 | 0,5 | 12 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166031 | 3 | 0,5 | 16 | 2,5 | 6 | 2,85 | 60 | 2 |
| EP48166032 | 4 | 0,5 | 12 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166033 | 4 | 0,5 | 16 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166034 | 4 | 0,5 | 20 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166035 | 4 | 1 | 10 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166036 | 4 | 1 | 12 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166037 | 4 | 1 | 16 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166038 | 4 | 1 | 20 | 4 | 6 | 3,85 | 60 | 4 |
| EP48166039 | 6 | 0,5 | 12 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166040 | 6 | 0,5 | 16 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166041 | 6 | 0,5 | 20 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166042 | 6 | 0,5 | 25 | 6 | 6 | 5,85 | 70 | 4 |

# EPL-CPR



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, long neck, corner radius

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | S | H ~60 HRC | H ~65 HRC

Plus line | CARBIDE | TiAlN

C.1033

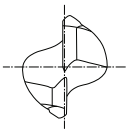
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| EP48166043 | 6 | 1 | 12 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166044 | 6 | 1 | 16 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166045 | 6 | 1 | 20 | 6 | 6 | 5,85 | 70 | 4 |
| EP48166046 | 6 | 1 | 25 | 6 | 6 | 5,85 | 70 | 4 |

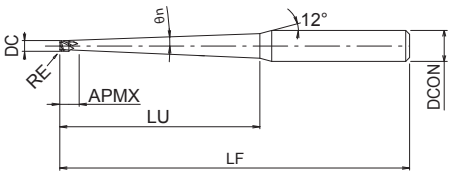
# EPL-CPR-DIA



Milling | Solid carbide

**WHILE STOCK LASTS**






- Carbide end mill with diamond coating
- For graphite milling
- 2 flutes, long neck, corner radius

GRAPHITE

Plus line | CARBIDE | DIA

C.1033

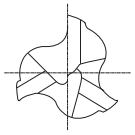
| EDP | DC | RE | θn | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| W0901016 | 4 | 1 | 0,9 | 80 | 10 | 8 | 130 | 2 |
| W0901017 | 4 | 1 | 0,9 | 110 | 10 | 8 | 160 | 2 |
| W0901025 | 6 | 1 | 0,9 | 100 | 12 | 10 | 160 | 2 |
| W0901026 | 6 | 1 | 0,9 | 150 | 12 | 12 | 220 | 2 |
| W0901031 | 8 | 1 | 0,9 | 100 | 20 | 12 | 170 | 2 |
| W0901032 | 8 | 1 | 0,9 | 150 | 20 | 12 | 220 | 2 |

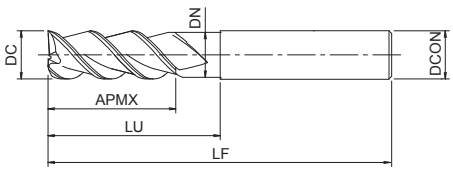
# EPA-AL-3FL



**Milling | Solid carbide**

**WHILE STOCK LASTS**






- Carbide end mill with ALC coating
- For aluminium and copper alloys
- 3 flutes, long length of cut

N

Plus line | CARBIDE | ALC | 40° | h6 | D=3 -0,004 ÷0,006 | 6≥D>3 -0,006 ÷0,006 | 10≥D≥8 -0,007 ÷0,006 | 16≥D≥12 -0,009 ÷0,006 | D≥20 -0,011 ÷0,006 | 45°

C.1035

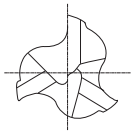
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | CHW |
|---|---|---|---|---|---|---|---|---|
| EP020003 | 3 | 12 | 9 | 6 | 2,9 | 57 | 3 | 0,05 |
| EP020004 | 4 | 16 | 11 | 6 | 3,8 | 57 | 3 | 0,05 |
| EP020005 | 5 | 18 | 13 | 6 | 4,8 | 57 | 3 | 0,10 |
| EP020006 | 6 | 20 | 13 | 6 | 5,8 | 57 | 3 | 0,10 |
| EP020008 | 8 | 25 | 19 | 8 | 7,8 | 63 | 3 | 0,10 |
| EP020010 | 10 | 32 | 22 | 10 | 9,8 | 72 | 3 | 0,10 |
| EP020012 | 12 | 38 | 26 | 12 | 11,8 | 83 | 3 | 0,20 |
| EP020016 | 16 | 50 | 32 | 16 | 15,8 | 92 | 3 | 0,20 |
| EP020020 | 20 | 62 | 38 | 20 | 19,8 | 104 | 3 | 0,20 |

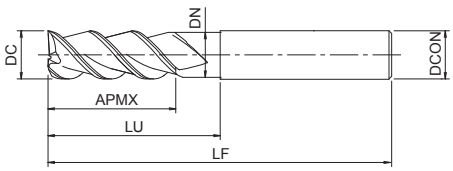
# EPA-AL-3FS



Milling | Solid carbide

**WHILE STOCK LASTS**






- Carbide end mill with ALC coating
- For aluminium and copper alloys
- 3 flutes, short length of cut

N

Plus line | CARBIDE | ALC | 40° | h6 | D=3 -0,004~-0,006 | 6≥D>3 -0,006~-0,006 | 10≥D≥8 -0,007~-0,006 | 16≥D≥12 -0,009~-0,006 | D≥20 -0,011~-0,006 | 45° | C.1035

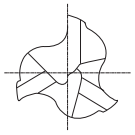
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | CHW |
|---|---|---|---|---|---|---|---|---|
| EP019903 | 3 | 7 | 4 | 6 | 2,8 | 50 | 3 | 0,05 |
| EP019904 | 4 | 8 | 5 | 6 | 3,8 | 54 | 3 | 0,05 |
| EP019905 | 5 | 9 | 6 | 6 | 4,8 | 54 | 3 | 0,10 |
| EP019906 | 6 | 15 | 7 | 6 | 5,8 | 54 | 3 | 0,10 |
| EP019908 | 8 | 17 | 9 | 8 | 7,8 | 55 | 3 | 0,10 |
| EP019910 | 10 | 20 | 11 | 10 | 9,8 | 60 | 3 | 0,10 |
| EP019912 | 12 | 24 | 12 | 12 | 11,8 | 70 | 3 | 0,20 |
| EP019916 | 16 | 28 | 16 | 16 | 15,8 | 80 | 3 | 0,20 |
| EP019920 | 20 | 32 | 20 | 20 | 19,8 | 82 | 3 | 0,20 |

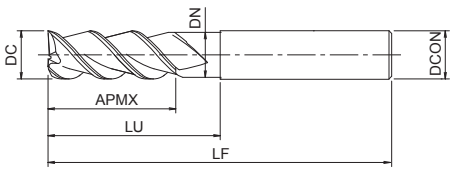
# EPN-AL-3FL



**Milling | Solid carbide**

**WHILE STOCK LASTS**






- Carbide end mill, bright finish
- For aluminium and copper alloys
- 3 flutes, long length of cut

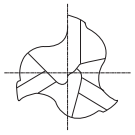
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | CHW |
|---|---|---|---|---|---|---|---|---|
| EP019803 | 3 | 12 | 9 | 6 | 2,9 | 57 | 3 | 0,05 |
| EP019804 | 4 | 16 | 11 | 6 | 3,8 | 57 | 3 | 0,05 |
| EP019805 | 5 | 18 | 13 | 6 | 4,8 | 57 | 3 | 0,10 |
| EP019806 | 6 | 20 | 13 | 6 | 5,8 | 57 | 3 | 0,10 |
| EP019808 | 8 | 25 | 19 | 8 | 7,8 | 63 | 3 | 0,10 |
| EP019810 | 10 | 32 | 22 | 10 | 9,8 | 72 | 3 | 0,10 |
| EP019812 | 12 | 38 | 26 | 12 | 11,8 | 83 | 3 | 0,20 |
| EP019816 | 16 | 50 | 32 | 16 | 15,8 | 92 | 3 | 0,20 |
| EP019820 | 20 | 62 | 38 | 20 | 19,8 | 104 | 3 | 0,20 |

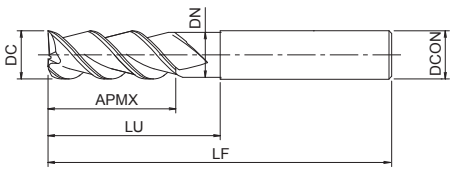
# EPN-AL-3FS



**Milling | Solid carbide**

**WHILE STOCK LASTS**






- Carbide end mill, bright finish
- For aluminium and copper alloys
- 3 flutes, short length of cut

N

Plus line | CARBIDE | 40° | h6 | h6 | 45°

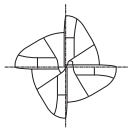
C.1035

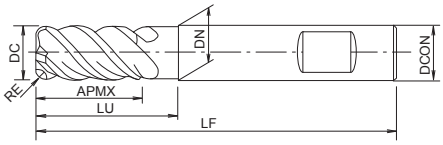
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | CHW |
|---|---|---|---|---|---|---|---|---|
| EP019703 | 3 | 7 | 4 | 6 | 2,8 | 50 | 3 | 0,05 |
| EP019704 | 4 | 8 | 5 | 6 | 3,8 | 54 | 3 | 0,05 |
| EP019705 | 5 | 9 | 6 | 6 | 4,8 | 54 | 3 | 0,10 |
| EP019706 | 6 | 15 | 7 | 6 | 5,8 | 54 | 3 | 0,10 |
| EP019708 | 8 | 17 | 9 | 8 | 7,8 | 55 | 3 | 0,10 |
| EP019710 | 10 | 20 | 11 | 10 | 9,8 | 60 | 3 | 0,10 |
| EP019712 | 12 | 24 | 12 | 12 | 11,8 | 70 | 3 | 0,20 |
| EP019716 | 16 | 28 | 16 | 16 | 15,8 | 80 | 3 | 0,20 |
| EP019720 | 20 | 32 | 20 | 20 | 19,8 | 82 | 3 | 0,20 |

# HYP-CR-HI-WEMS



**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing, corner radius
- Weldon shank

P ~45 HRC | P ~55 HRC | M ~35 HRC | K ~350 HB | N | S | H ~60 HRC

HYPRO | CARBIDE | TiAlN | 35°~38° | HB

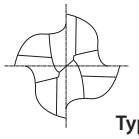
C.1036

| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 4832004011 | 4 | 0,5 | - | 11 | 6 | - | 57 | 4 |
| 4832005011 | 5 | 0,5 | - | 13 | 6 | - | 57 | 4 |
| 4832006011 | 6 | 0,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| 4832006012 | 6 | 1 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| 4832006013 | 6 | 1,5 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| 4832006014 | 6 | 2 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| 4832008011 | 8 | 0,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| 4832008012 | 8 | 1 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| 4832008013 | 8 | 1,5 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| 4832008014 | 8 | 2 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| 4832010011 | 10 | 0,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4832010012 | 10 | 1 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4832010013 | 10 | 1,5 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4832010014 | 10 | 2 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4832010016 | 10 | 3 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4832012011 | 12 | 0,5 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4832012012 | 12 | 1 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4832012013 | 12 | 1,5 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4832012014 | 12 | 2 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4832012016 | 12 | 3 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4832016011 | 16 | 0,5 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4832016012 | 16 | 1 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4832016014 | 16 | 2 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4832016016 | 16 | 3 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4832016018 | 16 | 4 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4832020012 | 20 | 1 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| 4832020014 | 20 | 2 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| 4832020016 | 20 | 3 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| 4832020018 | 20 | 4 | 54 | 38 | 20 | 19,8 | 104 | 4 |
| 4832020020 | 20 | 5 | 54 | 38 | 20 | 19,8 | 104 | 4 |

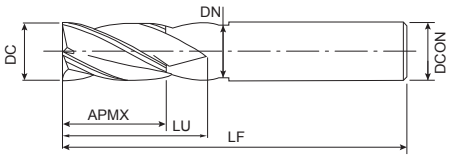
# HYP-HI-(W)EMS



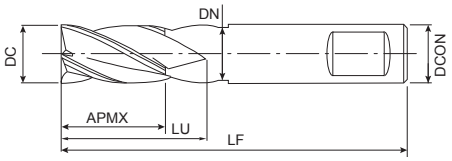
**Milling | Solid carbide**



**Type 1**




**Type 2**




- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing
- Also with Weldon shank

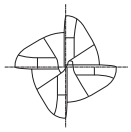
C.1036

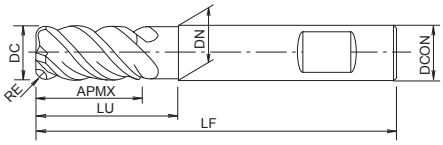
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 48320040 | 4 | - | 11 | 6 | - | 57 | 4 | 1 |
| 483200401 | 4 | - | 11 | 6 | - | 57 | 4 | 2 |
| 48320050 | 5 | - | 13 | 6 | - | 57 | 4 | 1 |
| 483200501 | 5 | - | 13 | 6 | - | 57 | 4 | 2 |
| 48320060 | 6 | 20 | 13 | 6 | 5,8 | 57 | 4 | 1 |
| 483200601 | 6 | 20 | 13 | 6 | 5,8 | 57 | 4 | 2 |
| 48320080 | 8 | 25 | 19 | 8 | 7,8 | 63 | 4 | 1 |
| 483200801 | 8 | 25 | 19 | 8 | 7,8 | 63 | 4 | 2 |
| 48320100 | 10 | 30 | 22 | 10 | 9,8 | 72 | 4 | 1 |
| 483201001 | 10 | 30 | 22 | 10 | 9,8 | 72 | 4 | 2 |
| 48320120 | 12 | 38 | 26 | 12 | 11,8 | 83 | 4 | 1 |
| 483201201 | 12 | 38 | 26 | 12 | 11,8 | 83 | 4 | 2 |
| 48320160 | 16 | 45 | 32 | 16 | 15,8 | 92 | 4 | 1 |
| 483201601 | 16 | 45 | 32 | 16 | 15,8 | 92 | 4 | 2 |
| 483202001 | 20 | 54 | 38 | 20 | 19,8 | 104 | 4 | 2 |
| 48320200 | 20 | 54 | 38 | 20 | 19,8 | 104 | 4 | 1 |

# HYP-CR-HD-WEMS

INDEX

**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- 4 flutes, variable helix and unequal spacing, corner radius
- Weldon shank

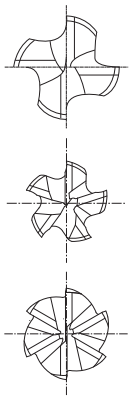
C.1036

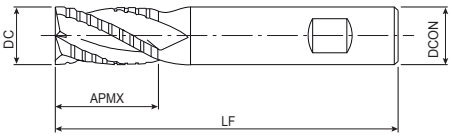
| EDP | DC | RE | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|---|
| 4833006010 | 6 | 0,25 | 20 | 13 | 6 | 5,8 | 57 | 4 |
| 4833008010 | 8 | 0,25 | 25 | 19 | 8 | 7,8 | 63 | 4 |
| 4833010010 | 10 | 0,25 | 30 | 22 | 10 | 9,8 | 72 | 4 |
| 4833012010 | 12 | 0,25 | 38 | 26 | 12 | 11,8 | 83 | 4 |
| 4833016010 | 16 | 0,25 | 44 | 32 | 16 | 15,8 | 92 | 4 |
| 4833020010 | 20 | 0,25 | 54 | 38 | 20 | 19,8 | 104 | 4 |

# HYP-HP-WRESF

**Milling | Solid carbide**

INDEX






- Carbide end mill with TiAlN coating
- For general applications
- Multi flute, for roughing
- Weldon shank

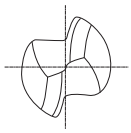
C.1037

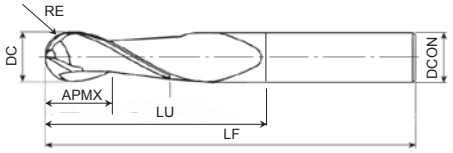
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 48624060 | 6 | 19 | 6 | 64 | 4 |
| 48624080 | 8 | 21 | 8 | 64 | 4 |
| 48624100 | 10 | 22 | 10 | 70 | 4 |
| 48624120 | 12 | 25 | 12 | 76 | 4 |
| 48625160 | 16 | 32 | 16 | 89 | 5 |
| 48626200 | 20 | 38 | 20 | 102 | 6 |
| 48626250 | 25 | 38 | 25 | 102 | 6 |

# HYP-SB-EBD

INDEX

**Milling | Solid carbide**





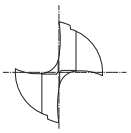

- Carbide end mill with TiAlN coating
- For general applications
- 2 flutes, ball nose

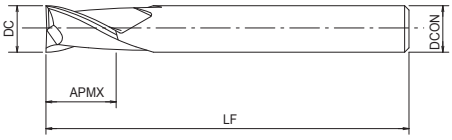
| EDP | DC | RE | LU | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| 48350030 | 3 | 1,5 | 9 | 4 | 6 | 57 | 2 |
| 48350040 | 4 | 2 | 12 | 5 | 6 | 57 | 2 |
| 48350050 | 5 | 2,5 | 15 | 6 | 6 | 57 | 2 |
| 48350060 | 6 | 3 | 18 | 7 | 6 | 57 | 2 |
| 48350080 | 8 | 4 | 20 | 9 | 8 | 63 | 2 |
| 48350100 | 10 | 5 | 25 | 11 | 10 | 72 | 2 |
| 48351200 | 12 | 6 | 25 | 13 | 12 | 83 | 2 |

# HYP-ZDS

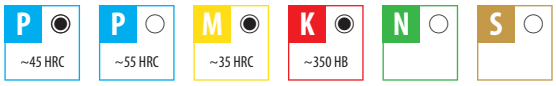
INDEX

**Milling | Solid carbide**






- Carbide end mill with TiAlN coating
- For general applications
- For counterboring

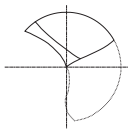


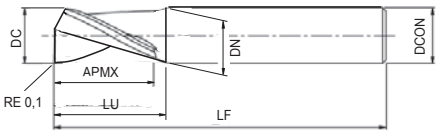
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 48370040 | 4 | 11 | 6 | 50 | 2 |
| 48370050 | 5 | 13 | 6 | 60 | 2 |
| 48370060 | 6 | 13 | 6 | 60 | 2 |
| 48370070 | 7 | 16 | 8 | 70 | 2 |
| 48370080 | 8 | 19 | 8 | 70 | 2 |
| 48370090 | 9 | 19 | 10 | 80 | 2 |
| 48370100 | 10 | 22 | 10 | 80 | 2 |

# HYP-F1



**Milling | Solid carbide**






- Carbide end mill, bright finish
- For aluminium milling
- 1 flute

N

HYPRO CARBIDE 15°

C.1038

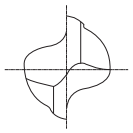
| EDP | DC | LU | APMX | DCON | DN | LF | ZEFP |
|---|---|---|---|---|---|---|---|
| 48360030 | 3 | 5 | 4 | 6 | - | 40 | 1 |
| 48360040 | 4 | 6 | 5 | 6 | - | 50 | 1 |
| 48360050 | 5 | 8 | 7 | 6 | - | 50 | 1 |
| 48360060 | 6 | 15 | 8 | 6 | 5,4 | 50 | 1 |
| 48360080 | 8 | 20 | 11 | 8 | 7 | 60 | 1 |
| 48360100 | 10 | 25 | 13 | 10 | 9 | 70 | 1 |
| 48360120 | 12 | 30 | 15 | 12 | 11 | 70 | 1 |

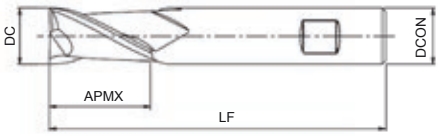
# V-XPM-WEDS



**Milling | Powder metal**

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- 2 flutes square
- Short length of cut
- Weldon shank

XPM | V | 32° | DIN 327 | HB

C.1041

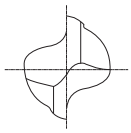
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 99025901 | 2 | 4 | 6 | 48 | 2 |
| 99025902 | 2,5 | 5 | 6 | 49 | 2 |
| 99025903 | 3 | 5 | 6 | 49 | 2 |
| 99025904 | 3,5 | 6 | 6 | 50 | 2 |
| 99025906 | 4 | 7 | 6 | 51 | 2 |
| 99025907 | 4,5 | 7 | 6 | 51 | 2 |
| 99025909 | 5 | 8 | 6 | 52 | 2 |
| 99025910 | 5,5 | 8 | 6 | 52 | 2 |
| 99025912 | 6 | 8 | 6 | 52 | 2 |
| 99025913 | 6,5 | 10 | 10 | 60 | 2 |
| 99025915 | 7 | 10 | 10 | 60 | 2 |
| 99025916 | 7,5 | 10 | 10 | 60 | 2 |
| 99025918 | 8 | 11 | 10 | 61 | 2 |
| 99025919 | 8,5 | 11 | 10 | 61 | 2 |
| 99025921 | 9 | 11 | 10 | 61 | 2 |
| 99025922 | 9,5 | 11 | 10 | 61 | 2 |
| 99025924 | 10 | 13 | 10 | 63 | 2 |
| 99025925 | 10,5 | 13 | 12 | 70 | 2 |
| 99025926 | 11 | 13 | 12 | 70 | 2 |
| 99025927 | 11,5 | 13 | 12 | 70 | 2 |
| 99025929 | 12 | 16 | 12 | 73 | 2 |
| 99025930 | 12,5 | 16 | 12 | 73 | 2 |
| 99025932 | 13 | 16 | 12 | 73 | 2 |
| 99025935 | 14 | 16 | 12 | 73 | 2 |
| 99025937 | 15 | 16 | 12 | 73 | 2 |
| 99025940 | 16 | 19 | 16 | 79 | 2 |
| 99025942 | 17 | 19 | 16 | 79 | 2 |
| 99025945 | 18 | 19 | 16 | 79 | 2 |
| 99025947 | 19 | 19 | 16 | 79 | 2 |
| 99025950 | 20 | 22 | 20 | 88 | 2 |
| 99025952 | 22 | 22 | 20 | 88 | 2 |
| 99025954 | 24 | 26 | 25 | 102 | 2 |
| 99025955 | 25 | 26 | 25 | 102 | 2 |
| 99025960 | 30 | 26 | 25 | 102 | 2 |

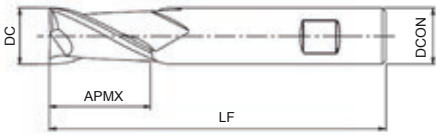
# V-WEDS



**Milling | HSS-Co**

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- 2 flutes square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 327 | HB

C.1041

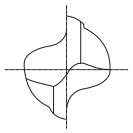
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2002801660 | 1 | 3 | 6 | 46 | 2 |
| 2002800010 | 1,5 | 3 | 6 | 47 | 2 |
| 2002801670 | 1,8 | 4 | 6 | 48 | 2 |
| 2001801180 | 2 | 4 | 6 | 48 | 2 |
| 2002800020 | 2,5 | 5 | 6 | 49 | 2 |
| 2003800030 | 2,8 | 5 | 6 | 49 | 2 |
| 2001801190 | 3 | 5 | 6 | 49 | 2 |
| 2002800030 | 3,5 | 6 | 6 | 50 | 2 |
| 2003800040 | 3,8 | 7 | 6 | 51 | 2 |
| 2001801200 | 4 | 7 | 6 | 51 | 2 |
| 2002800040 | 4,5 | 7 | 6 | 51 | 2 |
| 2002801240 | 4,8 | 8 | 6 | 52 | 2 |
| 2001801210 | 5 | 8 | 6 | 52 | 2 |
| 2002800050 | 5,5 | 8 | 6 | 52 | 2 |
| 2003800050 | 5,75 | 8 | 6 | 52 | 2 |
| 2001801220 | 6 | 8 | 6 | 52 | 2 |
| 2002800060 | 6,5 | 10 | 10 | 60 | 2 |
| 2003800060 | 6,75 | 10 | 10 | 60 | 2 |
| 2002800070 | 7 | 10 | 10 | 60 | 2 |
| 2002800080 | 7,5 | 10 | 10 | 60 | 2 |
| 2002802010 | 7,75 | 11 | 10 | 61 | 2 |
| 2001801230 | 8 | 11 | 10 | 61 | 2 |
| 2002800090 | 8,5 | 11 | 10 | 61 | 2 |
| 2003800070 | 8,7 | 11 | 10 | 61 | 2 |
| 2001801240 | 9 | 11 | 10 | 61 | 2 |
| 2003800080 | 9,5 | 11 | 10 | 61 | 2 |
| 2003800090 | 9,7 | 13 | 10 | 63 | 2 |
| 2001801250 | 10 | 13 | 10 | 63 | 2 |
| 2002800100 | 10,5 | 13 | 12 | 70 | 2 |
| 2002800110 | 11 | 13 | 12 | 70 | 2 |
| 2003800100 | 11,5 | 13 | 12 | 70 | 2 |
| 2003800110 | 11,7 | 16 | 12 | 73 | 2 |
| 2001801260 | 12 | 16 | 12 | 73 | 2 |
| 2002800120 | 12,5 | 16 | 12 | 73 | 2 |
| 2003800120 | 12,7 | 16 | 12 | 73 | 2 |
| 2002800130 | 13 | 16 | 12 | 73 | 2 |
| 2003800130 | 13,7 | 16 | 12 | 73 | 2 |
| 2001801270 | 14 | 16 | 12 | 73 | 2 |
| 2002800140 | 15 | 16 | 12 | 73 | 2 |
| 2003800140 | 15,7 | 19 | 16 | 79 | 2 |
| 2001801280 | 16 | 19 | 16 | 79 | 2 |
| 2002800150 | 17 | 19 | 16 | 79 | 2 |
| 2003800150 | 17,7 | 19 | 16 | 79 | 2 |
| 2001801290 | 18 | 19 | 16 | 79 | 2 |
| 2002800160 | 19 | 19 | 16 | 79 | 2 |
| 2003800160 | 19,7 | 22 | 20 | 88 | 2 |

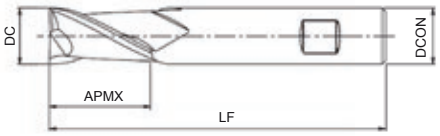
# V-WEDS



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- 2 flutes square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 327 | HB

C.1041

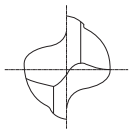
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2001801300 | 20 | 22 | 20 | 88 | 2 |
| 2002801250 | 21 | 22 | 20 | 88 | 2 |
| 2002800170 | 22 | 22 | 20 | 88 | 2 |
| 2003800170 | 23 | 22 | 20 | 88 | 2 |
| 2002800180 | 24 | 26 | 25 | 102 | 2 |
| 2002800190 | 25 | 26 | 25 | 102 | 2 |
| 2003800180 | 26 | 26 | 25 | 102 | 2 |
| 2002801850 | 27 | 26 | 25 | 102 | 2 |
| 2002800200 | 28 | 26 | 25 | 102 | 2 |
| 2002800210 | 30 | 26 | 25 | 102 | 2 |
| 2002802230 | 32 | 32 | 32 | 112 | 2 |
| 2002802170 | 35 | 32 | 32 | 112 | 2 |
| 2002802090 | 40 | 38 | 32 | 118 | 2 |

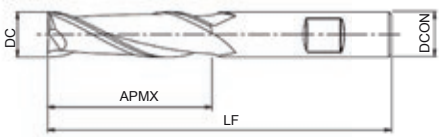
# V-XPM-WEDL

**Milling | Powder metal**



**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- 2 flutes square
- Long length of cut
- Weldon shank

XPM | V | 32° | DIN 844 | HB

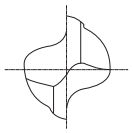
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 99125903 | 3 | 8 | 6 | 56 | 2 |
| 99125906 | 4 | 11 | 6 | 63 | 2 |
| 99125909 | 5 | 13 | 6 | 68 | 2 |
| 99125912 | 6 | 13 | 6 | 68 | 2 |
| 99125918 | 8 | 19 | 10 | 88 | 2 |
| 99125924 | 10 | 22 | 10 | 95 | 2 |
| 99125929 | 12 | 26 | 12 | 110 | 2 |
| 99125935 | 14 | 26 | 12 | 110 | 2 |
| 99125940 | 16 | 32 | 16 | 123 | 2 |
| 99125945 | 18 | 32 | 16 | 123 | 2 |
| 99125950 | 20 | 38 | 20 | 141 | 2 |
| 99125952 | 22 | 38 | 20 | 141 | 2 |
| 99125955 | 25 | 45 | 25 | 166 | 2 |
| 99125958 | 28 | 45 | 25 | 166 | 2 |
| 99125960 | 30 | 45 | 25 | 186 | 2 |

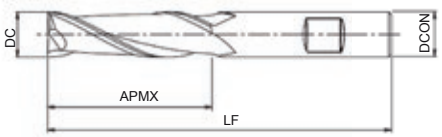
# V-WEDL



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- 2 flutes square
- Long length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

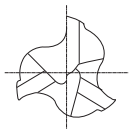
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2003804860 | 1,5 | 7 | 6 | 54 | 2 |
| 2002801680 | 2 | 7 | 6 | 54 | 2 |
| 2003800240 | 2,5 | 8 | 6 | 56 | 2 |
| 2003800250 | 3 | 8 | 6 | 56 | 2 |
| 2003800260 | 3,5 | 10 | 6 | 59 | 2 |
| 2002801360 | 4 | 11 | 6 | 63 | 2 |
| 2003800270 | 4,5 | 11 | 6 | 63 | 2 |
| 2002800590 | 5 | 13 | 6 | 68 | 2 |
| 2002801690 | 5,5 | 13 | 6 | 68 | 2 |
| 2002800600 | 6 | 13 | 6 | 68 | 2 |
| 2002801700 | 6,5 | 16 | 10 | 80 | 2 |
| 2002801710 | 7 | 16 | 10 | 80 | 2 |
| 2003800280 | 7,5 | 16 | 10 | 80 | 2 |
| 2002800610 | 8 | 19 | 10 | 88 | 2 |
| 2003800290 | 8,5 | 19 | 10 | 88 | 2 |
| 2002801720 | 9 | 19 | 10 | 88 | 2 |
| 2003800300 | 9,5 | 19 | 10 | 88 | 2 |
| 2002801730 | 10 | 22 | 10 | 95 | 2 |
| 2002801740 | 11 | 22 | 12 | 102 | 2 |
| 2002800620 | 12 | 26 | 12 | 110 | 2 |
| 2003800310 | 13 | 26 | 12 | 110 | 2 |
| 2002800630 | 14 | 26 | 12 | 110 | 2 |
| 2003800320 | 15 | 26 | 12 | 110 | 2 |
| 2002801970 | 16 | 32 | 16 | 123 | 2 |
| 2003800330 | 17 | 32 | 16 | 123 | 2 |
| 2003800340 | 18 | 32 | 16 | 123 | 2 |
| 2003800350 | 19 | 32 | 16 | 123 | 2 |
| 2002800640 | 20 | 38 | 20 | 141 | 2 |
| 2003800380 | 25 | 45 | 25 | 166 | 2 |
| 2003800400 | 28 | 45 | 25 | 166 | 2 |
| 2003800410 | 30 | 45 | 25 | 186 | 2 |

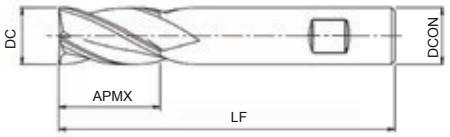
# V-XPM-WETS



**Milling | Powder metal**

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- 3 flutes square
- Short length of cut
- Weldon shank

XPM | V | 30° | DIN 327 | HB

C.1041

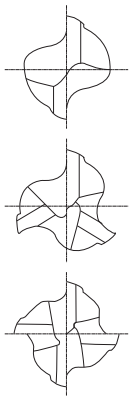
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 99425903 | 3 | 5 | 6 | 49 | 3 |
| 99425906 | 4 | 7 | 6 | 51 | 3 |
| 99425909 | 5 | 8 | 6 | 52 | 3 |
| 99425912 | 6 | 8 | 6 | 52 | 3 |
| 99425915 | 7 | 10 | 10 | 60 | 3 |
| 99425918 | 8 | 11 | 10 | 61 | 3 |
| 99425924 | 10 | 13 | 10 | 63 | 3 |
| 99425929 | 12 | 16 | 12 | 73 | 3 |
| 99425935 | 14 | 16 | 12 | 73 | 3 |
| 99425937 | 15 | 16 | 12 | 73 | 3 |
| 99425940 | 16 | 19 | 16 | 79 | 3 |
| 99425945 | 18 | 19 | 16 | 79 | 3 |
| 99425950 | 20 | 22 | 20 | 88 | 3 |
| 99425952 | 22 | 22 | 20 | 88 | 3 |
| 99425954 | 24 | 26 | 25 | 102 | 3 |
| 99425955 | 25 | 26 | 25 | 102 | 3 |
| 99425960 | 30 | 26 | 25 | 102 | 3 |

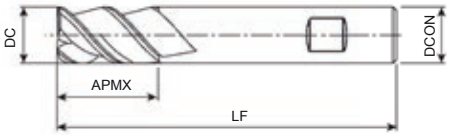
# V-XPM-WEHS



**Milling | Powder metal**

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Multi flute square with 50° helix
- Short length of cut
- Weldon shank

XPM | V | 50° | DIN 844 | HB

C.1045

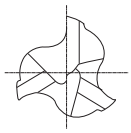
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 97125901 | 2 | 7 | 6 | 51 | 2 |
| 97125903 | 3 | 8 | 6 | 52 | 2 |
| 97125906 | 4 | 11 | 6 | 55 | 2 |
| 97125909 | 5 | 13 | 6 | 57 | 2 |
| 97125912 | 6 | 13 | 6 | 57 | 3 |
| 97125915 | 7 | 16 | 10 | 66 | 3 |
| 97125918 | 8 | 19 | 10 | 69 | 3 |
| 97125921 | 9 | 19 | 10 | 69 | 3 |
| 97125924 | 10 | 22 | 10 | 72 | 3 |
| 97125926 | 11 | 22 | 12 | 79 | 3 |
| 97125929 | 12 | 26 | 12 | 83 | 3 |
| 97125932 | 13 | 26 | 12 | 83 | 3 |
| 97125935 | 14 | 26 | 12 | 83 | 3 |
| 97125937 | 15 | 26 | 12 | 83 | 3 |
| 97125940 | 16 | 32 | 16 | 92 | 3 |
| 97125945 | 18 | 32 | 16 | 92 | 3 |
| 97125950 | 20 | 38 | 20 | 104 | 3 |
| 97125952 | 22 | 38 | 20 | 104 | 4 |
| 97125954 | 24 | 45 | 25 | 121 | 4 |
| 97125955 | 25 | 45 | 25 | 121 | 4 |
| 97125958 | 28 | 45 | 25 | 121 | 4 |
| 97125960 | 30 | 45 | 25 | 121 | 4 |

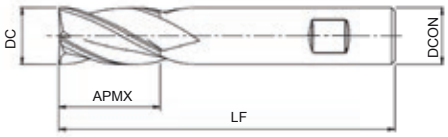
# V-WETS



Milling | HSS-Co

## WHILE STOCK LASTS






- HSS-Co end mill with TiCN coating
- 3 flutes square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 327 | HB

C.1041

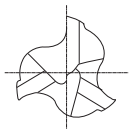
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2002800220 | 1,5 | 3 | 6 | 47 | 3 |
| 2002800230 | 2 | 4 | 6 | 48 | 3 |
| 2002800240 | 2,5 | 5 | 6 | 49 | 3 |
| 2001801480 | 3 | 5 | 6 | 49 | 3 |
| 2002801260 | 3,5 | 6 | 6 | 50 | 3 |
| 2001801490 | 4 | 7 | 6 | 51 | 3 |
| 2002801270 | 4,5 | 7 | 6 | 51 | 3 |
| 2001801500 | 5 | 8 | 6 | 52 | 3 |
| 2002800250 | 5,5 | 8 | 6 | 52 | 3 |
| 2001801510 | 6 | 8 | 6 | 52 | 3 |
| 2002800260 | 6,5 | 10 | 10 | 60 | 3 |
| 2001801520 | 7 | 10 | 10 | 60 | 3 |
| 2002800270 | 7,5 | 10 | 10 | 60 | 3 |
| 2001801530 | 8 | 11 | 10 | 61 | 3 |
| 2002801280 | 8,5 | 11 | 10 | 61 | 3 |
| 2002800280 | 9 | 11 | 10 | 61 | 3 |
| 2003800470 | 9,5 | 11 | 10 | 61 | 3 |
| 2001801540 | 10 | 13 | 10 | 63 | 3 |
| 2002800290 | 10,5 | 13 | 12 | 70 | 3 |
| 2002800300 | 11 | 13 | 12 | 70 | 3 |
| 2003800480 | 11,5 | 13 | 12 | 70 | 3 |
| 2001801550 | 12 | 16 | 12 | 73 | 3 |
| 2003800490 | 12,5 | 16 | 12 | 73 | 3 |
| 2002800310 | 13 | 16 | 12 | 73 | 3 |
| 2001801560 | 14 | 16 | 12 | 73 | 3 |
| 2002800320 | 15 | 16 | 12 | 73 | 3 |
| 2001801570 | 16 | 19 | 16 | 79 | 3 |
| 2002800330 | 17 | 19 | 16 | 79 | 3 |
| 2001801580 | 18 | 19 | 16 | 79 | 3 |
| 2003804870 | 19 | 19 | 16 | 79 | 3 |
| 2001801590 | 20 | 22 | 20 | 88 | 3 |
| 2003800510 | 21 | 22 | 20 | 88 | 3 |
| 2002801290 | 22 | 22 | 20 | 88 | 3 |
| 2003804850 | 23 | 22 | 20 | 88 | 3 |
| 2002801300 | 25 | 26 | 25 | 102 | 3 |
| 2003800540 | 26 | 26 | 25 | 102 | 3 |
| 2003800560 | 28 | 26 | 25 | 102 | 3 |
| 2002800340 | 30 | 26 | 25 | 102 | 3 |

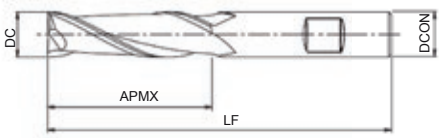
# V-XPM-WETL



Milling | Powder metal

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- 3 flutes square
- Long length of cut
- Weldon shank

XPM | V | 30° | DIN 844 | HB

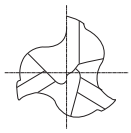
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 99625903 | 3 | 12 | 6 | 56 | 3 |
| 99625906 | 4 | 19 | 6 | 63 | 3 |
| 99625909 | 5 | 24 | 6 | 68 | 3 |
| 99625912 | 6 | 24 | 6 | 68 | 3 |
| 99625918 | 8 | 38 | 10 | 88 | 3 |
| 99625924 | 10 | 45 | 10 | 95 | 3 |
| 99625929 | 12 | 53 | 12 | 110 | 3 |
| 99625935 | 14 | 53 | 12 | 110 | 3 |
| 99625940 | 16 | 63 | 16 | 123 | 3 |
| 99625945 | 18 | 63 | 16 | 123 | 3 |
| 99625950 | 20 | 75 | 20 | 141 | 3 |
| 99625952 | 22 | 75 | 20 | 141 | 3 |
| 99625955 | 25 | 90 | 25 | 166 | 3 |
| 99625958 | 28 | 90 | 25 | 166 | 3 |
| 99625960 | 30 | 90 | 25 | 166 | 3 |

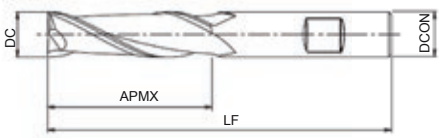
# V-WETL



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- 3 flutes square
- Long length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

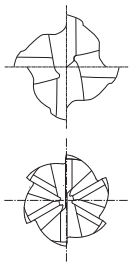
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2003800640 | 3 | 12 | 6 | 56 | 3 |
| 2003800650 | 3,5 | 15 | 6 | 59 | 3 |
| 2003800660 | 4 | 19 | 6 | 63 | 3 |
| 2003800670 | 4,5 | 19 | 6 | 63 | 3 |
| 2002802100 | 5 | 24 | 6 | 68 | 3 |
| 2003800680 | 5,5 | 24 | 6 | 68 | 3 |
| 2002801750 | 6 | 24 | 6 | 68 | 3 |
| 2003800690 | 6,5 | 30 | 10 | 80 | 3 |
| 2003800700 | 7 | 30 | 10 | 80 | 3 |
| 2003800710 | 7,5 | 38 | 10 | 80 | 3 |
| 2002801760 | 8 | 38 | 10 | 88 | 3 |
| 2002801770 | 9 | 38 | 10 | 88 | 3 |
| 2002800720 | 10 | 45 | 10 | 95 | 3 |
| 2002802110 | 11 | 45 | 12 | 102 | 3 |
| 2003800720 | 12 | 53 | 12 | 110 | 3 |
| 2002801550 | 13 | 53 | 12 | 110 | 3 |
| 2002801330 | 14 | 53 | 12 | 110 | 3 |
| 2003800730 | 15 | 53 | 12 | 110 | 3 |
| 2002801340 | 16 | 63 | 16 | 123 | 3 |
| 2003800740 | 17 | 63 | 16 | 123 | 3 |
| 2003800750 | 18 | 63 | 16 | 123 | 3 |
| 2003800760 | 19 | 63 | 16 | 123 | 3 |
| 2002801350 | 20 | 75 | 20 | 141 | 3 |
| 2002802050 | 30 | 90 | 25 | 166 | 3 |

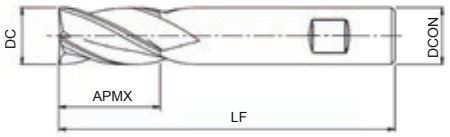
# V-XPM-WEMS



**Milling | Powder metal**

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Multi flute square
- Short length of cut
- Weldon shank

XPM | V | 32° | DIN 844 | HB

C.1042

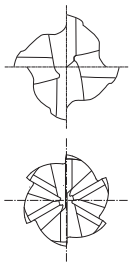
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 98025903 | 3 | 8 | 6 | 52 | 4 |
| 98025906 | 4 | 11 | 6 | 55 | 4 |
| 98025909 | 5 | 13 | 6 | 57 | 4 |
| 98025912 | 6 | 13 | 6 | 57 | 4 |
| 98025915 | 7 | 16 | 10 | 66 | 4 |
| 98025918 | 8 | 19 | 10 | 69 | 4 |
| 98025924 | 10 | 22 | 10 | 72 | 4 |
| 98025929 | 12 | 26 | 12 | 83 | 4 |
| 98025935 | 14 | 26 | 12 | 83 | 4 |
| 98025937 | 15 | 26 | 12 | 83 | 4 |
| 98025940 | 16 | 32 | 16 | 92 | 4 |
| 98025945 | 18 | 32 | 16 | 92 | 4 |
| 98025950 | 20 | 38 | 20 | 104 | 4 |
| 98025952 | 22 | 38 | 20 | 104 | 6 |
| 98025954 | 24 | 45 | 25 | 121 | 6 |
| 98025955 | 25 | 45 | 25 | 121 | 6 |
| 98025960 | 30 | 45 | 25 | 121 | 6 |

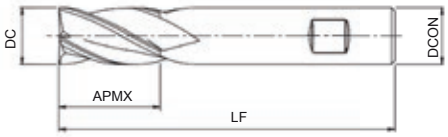
# V-WEMS



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- Multi flute square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

C.1042

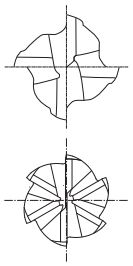
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2003800010 | 1,5 | 7 | 6 | 51 | 4 |
| 2001801310 | 2 | 7 | 6 | 51 | 4 |
| 2002800350 | 2,5 | 8 | 6 | 52 | 4 |
| 2002800360 | 3 | 8 | 6 | 52 | 4 |
| 2002800370 | 3,5 | 10 | 6 | 54 | 4 |
| 2001801320 | 4 | 11 | 6 | 55 | 4 |
| 2002800380 | 4,5 | 11 | 6 | 55 | 4 |
| 2001801330 | 5 | 13 | 6 | 57 | 4 |
| 2002800390 | 5,5 | 13 | 6 | 57 | 4 |
| 2001801340 | 6 | 13 | 6 | 57 | 4 |
| 2003800790 | 6,5 | 16 | 10 | 66 | 4 |
| 2002800400 | 7 | 16 | 10 | 66 | 4 |
| 2003800800 | 7,5 | 16 | 10 | 66 | 4 |
| 2001801350 | 8 | 19 | 10 | 69 | 4 |
| 2003800810 | 8,5 | 19 | 10 | 69 | 4 |
| 2001801360 | 9 | 19 | 10 | 69 | 4 |
| 2003800820 | 9,5 | 19 | 10 | 69 | 4 |
| 2001801370 | 10 | 22 | 10 | 72 | 4 |
| 2003800830 | 10,5 | 22 | 12 | 79 | 4 |
| 2002800410 | 11 | 22 | 12 | 79 | 4 |
| 2003800840 | 11,5 | 26 | 12 | 83 | 4 |
| 2001801380 | 12 | 26 | 12 | 83 | 4 |
| 2002800420 | 13 | 26 | 12 | 83 | 4 |
| 2001801390 | 14 | 26 | 12 | 83 | 4 |
| 2002800430 | 15 | 26 | 12 | 83 | 4 |
| 2001801400 | 16 | 32 | 16 | 92 | 4 |
| 2002800440 | 17 | 32 | 16 | 92 | 4 |
| 2001801410 | 18 | 32 | 16 | 92 | 4 |
| 2002800450 | 19 | 32 | 16 | 92 | 4 |
| 2001801420 | 20 | 38 | 20 | 104 | 4 |
| 2003800850 | 21 | 38 | 20 | 104 | 4 |
| 2001801430 | 22 | 38 | 20 | 104 | 6 |
| 2003800860 | 23 | 38 | 20 | 104 | 6 |
| 2002802240 | 24 | 45 | 25 | 121 | 6 |
| 2001801440 | 25 | 45 | 25 | 121 | 6 |
| 2002800460 | 26 | 45 | 25 | 121 | 6 |
| 2002800470 | 28 | 45 | 25 | 121 | 6 |
| 2001801450 | 30 | 45 | 25 | 121 | 6 |
| 2001801460 | 32 | 53 | 32 | 133 | 6 |
| 2003800890 | 36 | 53 | 32 | 133 | 6 |
| 2001801470 | 40 | 63 | 32 | 143 | 6 |

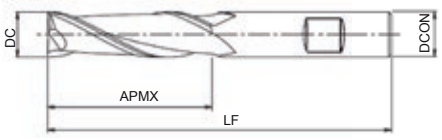
# V-XPM-WEML



**Milling | Powder metal**

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Multi flute square
- Long length of cut
- Weldon shank

XPM | V | 32° | DIN 844 | HB

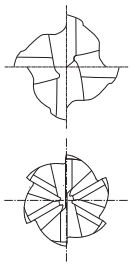
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 98125903 | 3 | 12 | 6 | 56 | 4 |
| 98125906 | 4 | 19 | 6 | 63 | 4 |
| 98125909 | 5 | 24 | 6 | 68 | 4 |
| 98125912 | 6 | 24 | 6 | 68 | 4 |
| 98125918 | 8 | 38 | 10 | 88 | 4 |
| 98125924 | 10 | 45 | 10 | 95 | 4 |
| 98125929 | 12 | 53 | 12 | 110 | 4 |
| 98125935 | 14 | 53 | 12 | 110 | 4 |
| 98125940 | 16 | 63 | 16 | 123 | 4 |
| 98125945 | 18 | 63 | 16 | 123 | 4 |
| 98125950 | 20 | 75 | 20 | 141 | 4 |
| 98125952 | 22 | 75 | 20 | 141 | 6 |
| 98125955 | 25 | 90 | 25 | 166 | 6 |
| 98125958 | 28 | 90 | 25 | 166 | 6 |
| 98125960 | 30 | 90 | 25 | 166 | 6 |

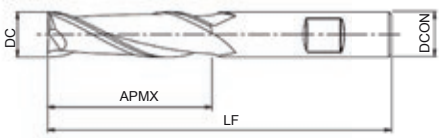
# V-WEML



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- Multi flute square
- Long length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

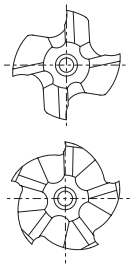
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2002801640 | 2 | 10 | 6 | 54 | 4 |
| 2002801650 | 2,5 | 12 | 6 | 56 | 4 |
| 2003804880 | 3 | 12 | 6 | 56 | 4 |
| 2003804890 | 3,5 | 15 | 6 | 63 | 4 |
| 2003804900 | 4 | 19 | 6 | 63 | 4 |
| 2003804910 | 4,5 | 19 | 6 | 63 | 4 |
| 2002800650 | 5 | 24 | 6 | 68 | 4 |
| 2003804920 | 5,5 | 24 | 6 | 68 | 4 |
| 2003804930 | 6 | 24 | 6 | 68 | 4 |
| 2003804940 | 6,5 | 30 | 10 | 80 | 4 |
| 2003804950 | 7 | 30 | 10 | 80 | 4 |
| 2003804960 | 7,5 | 30 | 10 | 80 | 4 |
| 2002800660 | 8 | 38 | 10 | 88 | 4 |
| 2003804970 | 8,5 | 38 | 10 | 88 | 4 |
| 2003804980 | 9 | 38 | 10 | 88 | 4 |
| 2003804990 | 9,5 | 38 | 10 | 88 | 4 |
| 2002800670 | 10 | 45 | 10 | 95 | 4 |
| 2003805000 | 11 | 45 | 12 | 102 | 4 |
| 2002801600 | 12 | 53 | 12 | 110 | 4 |
| 2003805010 | 13 | 53 | 12 | 110 | 4 |
| 2003805020 | 14 | 53 | 12 | 110 | 4 |
| 2003805030 | 15 | 53 | 12 | 110 | 4 |
| 2002802210 | 16 | 63 | 16 | 123 | 4 |
| 2003805040 | 17 | 63 | 16 | 123 | 4 |
| 2003805050 | 18 | 63 | 16 | 123 | 4 |
| 2003805060 | 19 | 63 | 16 | 123 | 4 |
| 2002800680 | 20 | 75 | 20 | 141 | 4 |
| 2003805070 | 22 | 75 | 20 | 141 | 6 |
| 2003805080 | 24 | 90 | 25 | 166 | 6 |
| 2002800690 | 25 | 90 | 25 | 166 | 6 |
| 2003805100 | 28 | 90 | 25 | 166 | 6 |
| 2002800700 | 30 | 90 | 25 | 166 | 6 |
| 2002800710 | 32 | 106 | 32 | 186 | 6 |
| 2003805110 | 35 | 106 | 32 | 186 | 6 |
| 2003805120 | 36 | 106 | 32 | 186 | 6 |
| 2002801580 | 40 | 125 | 32 | 205 | 6 |

# SI-WH-WRESF

**Milling | Powder metal**

INDEX

**WHILE STOCK LASTS**




- Powder metal end mill with WXL coating
- Roughing fine pitch, multi flute square
- Short length of cut, variable helix and unequal spacing
- Weldon shank

CPM | WXL | 25°~31,5° | DIN 844 | HB

C.1042

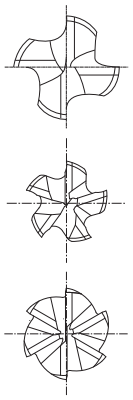
| EDP | DC | APMX | DCON | LF | ZEFP | CHW |
|---|---|---|---|---|---|---|
| 48147006 | 6 | 13 | 6 | 57 | 4 | 0,50 |
| 48147008 | 8 | 19 | 10 | 69 | 4 | 0,50 |
| 48147010 | 10 | 22 | 10 | 72 | 4 | 0,50 |
| 48147012 | 12 | 26 | 12 | 83 | 4 | 0,60 |
| 48147016 | 16 | 32 | 16 | 92 | 4 | 0,60 |
| 48147020 | 20 | 38 | 20 | 104 | 4 | 0,60 |
| 48147025 | 25 | 45 | 25 | 121 | 5 | 0,80 |

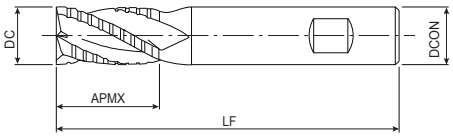
# V-XPM-WRESF

**Milling | Powder metal**

INDEX

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Roughing multi flute square
- Short length of cut
- Weldon shank

XPM | V | DIN 844 | HB

C.1043

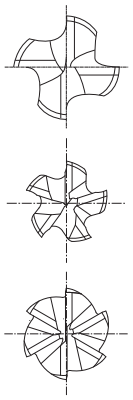
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 97825912 | 6 | 13 | 6 | 57 | 4 |
| 97825915 | 7 | 16 | 10 | 66 | 4 |
| 97825918 | 8 | 19 | 10 | 69 | 4 |
| 97825924 | 10 | 22 | 10 | 72 | 4 |
| 97825929 | 12 | 26 | 12 | 83 | 4 |
| 97825932 | 13 | 26 | 12 | 83 | 4 |
| 97825935 | 14 | 26 | 12 | 83 | 4 |
| 97825937 | 15 | 26 | 12 | 83 | 4 |
| 97825940 | 16 | 32 | 16 | 92 | 4 |
| 97825945 | 18 | 32 | 16 | 92 | 4 |
| 97825950 | 20 | 38 | 20 | 104 | 4 |
| 97825952 | 22 | 38 | 20 | 104 | 5 |
| 97825955 | 25 | 45 | 25 | 121 | 5 |
| 97825958 | 28 | 45 | 25 | 121 | 5 |
| 97825960 | 30 | 45 | 25 | 121 | 6 |
| 97825961 | 32 | 53 | 32 | 133 | 6 |

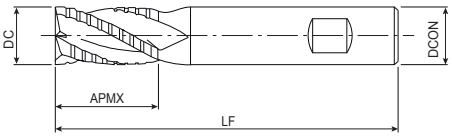
# V-WRESF

**Milling | HSS-Co**



**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- Roughing fine pitch, multi flute square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

C.1043

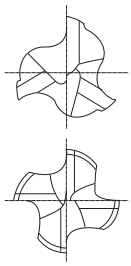
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2001801720 | 6 | 13 | 6 | 57 | 4 |
| 2002800540 | 7 | 16 | 10 | 66 | 4 |
| 2001801730 | 8 | 19 | 10 | 69 | 4 |
| 2002801200 | 9 | 19 | 10 | 69 | 4 |
| 2001801740 | 10 | 22 | 10 | 72 | 4 |
| 2002800550 | 11 | 22 | 12 | 79 | 4 |
| 2001801750 | 12 | 26 | 12 | 83 | 4 |
| 2002800560 | 13 | 26 | 12 | 83 | 4 |
| 2001801760 | 14 | 26 | 12 | 83 | 4 |
| 2002801210 | 15 | 26 | 12 | 83 | 4 |
| 2001801770 | 16 | 32 | 16 | 92 | 4 |
| 2002801220 | 18 | 32 | 16 | 92 | 4 |
| 2001801780 | 20 | 38 | 20 | 104 | 4 |
| 2001801790 | 22 | 38 | 20 | 104 | 5 |
| 2001801800 | 24 | 45 | 25 | 121 | 5 |
| 2001801810 | 25 | 45 | 25 | 121 | 5 |
| 2002801610 | 26 | 45 | 25 | 121 | 5 |
| 2002802020 | 28 | 45 | 25 | 121 | 5 |
| 2001801820 | 30 | 45 | 25 | 121 | 6 |
| 2001801830 | 32 | 53 | 32 | 133 | 6 |
| 2003801040 | 35 | 53 | 32 | 133 | 6 |
| 2001801840 | 40 | 63 | 32 | 143 | 6 |

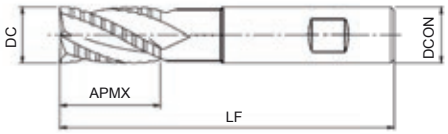
# VP-RESF-SP

**Milling | Powder metal**

INDEX

**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Roughing multi flute square
- Short length of cut
- Weldon shank

XPM | V | HB

C.1044

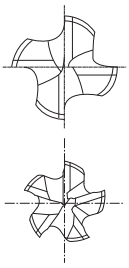
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 48101060 | 6 | 6 | 6 | 51 | 3 |
| 48101080 | 8 | 8 | 10 | 59 | 3 |
| 48101100 | 10 | 10 | 10 | 63 | 3 |
| 48101120 | 12 | 12 | 12 | 72 | 3 |
| 48101160 | 16 | 16 | 16 | 83 | 3 |
| 48101200 | 20 | 20 | 20 | 93 | 3 |
| 48101250 | 25 | 25 | 25 | 109 | 4 |

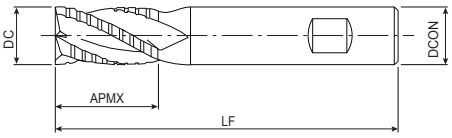
# VP-RELF

**Milling | Powder metal**



**WHILE STOCK LASTS**






- Powder metal end mill with TiCN coating
- Roughing multi flute square
- Long length of cut
- Weldon shank

XPM | V | HB

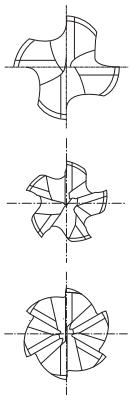
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 48102100 | 10 | 45 | 10 | 95 | 4 |
| 48102120 | 12 | 53 | 12 | 110 | 4 |
| 48102160 | 16 | 63 | 16 | 123 | 4 |
| 48102200 | 20 | 75 | 20 | 141 | 4 |
| 48102250 | 25 | 90 | 25 | 166 | 5 |

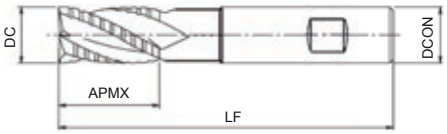
# V-WREES



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- Roughing multi flute square
- Short length of cut
- Weldon shank

HSS-Co | V | 30° | DIN 844 | HB

C.1043

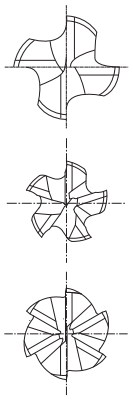
| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2001801600 | 6 | 13 | 6 | 57 | 4 |
| 2002800480 | 7 | 16 | 10 | 66 | 4 |
| 2001801610 | 8 | 19 | 10 | 69 | 4 |
| 2002800490 | 9 | 19 | 10 | 69 | 4 |
| 2001801620 | 10 | 22 | 10 | 72 | 4 |
| 2002800500 | 11 | 22 | 12 | 79 | 4 |
| 2001801630 | 12 | 26 | 12 | 83 | 4 |
| 2002801180 | 13 | 26 | 12 | 83 | 4 |
| 2001801640 | 14 | 26 | 12 | 83 | 4 |
| 2002800510 | 15 | 26 | 12 | 83 | 4 |
| 2002801190 | 16 | 32 | 16 | 92 | 4 |
| 2002800520 | 18 | 32 | 16 | 92 | 4 |
| 2001801650 | 20 | 38 | 20 | 104 | 4 |
| 2002800530 | 22 | 38 | 20 | 104 | 5 |
| 2001801660 | 24 | 45 | 25 | 121 | 5 |
| 2001801670 | 25 | 45 | 25 | 121 | 5 |
| 2002801540 | 26 | 45 | 25 | 121 | 5 |
| 2001801680 | 28 | 45 | 25 | 121 | 5 |
| 2001801690 | 30 | 45 | 25 | 121 | 6 |
| 2001801700 | 32 | 53 | 32 | 133 | 6 |
| 2003800980 | 35 | 53 | 32 | 133 | 6 |
| 2003800990 | 36 | 53 | 32 | 133 | 6 |
| 2001801710 | 40 | 63 | 32 | 143 | 6 |

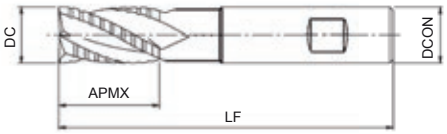
# V-WREEL



Milling | HSS-Co

**WHILE STOCK LASTS**






- HSS-Co end mill with TiCN coating
- Roughing multi flute square
- Long length of cut
- Weldon shank

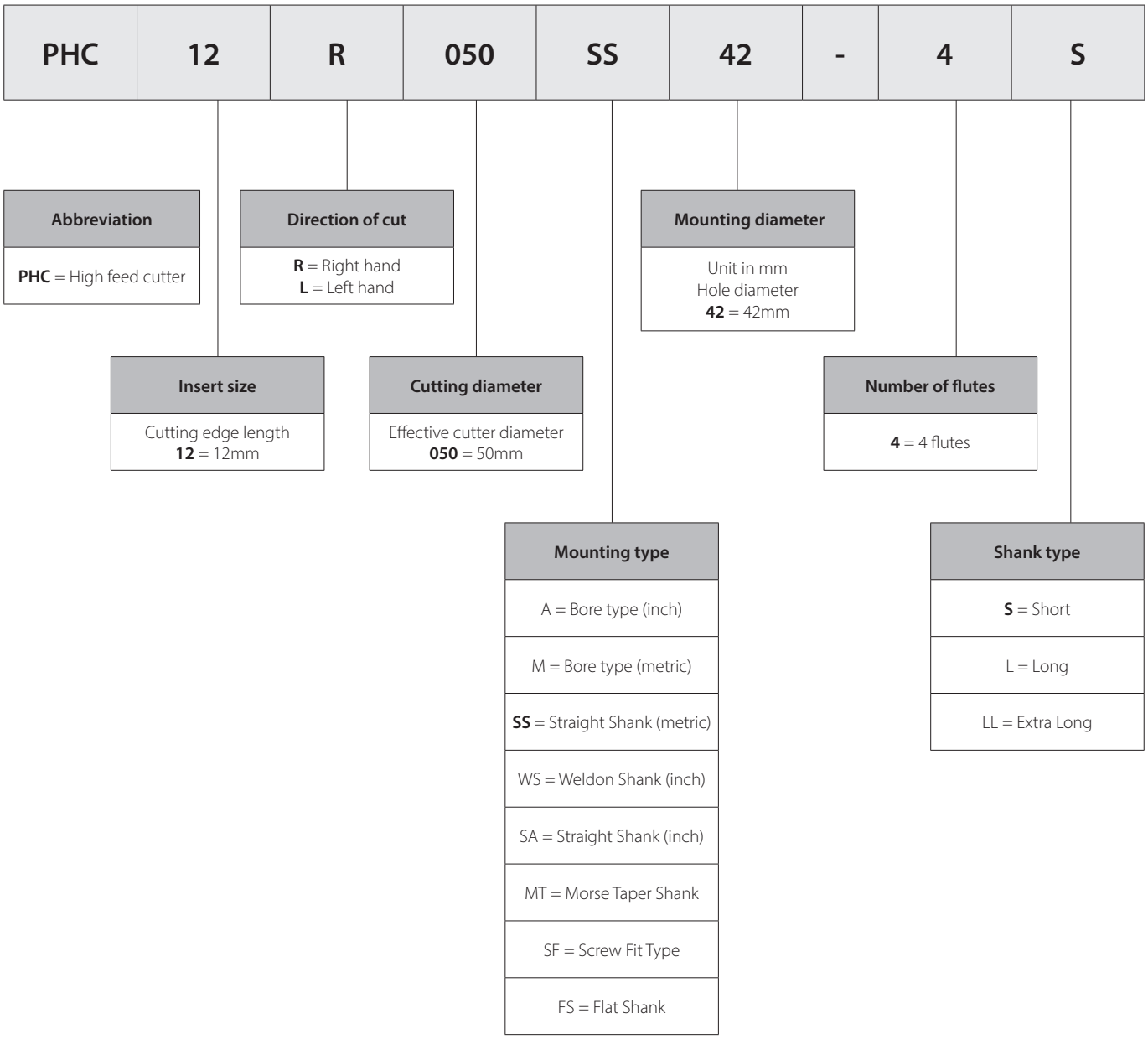
HSS-Co | V | 30° | DIN 844 | HB

| EDP | DC | APMX | DCON | LF | ZEFP |
|---|---|---|---|---|---|
| 2002801780 | 8 | 38 | 10 | 88 | 4 |
| 2002802130 | 10 | 45 | 10 | 95 | 4 |
| 2002801790 | 12 | 53 | 12 | 110 | 4 |
| 2002801800 | 14 | 53 | 12 | 110 | 4 |
| 2003805430 | 15 | 53 | 12 | 110 | 4 |
| 2003805440 | 16 | 63 | 16 | 123 | 4 |
| 2003805450 | 18 | 63 | 16 | 123 | 4 |
| 2002801810 | 20 | 75 | 20 | 141 | 4 |
| 2003805460 | 22 | 75 | 20 | 141 | 5 |
| 2003805470 | 24 | 90 | 25 | 166 | 5 |
| 2002800730 | 25 | 90 | 25 | 166 | 5 |
| 2003805480 | 26 | 90 | 25 | 166 | 5 |
| 2003805490 | 28 | 90 | 25 | 166 | 5 |
| 2002801820 | 30 | 90 | 25 | 166 | 6 |
| 2002801560 | 32 | 106 | 32 | 186 | 6 |
| 2003805500 | 36 | 106 | 32 | 186 | 6 |
| 2002801570 | 40 | 125 | 32 | 205 | 6 |

# MILLING INDEXABLES

# DESIGNATION SYSTEMS FOR BODY

**Milling | Indexables**

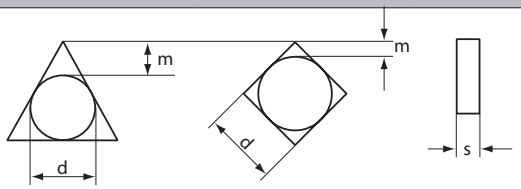


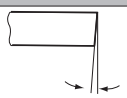
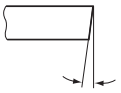
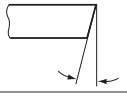
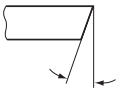
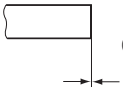
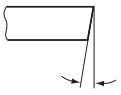
# DESIGNATION SYSTEMS FOR INSERTS

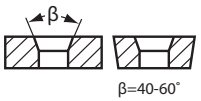
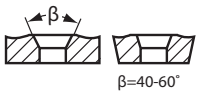
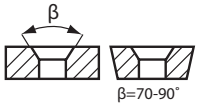
**Milling | Indexables**

| Z | D | K | T |
|---|---|---|---|

| Shape | | |
|---|---|---|
| C | 80° diamond apex | |
| D | 55° diamond apex | |
| O | octagon | |
| R | round | |
| S | square | |
| T | triangle | |
| V | 35° diamond apex | |
| W | axonometric hexagon | |
| Z | other shapes | - |

| Tolerance | | | |
|---|---|---|---|
|  | | | |
| **Symbol** | **dia d (mm)** Inscribed circle tolerance | **m (mm)** Corner height tolerance | **s (mm)** Thickness tolerance |
| A | ±0.025 | ±0.005 | ±0.025 |
| C | ±0.025 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| K* | ±0.05 ~ ±0.15 | ±0.013 | ±0.025 |
| M* | ±0.05 ~ ±0.15 | ±0.08 ~ ±0.18 | ±0.13 |
| N* | ±0.05 ~ ±0.15 | ±0.08 ~ ±0.18 | ±0.025 |

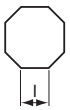
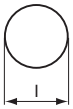
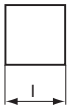
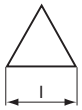
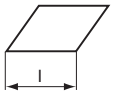
| Clearance angle | |
|---|---|
| A |  3° |
| C |  7° |
| D |  15° |
| E |  20° |
| N |  0° |
| P |  11° |
| X | Special dimension |

| Feature of inserts | | | |
|---|---|---|---|
| **Symbol** | **Shape of hole** | **Chipbreaker** | **Shape** |
| W | 40° - 60° Partial cylindrical hole | No breaker |  β=40-60° |
| T | | One side |  β=40-60° |
| B | 70° - 90° Partial cylindrical hole | No breaker |  β=70-90° |
| N | - | No breaker | |
| R | - | One side | |

# DESIGNATION SYSTEMS FOR INSERTS

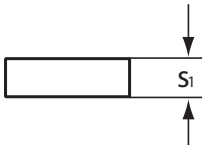
Milling | Indexables

| 15 | 05 | 08 | S | R | - | GM |
|---|---|---|---|---|---|---|

| Length of the cutting edge | |
|---|---|
| O |  |
| R |  |
| S |  |
| T |  |
| Z |  |

| Corner radius | |
|---|---|
| Symbol | Corner radius |
| 02 | 0.2 |
| 04 | 0.4 |
| 08 | 0.8 |
| 12 | 1.2 |
| 16 | 1.6 |
| 24 | 2.4 |

| Cutting direction | |
|---|---|
| Symbol | Cutting direction |
| R | Right hand |
| L | Left hand |
| N | Neutral |

| Thickness of insert | |
|---|---|
|  | |
| Symbol | S1 (mm) Thickness |
| 02 | 2.38 |
| 03 | 3.18 |
| T3 | 3.97 |
| 04 | 4.76 |
| 05 | 5.56 |
| 06 | 6.35 |

| Type of cutting edge | |
|---|---|
| Symbol | Appearance |
| F | Sharpe edge |
| E | Round honing |
| T | Chamfer honing |
| S | Combination honing |

| Type of chipbreaker | |
|---|---|
| Symbol | Material |
| GL | Stainless steel |
| GM | Steel, stainless steel, cast iron |
| GR | Steel - Cast Iron |
| NM | Non ferrous materials, sharp cutting edge |
| SM | Difficult materials, sharp cutting edge |
| DM | Steel, stainless steel, cast iron general purpose chipbreaker |
| HR | Hardened steel |
| DN | Non ferrous |
| DR | Cast Iron |

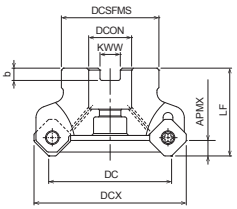
# ISO 13399 LEGEND



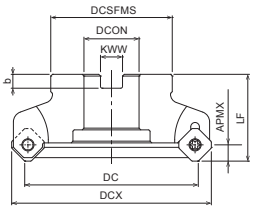
| ISO code | Description |
|---|---|
| ae | Maximum depth plunging |
| AN | Clearance angle major |
| APMX | Depth of cut maximum |
| b | Keyway depth |
| BD | Body diameter |
| BHTA | Body half taper angle |
| BS | Wiper edge length |
| CBDP | Connection bore depth |
| CHW | Corner chamfer width |
| CRKS | Connection retention knob thread size |
| CS | Head connexion C |
| DC | Cutting diameter |
| DCB | Connection bore diameter |
| DCF | Cutting diameter face contact |
| DCN | Cutting diameter minimum |
| DCON | Connection diameter |
| DCONWS | Connection diameter workpiece side |
| DCSFMS | Contact surface diameter machine side |
| DCX | Cutting diameter maximum |
| DN | Neck diameter |
| DRVS | Drive size |
| FHA | Flute helix angle |
| IC | Inscribed circle diameter |
| KAPR | Tool cutting edge angle |
| KCH | Corner chamfer angle |
| KWW | Keyway width |
| L | Cutting edge length |
| LB | Body length |
| LC | Length at widest point |
| LCF | Length chip flute |
| LE | Cutting edge effective length |
| LF | Functional length |
| LH | Head length |
| LPR | Protruding length |
| LS | Shank length |
| LU | Usable length |
| NOF | Flute count |
| OAL | Overall length |
| PHD | Premachined hole diameter |
| RE | Corner radius |
| RE2 | Secondary radius |
| RE3 | Tertiary radius |
| S | Insert thickness |
| SIG | Point angle |
| ULDR | Usable length diameter ratio |
| W1 | Insert width |
| ZEFP | Peripheral effective cutting edge count |
| | |
| | |

# PAS

**Milling | Indexable | 45 degrees**

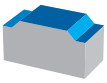



Type 1




Type 2

- 45° face milling cutter
- Double sided 8 corners inserts
- Bore type
- 50 -125 mm



C.868
C.1050

| EDP | Designation | DC | DCX | LF | APMX | DCON | DCSFMS | KWW | b | ZEFP | Type | Specification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7802000 | PAS15R050M224 | 50 | 65 | 45 | 6,5 | 22 | 45 | 10,4 | 6,3 | 4 | 1 | With coolant |
| 7802001 | PAS15R063M225 | 63 | 78 | 45 | 6,5 | 22 | 50 | 10,4 | 6,3 | 5 | 1 | With coolant |
| 47802002 | PAS15R080M276 | 80 | 95 | 50 | 6,5 | 27 | 60 | 12,4 | 7 | 6 | 1 | With coolant |
| 47802003 | PAS15R100M327 | 100 | 115 | 50 | 6,5 | 32 | 70 | 14,4 | 8 | 7 | 2 | Without coolant |
| 47802004 | PAS15R125M408 | 125 | 140 | 63 | 6,5 | 40 | 90 | 16,4 | 9 | 8 | 2 | Without coolant |

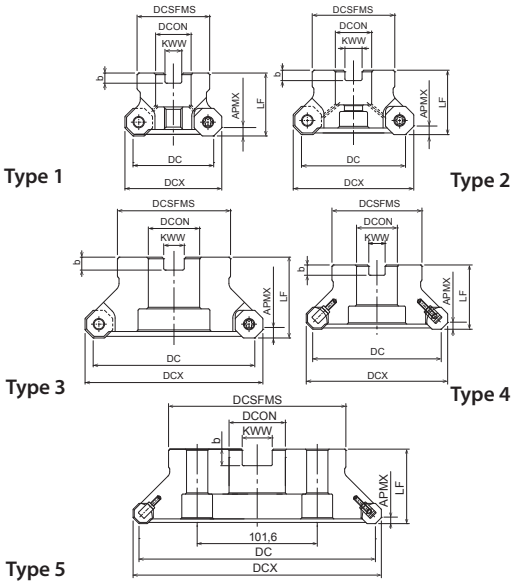
## Accessories and spare parts

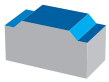
| EDP | Designation | Specification |
|---|---|---|
| 7808131 | FS45513P (Torx 20IP) | Clamping screw |
| 7808000 | 20IP-T (Torx 20IP) | Wrench |

# PAO

## Milling | Indexable | 45 degrees

- 45° face milling cutter
- Double sided 16 corners inserts
- Bore type
- 50 -200 mm



C.869
C.1050

| EDP | Designation | DC | DCX | LF | APMX | DCON | DCSFMS | KWW | b | ZEFP | Type | Specification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7802020 | PAO06R050M225 | 50 | 60,2 | 40 | 3,5 | 22 | 45 | 10,4 | 6,3 | 5 | 1 | With coolant |
| 7802021 | PAO06R063M227 | 63 | 73,2 | 40 | 3,5 | 22 | 50 | 10,4 | 6,3 | 7 | 2 | With coolant |
| 7802085 | PAO06R080M278 | 80 | 90,2 | 50 | 3,5 | 27 | 60 | 12,4 | 7 | 8 | 2 | With coolant |
| 7802086 | PAO06R100M3210 | 100 | 110,2 | 50 | 3,5 | 32 | 70 | 14,4 | 8 | 10 | 3 | Without coolant |
| 7802087 | PAO06R125M4012 | 125 | 135,2 | 63 | 3,5 | 40 | 90 | 16,4 | 9 | 12 | 3 | Without coolant |
| 7802088 | PAO06R100M32W14 | 100 | 110,2 | 50 | 3,5 | 32 | 70 | 14,4 | 8 | 14 | 4 | Without coolant |
| 7802090 | PAO06R125M40W17 | 125 | 135,2 | 63 | 3,5 | 40 | 90 | 16,4 | 9 | 17 | 4 | Without coolant |
| 7802092 | PAO06R160M40W20 | 160 | 170,2 | 63 | 3,5 | 40 | 100 | 16,4 | 9 | 20 | 4 | Without coolant |
| 7802094 | PAO06R200M60W25 | 200 | 210,2 | 63 | 3,5 | 60 | 150 | 25,7 | 14 | 25 | 5 | Without coolant |

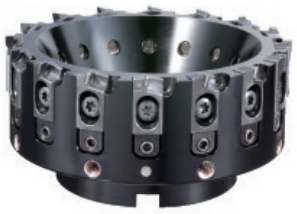
### Accessories and spare parts

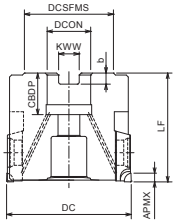
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 | 7808151 | PS1031 (M10x31) | Power screw |
| 50 - 125 | 7808130 | FS50614 (Torx 20) | Clamping screw |
| 50 - 125 | 7808209 | T20-D (Torx 20) | Wrench |
| 100 - 200 (Wedge) | 7808141 | W12F-06N (M6) | Wedge |
| 100 - 200 (Wedge) | 7808140 | WS0621T (M6x21) | Clamping screw (wedge) |
| 100 - 200 (Wedge) | 7808208 | T15-D (Torx 15) | Wrench |

# PFAL

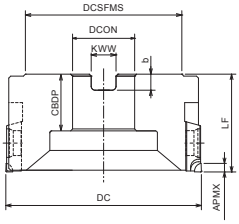
**Milling | Indexable | 90 degrees**





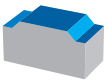



Type 1




Type 2

- Face milling finishing cutter for aluminium
- PCD blades
- Bore type
- 50 -160 mm



C.870 C.1050

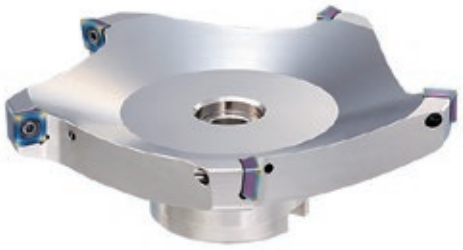
| EDP | Designation | DC | LF | DCON | DCSFMS | KWW | b | CBDP | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 7803600 | PFAL04R050M165 | 50 | 55 | 16 | 40 | 8,4 | 5,6 | 20 | 5 | 1 |
| 7803601 | PFAL04R063M226 | 63 | 55 | 22 | 45 | 10,4 | 6,3 | 21 | 6 | 1 |
| 7803602 | PFAL04R063M228 | 63 | 55 | 22 | 45 | 10,4 | 6,3 | 21 | 8 | 1 |
| 7803604 | PFAL04R080M278 | 80 | 50 | 27 | 70 | 12,4 | 7 | 28 | 8 | 2 |
| 7803606 | PFAL04R080M2710 | 80 | 50 | 27 | 70 | 12,4 | 7 | 28 | 10 | 2 |
| 7803608 | PFAL04R100M278 | 100 | 50 | 27 | 80 | 12,4 | 7 | 28 | 8 | 2 |
| 7803610 | PFAL04R100M328 | 100 | 50 | 32 | 80 | 14,4 | 8,2 | 28 | 8 | 2 |
| 7803612 | PFAL04R100M2712 | 100 | 50 | 27 | 80 | 12,4 | 7 | 28 | 12 | 2 |
| 7803614 | PFAL04R100M3212 | 100 | 50 | 32 | 80 | 14,4 | 8,2 | 28 | 12 | 2 |
| 7803616 | PFAL04R125M2710 | 125 | 50 | 27 | 80 | 12,4 | 7 | 28 | 10 | 2 |
| 7803618 | PFAL04R125M4010 | 125 | 63 | 40 | 85 | 16,4 | 9,2 | 30 | 10 | 2 |
| 7803620 | PFAL04R125M2716 | 125 | 50 | 27 | 80 | 12,4 | 7 | 28 | 16 | 2 |
| 7803622 | PFAL04R125M4016 | 125 | 63 | 40 | 85 | 16,4 | 9,2 | 30 | 16 | 2 |
| 7803624 | PFAL04R160M2712 | 160 | 50 | 27 | 80 | 12,4 | 7 | 28 | 12 | 2 |
| 7803625 | PFAL04R160M4012 | 160 | 63 | 40 | 85 | 16,4 | 9,2 | 30 | 12 | 2 |
| 7803630 | PFAL04R160M2720 | 160 | 50 | 27 | 80 | 12,4 | 7 | 28 | 20 | 2 |
| 7803627 | PFAL04R160M4020 | 160 | 63 | 40 | 85 | 16,4 | 9,2 | 30 | 20 | 2 |

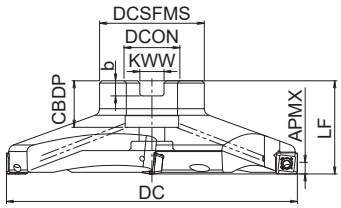
## Accessories and spare parts

| EDP | Designation | Specification |
|---|---|---|
| 7808143 | W12-06 | Wedge |
| 7808125 | FS60620 (Torx 25) | Clamping screw |
| 7808142 | WS0617 | Clamping screw (wedge) |
| 7808231 | 3MM-L | L-wrench (wedge) |
| 7808211 | T25-T (Torx 25) | Wrench |

# PFDC

**Milling | Indexable**






- Face milling disk cutter
- Economical 4-corner insert with 90° cutting angle
- Bore type coolant hole
- 80 - 125 mm

C.871
C.1051

| EDP | Designation | DC | LF | APMX | DCON | RPMX (min$^{-1}$) | (Kg) | DCSFMS | KWW | b | CBDP | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7835101 | PFDC09R080M22-4 | 80 | 40 | 5 | 22 | 10.000 | 0,5 | 45 | 10,4 | 6,5 | 20 | 4 |
| 7835102 | PFDC09R080M25.4-4 | 80 | 45 | 5 | 25,4 | 10.000 | 0,6 | 50 | 9,5 | 6 | 23 | 4 |
| 7835103 | PFDC09R100M22-4 | 100 | 40 | 5 | 22 | 10.000 | 0,7 | 45 | 10,4 | 6,5 | 20 | 4 |
| 7835104 | PFDC09R100M25.4-4 | 100 | 45 | 5 | 25,4 | 10.000 | 0,83 | 50 | 9,5 | 6 | 23 | 4 |
| 7835105 | PFDC09R125M22-5 | 125 | 40 | 5 | 22 | 10.000 | 1 | 45 | 10,4 | 6,5 | 20 | 5 |
| 7835106 | PFDC09R125M25.4-5 | 125 | 45 | 5 | 25,4 | 10.000 | 1,07 | 50 | 9,5 | 6 | 23 | 5 |

For balancing purposes, a hole may be present on the flute of the cutter

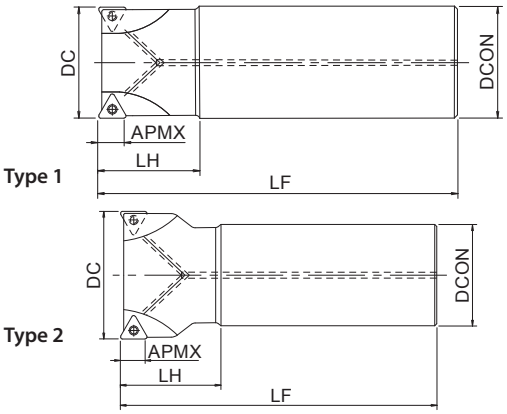
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 80 - 125 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 80 - 125 | 7808205 | T8-D (Torx 8) | Wrench |

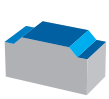
# PSTW SS

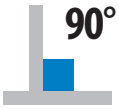
**Milling | Indexable | 90 degrees**

INDEX




- 90° shoulder cutter
- Double sided 6 corners inserts
- Cylindrical type, with internal coolant
- 25 - 40 mm






C.872 C.1051

| EDP | Designation | DC | LF | LH | APMX | DCON | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 7803014 | PSTW09R025SS25-2S | 25 | 120 | 35 | 9 | 25 | TN...U0904004 | 2 | 1 |
| 7803015 | PSTW09R025SS25-2L | 25 | 170 | 70 | 9 | 25 | TN...U0904004 | 2 | 1 |
| 7803016 | PSTW09R025SS25-3S | 25 | 120 | 35 | 9 | 25 | TN...U0904004 | 3 | 1 |
| 7803017 | PSTW09R026SS25-2L | 26 | 170 | 35 | 9 | 25 | TN...U0904004 | 2 | 2 |
| 7803018 | PSTW09R028SS25-2L | 28 | 170 | 35 | 9 | 25 | TN...U0904004 | 2 | 2 |
| 7803019 | PSTW09R028SS25-3S | 28 | 120 | 35 | 9 | 25 | TN...U0904004 | 3 | 2 |
| 7803020 | PSTW09R030SS32-2L | 30 | 190 | 90 | 9 | 32 | TN...U0904004 | 2 | 1 |
| 7803021 | PSTW09R030SS32-3S | 30 | 130 | 45 | 9 | 32 | TN...U0904004 | 3 | 1 |
| 7803022 | PSTW09R032SS32-3S | 32 | 130 | 45 | 9 | 32 | TN...U0904004 | 3 | 1 |
| 7803023 | PSTW09R032SS32-3L | 32 | 190 | 45 | 9 | 32 | TN...U0904004 | 3 | 1 |
| 7803024 | PSTW09R032SS32-4S | 32 | 125 | 40 | 9 | 32 | TN...U0904004 | 4 | 1 |
| 7803025 | PSTW09R033SS32-3L | 33 | 190 | 35 | 9 | 32 | TN...U0904004 | 3 | 2 |
| 7803026 | PSTW09R035SS32-3L | 35 | 190 | 35 | 9 | 32 | TN...U0904004 | 3 | 2 |
| 7803027 | PSTW09R035SS32-4S | 35 | 130 | 35 | 9 | 32 | TN...U0904004 | 4 | 2 |
| 7803028 | PSTW09R040SS32-4S | 40 | 140 | 50 | 9 | 32 | TN...U0904004 | 4 | 2 |
| 7803029 | PSTW09R040SS32-4L | 40 | 190 | 45 | 9 | 32 | TN...U0904004 | 4 | 2 |
| 7803030 | PSTW09R040SS32-5S | 40 | 140 | 50 | 9 | 32 | TN...U0904004 | 5 | 2 |

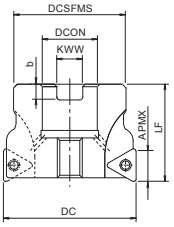
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 25 - 40 | 7808097 | FS30668 (Torx 8) | Clamping screw |
| 25 - 40 | 7808205 | T8-D (Torx 8) | Wrench |

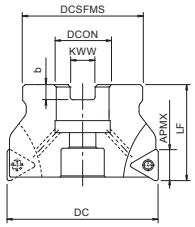
# PSTW

**Milling | Indexable | 90 degrees**

**BORE**

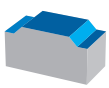


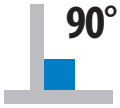

Type 1




Type 2

- 90° shoulder cutter
- Double sided 6 corners inserts
- Bore type
- 40 - 125 mm






C.872 C.1051

| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | KWW | b | Type | ZEFP | Specification |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803031 | PSTW09R040M16-4 | 40 | 40 | 9 | 16 | 38 | 8,4 | 5,6 | 2 | 4 | With coolant hole |
| 7803032 | PSTW09R040M16-5 | 40 | 40 | 9 | 16 | 38 | 8,4 | 5,6 | 2 | 5 | With coolant hole |
| 7803100 | PSTW12R050M22-3 | 50 | 40 | 12 | 22 | 45 | 10,4 | 6,3 | 1 | 3 | With coolant hole |
| 7803033 | PSTW09R050M22-4 | 50 | 40 | 9 | 22 | 45 | 10,4 | 6,3 | 2 | 4 | With coolant hole |
| 7803101 | PSTW12R050M22-4 | 50 | 40 | 12 | 22 | 45 | 10,4 | 6,3 | 1 | 4 | With coolant hole |
| 7803034 | PSTW09R050M22-6 | 50 | 40 | 9 | 22 | 45 | 10,4 | 6,3 | 2 | 6 | With coolant hole |
| 7803102 | PSTW12R063M22-3 | 63 | 40 | 12 | 22 | 50 | 10,4 | 6,3 | 2 | 3 | With coolant hole |
| 7803035 | PSTW09R063M22-5 | 63 | 40 | 9 | 22 | 50 | 10,4 | 6,3 | 2 | 5 | With coolant hole |
| 7803103 | PSTW12R063M22-5 | 63 | 40 | 12 | 22 | 50 | 10,4 | 6,3 | 2 | 5 | With coolant hole |
| 7803036 | PSTW09R063M22-7 | 63 | 40 | 9 | 22 | 50 | 10,4 | 6,3 | 2 | 7 | With coolant hole |
| 7803110 | PSTW12R080M27-5 | 80 | 50 | 12 | 27 | 60 | 12,4 | 7 | 2 | 5 | With coolant hole |
| 7803111 | PSTW12R080M27-6 | 80 | 50 | 12 | 27 | 60 | 12,4 | 7 | 2 | 6 | With coolant hole |
| 7803112 | PSTW12R100M32-5 | 100 | 50 | 12 | 32 | 70 | 14,4 | 8 | 2 | 5 | With coolant hole |
| 7803113 | PSTW12R100M32-7 | 100 | 50 | 12 | 32 | 70 | 14,4 | 8 | 2 | 7 | With coolant hole |
| 7803114 | PSTW12R125M40-7 | 125 | 63 | 12 | 40 | 90 | 16,4 | 9 | 2 | 7 | With coolant hole |
| 7803115 | PSTW12R125M40-9 | 125 | 63 | 12 | 40 | 90 | 16,4 | 9 | 2 | 9 | With coolant hole |

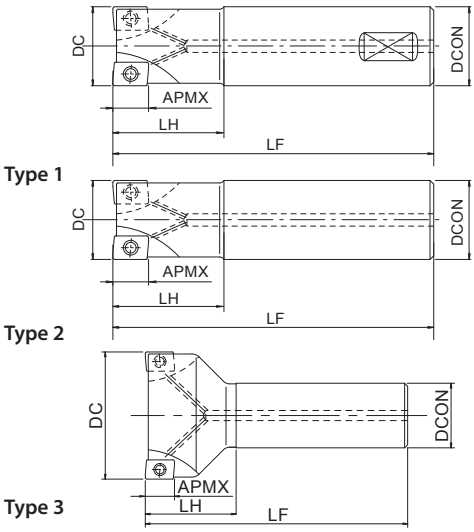
## Accessories and spare parts

| Applicable cutter DC | Insert | EDP | Designation | Specification |
|---|---|---|---|---|
| 50 (Type 1) | TN*U12 | 7808151 | PS1031 (M10x31) | Power screw |
| 40 - 63 | TN*U09 | 7808097 | FS30668 (Torx 8) | Clamping screw |
| 40 - 63 | TN*U09 | 7808205 | T8-D (Torx 8) | Wrench |
| 50 - 125 | TN*U12 | 7808129 | FS40511 (Torx 15) | Clamping screw |
| 50 - 125 | TN*U12 | 7808208 | T15-D (Torx 15) | Wrench |

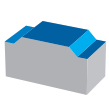
# PSE WS / PSE SS

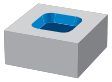
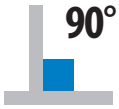


**Milling | Indexable | 90 degrees**




- 90° shoulder cutter
- 2 corners inserts with bottom notch
- Cylindrical type, with internal coolant
- 10 - 63 mm



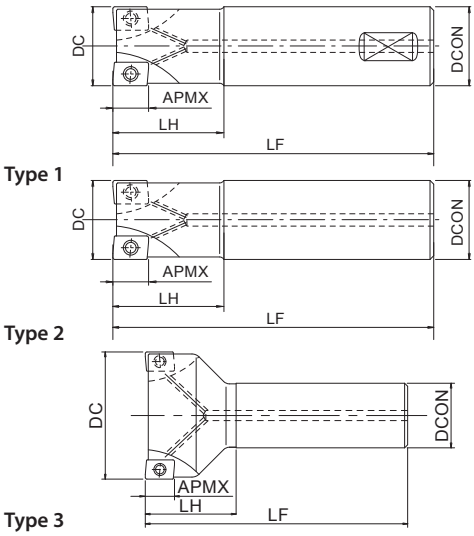

C.875 C.1052

| EDP | Designation | DC | LF | LH | APMX | DCON | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 7803810 | PSE07R010SS10-2S | 10 | 50 | 12 | 6 | 10 | ZDT07 | 2 | 2 |
| 7803811 | PSE07R012SS12-3S | 12 | 50 | 12 | 6 | 12 | ZDT07 | 3 | 2 |
| 7803813 | PSE07R016SS16-3S | 16 | 90 | 25 | 6 | 16 | ZDT07 | 3 | 2 |
| 7803814 | PSE07R016SS16-4S | 16 | 90 | 25 | 6 | 16 | ZDT07 | 4 | 2 |
| 7803817 | PSE07R020SS20-4S | 20 | 100 | 30 | 6 | 20 | ZDT07 | 4 | 2 |
| 7803820 | PSE07R025SS25-5S | 25 | 120 | 35 | 6 | 25 | ZDT07 | 5 | 2 |
| 47801100 | PSE11R016WS16-2S | 16 | 75 | 25 | 10 | 16 | ZDT11 | 2 | 1 |
| 7801100 | PSE11R016SS16-2S | 16 | 90 | 25 | 10 | 16 | ZDT11 | 2 | 2 |
| 7801121 | PSE11R016SS16-2L | 16 | 150 | 50 | 10 | 16 | ZDT11 | 2 | 2 |
| 7801116 | PSE11R018SS16-2S | 18 | 90 | 25 | 10 | 16 | ZDT11 | 2 | 3 |
| 7801122 | PSE11R018SS16-2L | 18 | 150 | 25 | 10 | 16 | ZDT11 | 2 | 3 |
| 47801115 | PSE11R020WS20-3S | 20 | 80 | 25 | 10 | 20 | ZDT11 | 3 | 1 |
| 7801101 | PSE11R020SS20-2S | 20 | 100 | 30 | 10 | 20 | ZDT11 | 2 | 2 |
| 7801115 | PSE11R020SS20-3S | 20 | 100 | 30 | 10 | 20 | ZDT11 | 3 | 2 |
| 7801123 | PSE11R020SS20-3L | 20 | 160 | 60 | 10 | 20 | ZDT11 | 3 | 2 |
| 7801117 | PSE11R022SS20-3S | 22 | 110 | 30 | 10 | 20 | ZDT11 | 3 | 3 |
| 7801124 | PSE11R022SS20-3L | 22 | 160 | 30 | 10 | 20 | ZDT11 | 3 | 3 |
| 47801104 | PSE11R025WS25-4S | 25 | 90 | 35 | 10 | 25 | ZDT11 | 4 | 1 |
| 7801102 | PSE11R025SS25-3S | 25 | 120 | 35 | 10 | 25 | ZDT11 | 3 | 2 |
| 7801104 | PSE11R025SS25-4S | 25 | 120 | 35 | 10 | 25 | ZDT11 | 4 | 2 |
| 7801125 | PSE11R025SS25-3L | 25 | 170 | 70 | 10 | 25 | ZDT11 | 3 | 2 |
| 7801118 | PSE11R028SS25-4S | 28 | 120 | 35 | 10 | 25 | ZDT11 | 4 | 3 |
| 7801126 | PSE11R028SS25-3L | 28 | 170 | 35 | 10 | 25 | ZDT11 | 3 | 3 |
| 7801119 | PSE11R030SS32-4S | 30 | 130 | 45 | 10 | 32 | ZDT11 | 4 | 2 |
| 7801127 | PSE11R030SS32-3L | 30 | 190 | 90 | 10 | 32 | ZDT11 | 3 | 2 |
| 47801105 | PSE11R032WS32-5S | 32 | 105 | 40 | 10 | 32 | ZDT11 | 5 | 1 |
| 7801105 | PSE11R032SS32-5S | 32 | 125 | 40 | 10 | 32 | ZDT11 | 5 | 2 |
| 7801103 | PSE11R032SS32-3S | 32 | 130 | 45 | 10 | 32 | ZDT11 | 3 | 2 |
| 7801128 | PSE11R032SS32-3L | 32 | 190 | 90 | 10 | 32 | ZDT11 | 3 | 2 |
| 7801120 | PSE11R035SS32-5S | 35 | 130 | 35 | 10 | 32 | ZDT11 | 5 | 3 |
| 7801129 | PSE11R035SS32-3L | 35 | 190 | 35 | 10 | 32 | ZDT11 | 3 | 3 |
| 47801106 | PSE15R025WS25-2S | 25 | 100 | 32 | 14 | 25 | ZDT15 | 2 | 1 |
| 7801106 | PSE15R025SS25-2S | 25 | 120 | 35 | 14 | 25 | ZDT15 | 2 | 2 |
| 7801133 | PSE15R025SS25-2L | 25 | 170 | 70 | 14 | 25 | ZDT15 | 2 | 2 |
| 7801130 | PSE15R028SS25-2S | 28 | 120 | 35 | 14 | 25 | ZDT15 | 2 | 3 |
| 7801134 | PSE15R028SS25-2L | 28 | 170 | 35 | 14 | 25 | ZDT15 | 2 | 3 |
| 7801131 | PSE15R030SS32-3S | 30 | 130 | 45 | 14 | 32 | ZDT15 | 3 | 2 |
| 7801135 | PSE15R030SS32-3L | 30 | 190 | 90 | 14 | 32 | ZDT15 | 3 | 2 |
| 47801111 | PSE15R032WS32-3S | 32 | 125 | 40 | 14 | 32 | ZDT15 | 3 | 1 |
| 7801107 | PSE15R032SS32-2S | 32 | 130 | 45 | 14 | 32 | ZDT15 | 2 | 2 |
| 7801111 | PSE15R032SS32-3S | 32 | 130 | 45 | 14 | 32 | ZDT15 | 3 | 2 |
| 7801136 | PSE15R032SS32-3L | 32 | 190 | 90 | 14 | 32 | ZDT15 | 3 | 2 |
| 7801132 | PSE15R035SS32-3S | 35 | 130 | 35 | 14 | 32 | ZDT15 | 3 | 3 |
| 7801137 | PSE15R035SS32-3L | 35 | 190 | 45 | 14 | 32 | ZDT15 | 3 | 3 |
| 7801108 | PSE15R040SS32-3S | 40 | 140 | 50 | 14 | 32 | ZDT15 | 3 | 3 |

# PSE WS / PSE SS



**Milling | Indexable | 90 degrees**




- 90° shoulder cutter
- 2 corners inserts with bottom notch
- Cylindrical type, with internal coolant
- 16 - 63 mm

C.875 C.1052

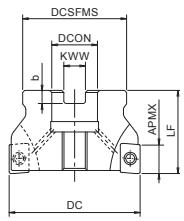
| EDP | Designation | DC | LF | LH | APMX | DCON | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 7801112 | PSE15R040SS32-4S | 40 | 50 | 14 | ZDT15 | 32 | 140 | 4 | 3 |
| 7801138 | PSE15R040SS32-3L | 40 | 45 | 14 | ZDT15 | 32 | 190 | 3 | 3 |
| 7801109 | PSE15R050SS32-3S | 50 | 45 | 14 | ZDT15 | 32 | 130 | 3 | 3 |
| 7801113 | PSE15R050SS32-5S | 50 | 45 | 14 | ZDT15 | 32 | 130 | 5 | 3 |
| 7801110 | PSE15R063SS32-4S | 63 | 45 | 14 | ZDT15 | 32 | 130 | 4 | 3 |
| 7801114 | PSE15R063SS32-6S | 63 | 45 | 14 | ZDT15 | 32 | 130 | 6 | 3 |

## Accessories and spare parts

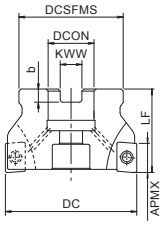
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| PSE SS/SF 10 - 12 (ZDKT07) | 7808098 | FS18634P (Torx 6IP) | Clamping screw |
| PSE SS 16 - 26 (ZDKT07) | 7808099 | FS18637P (Torx 6IP) | Clamping screw |
| PSE SF 16 - 32 (ZDKT07) | 7808099 | FS18637P (Torx 6IP) | Clamping screw |
| PSE SS 10 - 26 (ZDKT07) | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| PSE SF 10 - 32 (ZDKT07) | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 16 - 40 (ZD-T11) | 7808107 | FS25656P (Torx 8IP) | Clamping screw |
| 16 - 40 (ZD-T11) | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 63 (ZDKT15) | 7808115 | FS35686P (Torx 15IP) | Clamping screw |
| 25 - 63 (ZDKT15) | 7808228 | 15IP-D (Torx 15IP) | Wrench |

# PSE

## Milling | Indexable | 90 degrees

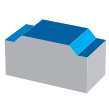


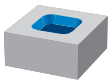
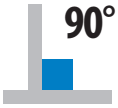

Type 1




Type 2

- 90° shoulder cutter
- 2 corners inserts with bottom notch
- Bore type
- 40 - 100 mm




C.875 C.1052

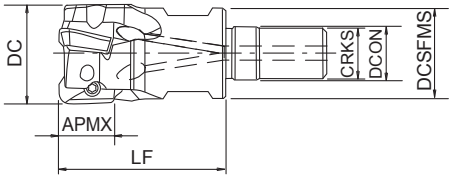
| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | KWW | b | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7801000 | PSE11R040M16-4 | 40 | 40 | 10 | 16 | 38 | 8,4 | 5,6 | ZDT11 | 4 | 1 |
| 7801004 | PSE11R040M16-6 | 40 | 40 | 10 | 16 | 38 | 8,4 | 5,6 | ZDT11 | 6 | 1 |
| 7801001 | PSE11R050M22-5 | 50 | 40 | 10 | 22 | 45 | 10,4 | 6,3 | ZDT11 | 5 | 1 |
| 7801005 | PSE11R050M22-7 | 50 | 40 | 10 | 22 | 45 | 10,4 | 6,3 | ZDT11 | 7 | 1 |
| 7801002 | PSE11R063M22-6 | 63 | 40 | 10 | 22 | 50 | 10,4 | 6,3 | ZDT11 | 6 | 2 |
| 7801006 | PSE11R063M22-8 | 63 | 40 | 10 | 22 | 50 | 10,4 | 6,3 | ZDT11 | 8 | 2 |
| 7801003 | PSE11R080M27-7 | 80 | 50 | 10 | 27 | 60 | 12,4 | 7 | ZDT11 | 7 | 2 |
| 7801007 | PSE11R080M27-10 | 80 | 50 | 10 | 27 | 60 | 12,4 | 7 | ZDT11 | 10 | 2 |
| 7801008 | PSE15R040M16-3 | 40 | 40 | 14 | 16 | 38 | 8,4 | 5,6 | ZDT15 | 3 | 1 |
| 7801014 | PSE15R040M16-4 | 40 | 40 | 14 | 16 | 38 | 8,4 | 5,6 | ZDT15 | 4 | 1 |
| 7801009 | PSE15R050M22-3 | 50 | 40 | 14 | 22 | 45 | 10,4 | 6,3 | ZDT15 | 3 | 1 |
| 7801015 | PSE15R050M22-5 | 50 | 40 | 14 | 22 | 45 | 10,4 | 6,3 | ZDT15 | 5 | 1 |
| 7801010 | PSE15R063M22-4 | 63 | 40 | 14 | 22 | 50 | 10,4 | 6,3 | ZDT15 | 4 | 2 |
| 7801016 | PSE15R063M22-6 | 63 | 40 | 14 | 22 | 50 | 10,4 | 6,3 | ZDT15 | 6 | 2 |
| 7801011 | PSE15R080M27-5 | 80 | 50 | 14 | 27 | 60 | 12,4 | 7 | ZDT15 | 5 | 2 |
| 7801017 | PSE15R080M27-8 | 80 | 50 | 14 | 27 | 60 | 12,4 | 7 | ZDT15 | 8 | 2 |
| 7801012 | PSE15R100M32-7 | 100 | 50 | 14 | 32 | 70 | 14,4 | 8 | ZDT15 | 7 | 2 |
| 7801018 | PSE15R100M32-10 | 100 | 50 | 14 | 32 | 70 | 14,4 | 8 | ZDT15 | 10 | 2 |

### Accessories and spare parts

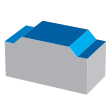
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 40 | 7808150 | PS0830 (M8x30) | Power screw |
| 50 | 7808151 | PS1031 (M10x31) | Power screw |
| 40 - 80 (ZD-T11) | 7808109 | FS25673P (Torx 8IP) | Clamping screw |
| 40 - 80 (ZD-T11) | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 40 - 125 (ZDKT15) | 7808115 | FS35686P (Torx 15IP) | Clamping screw |
| 40 - 125 (ZDKT15) | 7808228 | 15IP-D (Torx 15IP) | Wrench |

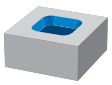
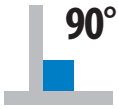
# PSE

**Milling | Indexable | 90 degrees**




- 90° shoulder cutter
- 2 corners inserts with bottom notch
- Screw fit type
- 10 - 40 mm




C.866 C.875 C.1052

| EDP | Designation | DC | APMX | DCON | DCSFMS | LF | CRKS | Wrench size | Applicable inserts type | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7803822 | PSE07R010SF6-2 | 10 | 6 | 6,5 | 9 | 26 | 6 | 7 | ZD...T07... | 2 |
| 7803823 | PSE07R012SF6-3 | 12 | 6 | 6,5 | 11 | 26 | 6 | 7 | ZD...T07... | 3 |
| 7803824 | PSE07R016SF8-4 | 16 | 6 | 8,5 | 15 | 27 | 8 | 10 | ZD...T07... | 4 |
| 7803825 | PSE07R020SF10-4 | 20 | 6 | 10,5 | 18 | 33 | 10 | 14 | ZD...T07... | 4 |
| 7803826 | PSE07R025SF12-5 | 25 | 6 | 12,5 | 23 | 35 | 12 | 17 | ZD...T07... | 5 |
| 7803827 | PSE07R032SF16-6 | 32 | 6 | 17 | 17 | 35 | 16 | 22 | ZD...T07... | 6 |
| 7801600 | PSE11R016SF8-2 | 16 | 10 | 8,5 | 14,5 | 27 | 8 | 10 | ZD...T11... | 2 |
| 7801601 | PSE11R020SF10-3 | 20 | 10 | 10,5 | 18 | 33 | 10 | 14 | ZD...T11... | 3 |
| 7801602 | PSE11R025SF12-4 | 25 | 10 | 12,5 | 23 | 35 | 12 | 17 | ZD...T11... | 4 |
| 7801603 | PSE11R028SF12-4 | 28 | 10 | 12,5 | 23 | 35 | 12 | 17 | ZD...T11... | 4 |
| 7801604 | PSE11R032SF16-5 | 32 | 10 | 17 | 28 | 40 | 16 | 22 | ZD...T11... | 5 |
| 7801605 | PSE11R035SF16-5 | 35 | 10 | 17 | 28 | 40 | 16 | 22 | ZD...T11... | 5 |
| 7801606 | PSE11R040SF16-6 | 40 | 10 | 17 | 28 | 40 | 16 | 22 | ZD...T11... | 6 |
| 7801607 | PSE15R025SF12-2 | 25 | 14 | 12,5 | 23 | 35 | 12 | 17 | ZD...T15... | 2 |
| 7801608 | PSE15R028SF12-2 | 28 | 14 | 12,5 | 23 | 35 | 12 | 17 | ZD...T15... | 2 |
| 7801609 | PSE15R032SF16-3 | 32 | 14 | 17 | 28 | 40 | 16 | 22 | ZD...T15... | 3 |
| 7801610 | PSE15R035SF16-3 | 35 | 14 | 17 | 28 | 40 | 16 | 22 | ZD...T15... | 3 |
| 7801611 | PSE15R040SF16-4 | 40 | 14 | 17 | 28 | 40 | 16 | 22 | ZD...T15... | 4 |

## Accessories and spare parts

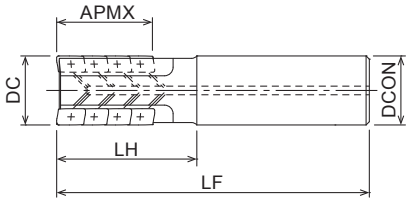
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| PSE SS/SF 10 - 12 (ZDKT07) | 7808098 | FS18634P (Torx 6IP) | Clamping screw |
| PSE SS 16 - 26 (ZDKT07) | 7808099 | FS18637P (Torx 6IP) | Clamping screw |
| PSE SF 16 - 32 (ZDKT07) | 7808099 | FS18637P (Torx 6IP) | Clamping screw |
| PSE SS 10 - 26 (ZDKT07) | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| PSE SF 10 - 32 (ZDKT07) | 7808223 | 6IP-D (Torx 6IP) | Wrench |
| 16 - 40 (ZD-T11) | 7808107 | FS25656P (Torx 8IP) | Clamping screw |
| 16 - 40 (ZD-T11) | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 25 - 40 (ZDKT15) | 7808115 | FS35686P (Torx 15IP) | Clamping screw |
| 25 - 40 (ZDKT15) | 7808228 | 15IP-D (Torx 15IP) | Wrench |

# PSEL SS

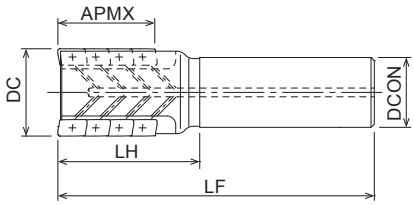


**Milling | Indexable | 90 degrees**

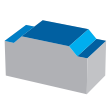
Type 1

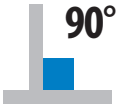



Type 2




- 90° shoulder cutter with long length of cut
- 2 corners inserts with bottom notch
- Cylindrical type, with internal coolant
- 25 - 50 mm






C.873 C.1053

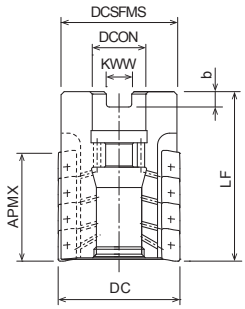
| EDP | Designation | DC | LF | LH | APMX | DCON | Inserts per flute | Inserts total | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7802900 | PSEL11R025SS25227 | 25 | 125 | 50 | 27 | 25 | 3 | 6 | ZDT11 | 2 | 1 |
| 7802901 | PSEL11R032SS32237 | 32 | 140 | 60 | 37 | 32 | 4 | 8 | ZDT11 | 2 | 1 |
| 7802902 | PSEL11R032SS32345 | 32 | 140 | 60 | 45,5 | 32 | 5 | 15 | ZDT11 | 3 | 1 |
| 7802903 | PSEL11R040SS42337 | 40 | 140 | 60 | 37 | 42 | 4 | 12 | ZDT11 | 3 | 1 |
| 7802904 | PSEL11R040SS42445 | 40 | 140 | 60 | 45,5 | 42 | 5 | 20 | ZDT11 | 4 | 1 |
| 7802905 | PSEL15R040SS42238 | 40 | 140 | 60 | 38 | 42 | 3 | 6 | ZDT15 | 2 | 1 |
| 7802906 | PSEL15R050SS42350 | 50 | 144 | 64 | 50,5 | 42 | 4 | 12 | ZDT15 | 3 | 2 |

## Accessories and spare parts

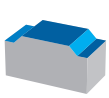
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 25 (ZD-T11) | 7808107 | FS25656P (Torx 8IP) | Clamping screw |
| 25 (ZD-T11) | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 32 - 40 (ZD-T11) | 7808109 | FS25673P (Torx 8IP) | Clamping screw |
| 32 - 40 (ZD-T11) | 7808225 | 8IP-D (Torx 8IP) | Wrench |
| 40 - 50 (ZDKT15) | 7808115 | FS35686P (Torx 15IP) | Clamping screw |
| 40 - 50 (ZDKT15) | 7808228 | 15IP-D (Torx 15IP) | Wrench |

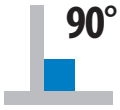
# PSEL

**Milling | Indexable | 90 degrees**




- 90° shoulder cutter with long length of cut
- 2 corners inserts with bottom notch
- Bore type
- 50 - 80 mm






C.873
C.1053

| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | KWW | b | ZEFP | Inserts per flute | Inserts total | Applicable inserts type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7802850 | PSEL15R050M22350 | 50 | 74 | 50,5 | 22 | 45 | 10,4 | 6,3 | 3 | 4 | 12 | ZDKT150 |
| 7802851 | PSEL15R063M27350 | 63 | 74 | 50,5 | 27 | 60 | 12,4 | 7 | 3 | 4 | 12 | ZDKT150 |
| 7802852 | PSEL15R080M32463 | 80 | 88 | 63 | 32 | 76 | 14,4 | 8 | 4 | 5 | 20 | ZDKT150 |

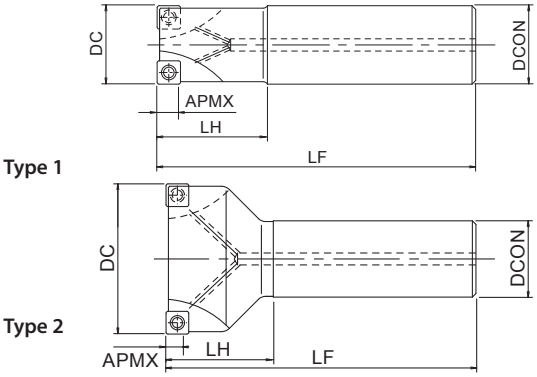
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 - 80 (ZDKT15) | 7808115 | FS35686P (Torx 15IP) | Clamping screw |
| 50 - 80 (ZDKT15) | 7808228 | 15IP-D (Torx 15IP) | Wrench |
| 50 | 7808132 | OCB-M20-08 | Coolant cap bolt |
| 63 | 7808133 | OCB-M24-10 | Coolant cap bolt |
| 80 | 7808134 | OCB-M30-14 | Coolant cap bolt |

# PSF SS



**Milling | Indexable | 90 degrees**




- Shoulder cutter
- 4 corners inserts
- Cylindrical type, with internal coolant
- 25 - 40 mm

C.877 C.1053

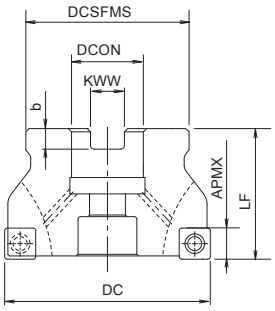
| EDP | Designation | DC | LF | LH | APMX | DCON | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|
| 7803001 | PSF09R025SS253S | 25 | 120 | 35 | 5 | 25 | 3 | 1 |
| 7803002 | PSF09R032SS324S | 32 | 130 | 45 | 5 | 32 | 4 | 1 |
| 7803003 | PSF09R040SS325S | 40 | 140 | 50 | 5 | 32 | 5 | 2 |

Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 25 - 40 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 25 - 40 | 7808205 | T8-D (Torx 8) | Wrench |

# PSF

## Milling | Indexable | 90 degrees




- Shoulder cutter
- 4 corners inserts
- Bore type
- 50 - 80 mm

C.877
C.1053

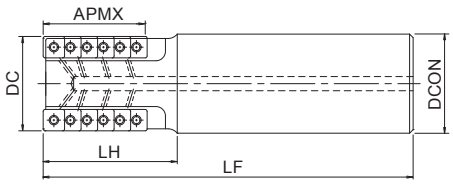
| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | KWW | b | ZEFP |
|---|---|---|---|---|---|---|---|---|---|
| 7803011 | PSF09R050M226 | 50 | 40 | 5 | 22 | 45 | 10,4 | 6,3 | 6 |
| 7803012 | PSF09R063M227 | 63 | 40 | 5 | 22 | 50 | 10,4 | 6,3 | 7 |
| 47803013 | PSF09R080M279 | 80 | 50 | 5 | 27 | 60 | 12,4 | 7 | 9 |

### Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 - 80 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 50 - 80 | 7808205 | T8-D (Torx 8) | Wrench |

# PSFL SS

**Milling | Indexable | 90 degrees**




- 90° shoulder cutter with long length of cut
- 4 corners inserts with bottom notch
- Cylindrical type, with internal coolant
- 32 - 40 mm

C.877 C.1054

| EDP | Designation | DC | LF | LH | APMX | DCON | Inserts per flute | Inserts total | Applicable inserts type | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7803700 | PSFL09R032SS32236 | 32 | 140 | 60 | 36 | 32 | 5 | 10 | SD*T09 | 2 |
| 7803701 | PSFL09R040SS42343 | 40 | 140 | 60 | 43 | 42 | 6 | 18 | SD*T09 | 3 |

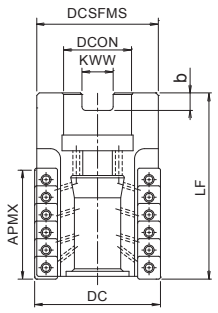
Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 32 - 40 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 32 - 40 | 7808205 | T8-D (Torx 8) | Wrench |

# PSFL

**Milling | Indexable | 90 degrees**

**BORE**




- 90° shoulder cutter with long length of cut
- 4 corners inserts with bottom notch
- Bore type
- 50 - 100 mm

C.877 C.1054

| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | KWW | b | Inserts per flute | Inserts total | Applicable inserts type | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803702 | PSFL09R050M22450 | 50 | 75 | 50 | 22 | 48,5 | 10,4 | 6,3 | 7 | 28 | SD*T09 | 4 |
| 7803703 | PSFL09R050M22478 | 50 | 100 | 78 | 22 | 48,5 | 10,4 | 6,3 | 11 | 44 | SD*T09 | 4 |
| 7803704 | PSFL09R050M27450 | 50 | 75 | 50 | 27 | 48,5 | 12,4 | 7 | 7 | 28 | SD*T09 | 4 |
| 7803705 | PSFL09R050M27478 | 50 | 100 | 78 | 27 | 48,5 | 12,4 | 7 | 11 | 44 | SD*T09 | 4 |
| 7803706 | PSFL12R063M27460 | 63 | 85 | 60 | 27 | 60,5 | 12,4 | 7 | 6 | 24 | SD*T12 | 4 |
| 7803707 | PSFL12R063M274100 | 63 | 125 | 100 | 27 | 60,5 | 12,4 | 7 | 10 | 40 | SD*T12 | 4 |
| 7803708 | PSFL12R080M32570 | 80 | 95 | 70 | 32 | 77,3 | 14,4 | 8 | 7 | 35 | SD*T12 | 5 |
| 7803709 | PSFL12R080M325110 | 80 | 143 | 110 | 32 | 77,3 | 14,4 | 8 | 11 | 55 | SD*T12 | 5 |
| 7803710 | PSFL12R100M326120 | 100 | 153 | 120 | 32 | 97 | 16,4 | 9 | 12 | 72 | SD*T12 | 6 |

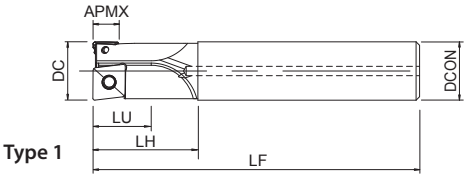
## Accessories and spare parts

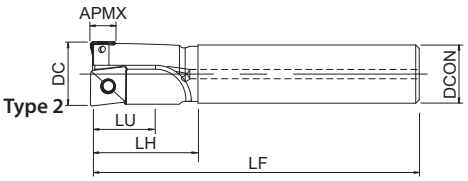
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 | 7808110 | FS30573 (Torx 8) | Clamping screw |
| 50 | 7808205 | T8-D (Torx 8) | Wrench |
| 63 - 100 | 7808129 | FS40511 (Torx 15) | Clamping screw |
| 63 - 100 | 7808208 | T15-D (Torx 15) | Wrench |
| 50 | 7808132 | OCB-M20-08 | Coolant cap bolt |
| 63 | 7808133 | OCB-M24-10 | Coolant cap bolt |
| 80 - 100 | 7808134 | OCB-M30-14 | Coolant cap bolt |

# PMD SS



**Milling | Indexable | 90 degrees**




- 90° multi-function cutter
- 2 types of inserts (PSE & PZAG)
- Cylindrical type, with internal coolant
- 16 - 32 mm

| EDP | Designation | DC | LF | LH | APMX | DCON | LU | NOF | Applicable center inserts type | Peripheral inserts | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803419 | PMD07R016SS16-1S | 16 | 100 | 30 | 6 | 16 | 16 | 2 | ZPNT080304EN | ZDKT070304... | 1 | 1 |
| 7803420 | PMD07R016SS16-1L | 16 | 150 | 50 | 6 | 16 | 16 | 2 | ZPNT080304EN | ZDKT070304... | 1 | 1 |
| 7803421 | PMD07R018SS16-1S | 18 | 100 | 30 | 6 | 16 | 18 | 2 | ZPNT090404EN | ZDKT070304... | 1 | 2 |
| 7803422 | PMD07R018SS16-1L | 18 | 150 | 30 | 6 | 16 | 18 | 2 | ZPNT090404EN | ZDKT070304... | 1 | 2 |
| 7803410 | PMD11R020SS20-1S | 20 | 130 | 35 | 10 | 20 | 20 | 2 | ZPNT100408EN | ZDKT11T308... | 1 | 1 |
| 7803413 | PMD11R020SS20-1L | 20 | 185 | 60 | 10 | 20 | 20 | 2 | ZPNT100408EN | ZDKT11T308... | 1 | 1 |
| 7803411 | PMD11R025SS25-1S | 25 | 140 | 45 | 10 | 25 | 25 | 2 | ZPNT130508EN | ZDKT11T308... | 1 | 1 |
| 7803414 | PMD11R025SS25-1L | 25 | 220 | 75 | 10 | 25 | 25 | 2 | ZPNT130508EN | ZDKT11T308... | 1 | 1 |
| 7803412 | PMD11R032SS32-1S | 32 | 150 | 50 | 10 | 32 | 28 | 2 | ZPNT170608EN | ZDKT11T308... | 1 | 1 |
| 7803415 | PMD11R032SS32-1L | 32 | 230 | 90 | 10 | 32 | 28 | 2 | ZPNT170608EN | ZDKT11T308... | 1 | 1 |

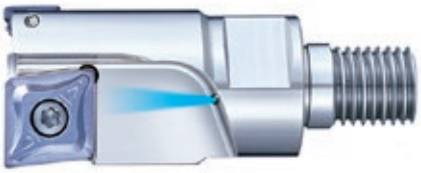
## Accessories and spare parts

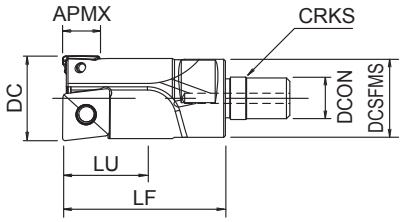
| Applicable cutter DC | EDP | Designation | Insert | Torque | Specification |
|---|---|---|---|---|---|
| 16 | 7808135 | FS30570P (Torx 9IP) | ZPNT08 | 2,2 N.m | Clamping screw |
| 18 | 7808135 | FS30570P (Torx 9IP) | ZPNT09 | 2,2 N.m | Clamping screw |
| 20 | 7808137 | FS35586P (Torx 15IP) | ZPNT10 | 3,2 N.m | Clamping screw |
| 16-18 | 7808099 | FS18637P (Torx 6Ip) | ZDKT07 | 0,5 N.m | Clamping screw |
| 20 -32 | 7808107 | FS25656P (Torx 8IP) | ZDKT11 | 1,6 N.m | Clamping screw |
| 20 | 7808115 | FS35686P (Torx 15IP) | ZPNT10 | 3,2 N.m | Clamping screw |
| 25 | 7808114 | FS45510P (Torx 20IP) | ZPNT13 | 5,0 N.m | Clamping screw |
| 32 | 7808114 | FS45510P | ZPNT17 | 5,0 N.m | Clamping screw |
| 20 - 32 | 7808225 | 8IP-D (Torx 8IP) | ZDKT11 | - | Wrench |
| 16 | 7808226 | 9IP-D (Torx 9IP) | ZPNT08 | - | Wrench |
| 18 | 7808226 | 9IP-D (Torx 9IP) | ZPNT09 | - | Wrench |
| 20 | 7808228 | 15IP-D (Torx 15IP) | ZPNT10 | - | Wrench |
| 25 | 7808229 | 20IP-D (Torx 20IP) | ZPNT13 | - | Wrench |
| 32 | 7808229 | 20IP-D (Torx 20IP) | ZPNT17 | - | Wrench |
| 16 - 18 | 7808223 | 6IP-D (Torx 6IP) | ZDKT07 | - | Wrench |

# PMD

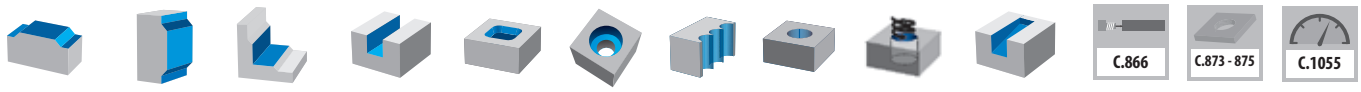
**Milling | Indexable | 90 degrees**








- 90° multi-function cutter
- 2 types of inserts (PSE & PZAG)
- Screw fit type
- 16 - 32 mm




| EDP | Designation | DC | LF | APMX | DCON | DCSFMS | DN | LU | NOF | CRKS | Wrench size | Applicable center inserts type | Peripheral inserts | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7803423 | PMD07R016SF8-1 | 16 | 40 | 6 | 8,5 | 14,5 | 15,4 | 16 | 2 | 8 | 10 | ZPNT080304EN | ZDKT070304... | 1 |
| 7803424 | PMD07R018SF8-1 | 18 | 40 | 6 | 8,5 | 14,5 | 17 | 18 | 2 | 8 | 10 | ZPNT090404EN | ZDKT070304... | 1 |
| 7803416 | PMD11R020SF10-1 | 20 | 48 | 10 | 10,5 | 18 | 18 | 20 | 2 | 10 | 14 | ZPNT100408EN | ZDKT11T308… | 1 |
| 7803417 | PMD11R025SF12-1 | 25 | 48 | 10 | 12,5 | 23 | 22 | 25 | 2 | 12 | 17 | ZPNT130508EN | ZDKT11T308… | 1 |
| 7803418 | PMD11R032SF16-1 | 32 | 58 | 10 | 17 | 28 | 27 | 28 | 2 | 16 | 22 | ZPNT170608EN | ZDKT11T308… | 1 |

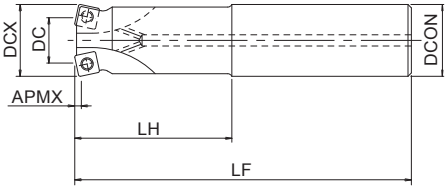
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Insert | Torque | Specification |
|---|---|---|---|---|---|
| 16 | 7808135 | FS30570P (Torx 9IP) | ZPNT08 | 2,2 N.m | Clamping screw |
| 18 | 7808135 | FS30570P (Torx 9IP) | ZPNT09 | 2,2 N.m | Clamping screw |
| 20 | 7808137 | FS35586P (Torx 15IP) | ZPNT10 | 3,2 N.m | Clamping screw |
| 16-18 | 7808099 | FS18637P (Torx 6Ip) | ZDKT07 | 0,5 N.m | Clamping screw |
| 20 -32 | 7808107 | FS25656P (Torx 8IP) | ZDKT11 | 1,6 N.m | Clamping screw |
| 20 | 7808115 | FS35686P (Torx 15IP) | ZPNT10 | 3,2 N.m | Clamping screw |
| 25 | 7808114 | FS45510P (Torx 20IP) | ZPNT13 | 5,0 N.m | Clamping screw |
| 32 | 7808114 | FS45510P | ZPNT17 | 5,0 N.m | Clamping screw |
| 20 - 32 | 7808225 | 8IP-D (Torx 8IP) | ZDKT11 | - | Wrench |
| 16 | 7808226 | 9IP-D (Torx 9IP) | ZPNT08 | - | Wrench |
| 18 | 7808226 | 9IP-D (Torx 9IP) | ZPNT09 | - | Wrench |
| 20 | 7808228 | 15IP-D (Torx 15IP) | ZPNT10 | - | Wrench |
| 25 | 7808229 | 20IP-D (Torx 20IP) | ZPNT13 | - | Wrench |
| 32 | 7808229 | 20IP-D (Torx 20IP) | ZPNT17 | - | Wrench |
| 16 - 18 | 7808223 | 6IP-D (Torx 6IP) | ZDKT07 | - | Wrench |

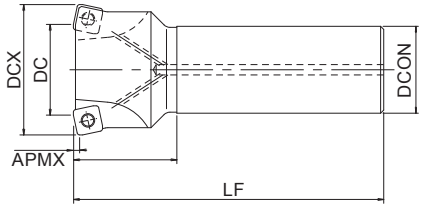
# PHC SS



**Milling | Indexable | 90 degrees**




Type 1




Type 2

- High feed radius cutter for long over hang
- 4 corners high feed inserts
- Cylindrical type, with internal coolant
- 16 - 40 mm

C.879 C.1056

| EDP | Designation | DC | DCX | LF | LH | APMX | DCON | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 7800750 | PHC07R016SS16-2S | 7,4 | 16 | 100 | 30 | 0,8 | 16 | SPMT07 | 2 | 1 |
| 7800755 | PHC07R016SS16-2L | 7,4 | 16 | 150 | 50 | 0,8 | 16 | SPMT07 | 2 | 1 |
| 7800757 | PHC07R018SS16-2L | 9,4 | 18 | 150 | 25 | 0,8 | 16 | SPMT07 | 2 | 2 |
| 7800751 | PHC07R020SS20-3S | 11,4 | 20 | 130 | 50 | 0,8 | 20 | SPMT07 | 3 | 1 |
| 7800758 | PHC07R020SS20-3L | 11,4 | 20 | 160 | 80 | 0,8 | 20 | SPMT07 | 3 | 1 |
| 7800760 | PHC07R022SS20-3L | 13,4 | 22 | 160 | 30 | 0,8 | 20 | SPMT07 | 3 | 2 |
| 7800752 | PHC07R025SS25-4S | 16,4 | 25 | 140 | 60 | 0,8 | 25 | SPMT07 | 4 | 1 |
| 7800761 | PHC07R025SS25-4L | 16,4 | 25 | 200 | 100 | 0,8 | 25 | SPMT07 | 4 | 1 |
| 7800753 | PHC07R030SS32-4S | 21,4 | 30 | 150 | 70 | 0,8 | 32 | SPMT07 | 4 | 1 |
| 7800764 | PHC07R030SS32-4L | 21,4 | 30 | 200 | 120 | 0,8 | 32 | SPMT07 | 4 | 1 |
| 7800754 | PHC07R032SS32-5S | 23,4 | 32 | 150 | 70 | 0,8 | 32 | SPMT07 | 5 | 1 |
| 7800765 | PHC07R032SS32-5L | 23,4 | 32 | 200 | 120 | 0,8 | 32 | SPMT07 | 5 | 1 |
| 7800767 | PHC07R035SS32-5L | 26,4 | 35 | 200 | 50 | 0,8 | 32 | SPMT07 | 5 | 2 |
| 7800700 | PHC09R025SS25-2S | 13,2 | 25 | 140 | 60 | 1 | 25 | SDMT09 | 2 | 1 |
| 7800701 | PHC09R025SS25-3S | 13,2 | 25 | 140 | 60 | 1 | 25 | SDMT09 | 3 | 1 |
| 7800704 | PHC09R025SS25-2L | 13,2 | 25 | 200 | 120 | 1 | 25 | SDMT09 | 2 | 1 |
| 7800705 | PHC09R025SS25-3L | 13,2 | 25 | 200 | 120 | 1 | 25 | SDMT09 | 3 | 1 |
| 7800716 | PHC09R028SS25-3S | 16,2 | 28 | 140 | 40 | 1 | 25 | SDMT09 | 3 | 2 |
| 7800720 | PHC09R028SS25-3L | 16,2 | 28 | 200 | 40 | 1 | 25 | SDMT09 | 3 | 2 |
| 7800717 | PHC09R030SS32-3S | 18,2 | 30 | 150 | 70 | 1 | 32 | SDMT09 | 3 | 1 |
| 7800721 | PHC09R030SS32-3L | 18,2 | 30 | 200 | 120 | 1 | 32 | SDMT09 | 3 | 1 |
| 7800702 | PHC09R032SS32-3S | 20,2 | 32 | 150 | 70 | 1 | 32 | SDMT09 | 3 | 1 |
| 7800706 | PHC09R032SS32-3L | 20,2 | 32 | 200 | 120 | 1 | 32 | SDMT09 | 3 | 1 |
| 7800718 | PHC09R035SS32-3S | 23,2 | 35 | 150 | 50 | 1 | 32 | SDMT09 | 3 | 2 |
| 7800722 | PHC09R035SS32-3L | 23,2 | 35 | 200 | 50 | 1 | 32 | SDMT09 | 3 | 2 |
| 7800703 | PHC09R040SS32-4S | 28,2 | 40 | 150 | 50 | 1 | 32 | SDMT09 | 4 | 2 |
| 7800730 | PHC12R030SS32-2S | 13,4 | 30 | 150 | 70 | 2 | 32 | SXMT12 | 2 | 1 |
| 7800708 | PHC12R032SS32-2S | 15,4 | 32 | 150 | 70 | 2 | 32 | SXMT12 | 2 | 1 |
| 7800731 | PHC12R035SS32-3S | 18,4 | 35 | 150 | 50 | 2 | 32 | SXMT12 | 3 | 2 |
| 7800709 | PHC12R040SS32-3S | 23,4 | 40 | 150 | 50 | 2 | 32 | SXMT12 | 3 | 2 |

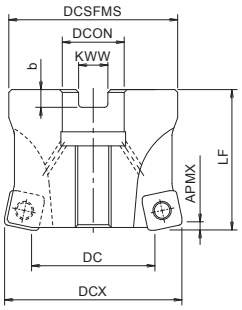
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 16 - 35 (SPMT07) | 7808105 | FS25550 (Torx 8) | Clamping screw |
| 16 - 35 (SPMT07) | 7808205 | T8-D (Torx 8) | Wrench |
| 25 - 35 (SDMT09) | 7808111 | FS35572 (Torx 15) | Clamping screw |
| 25 - 35 (SDMT09) | 7808208 | T15-D (Torx 15) | Wrench |
| 40 (SDMT09) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 40 (SDMT09) | 7808208 | T15-D (Torx 15) | Wrench |
| 30 - 40 (SXMT12) | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 30 - 40 (SXMT12) | 7808209 | T20-D (Torx 20) | Wrench |

# PHC

**Milling | Indexable**

**BORE**




- High feed radius cutter
- 4 corners high feed inserts
- Bore type
- 40 - 100 mm

C.879 C.1056

| EDP | Designation | DC | DCX | LF | APMX | DCON | DCSFMS | KWW | b | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7800600 | PHC09R040M16-4 | 28,2 | 40 | 40 | 1 | 16 | 38 | 8,4 | 5,6 | SDMT09… | 4 | 1 |
| 7800601 | PHC09R050M22-5 | 38,2 | 50 | 50 | 1 | 22 | 47 | 10,4 | 6,3 | SDMT09… | 5 | 2 |
| 7800602 | PHC09R052M22-5 | 40,2 | 52 | 50 | 1 | 22 | 47 | 10,4 | 6,3 | SDMT09… | 5 | 2 |
| 7800603 | PHC09R063M22-6 | 51,2 | 63 | 50 | 1 | 22 | 60 | 10,4 | 6,3 | SDMT09… | 6 | 2 |
| 7800604 | PHC09R066M22-7 | 54,2 | 66 | 50 | 1 | 22 | 60 | 10,4 | 6,3 | SDMT09… | 7 | 2 |
| 7800607 | PHC12R040M16-3 | 23,4 | 40 | 40 | 2 | 16 | 38 | 8,4 | 5,6 | SXMT12… | 3 | 1 |
| 7800608 | PHC12R050M22-4 | 33,4 | 50 | 50 | 2 | 22 | 47 | 10,4 | 6,3 | SXMT12… | 4 | 2 |
| 7800609 | PHC12R052M22-4 | 35,4 | 52 | 50 | 2 | 22 | 47 | 10,4 | 6,3 | SXMT12… | 4 | 2 |
| 7800610 | PHC12R063M22-5 | 46,4 | 63 | 50 | 2 | 22 | 60 | 10,4 | 6,3 | SXMT12… | 5 | 2 |
| 7800611 | PHC12R066M22-6 | 49,4 | 66 | 50 | 2 | 22 | 60 | 10,4 | 6,3 | SXMT12… | 6 | 2 |
| 7800612 | PHC12R080M27-7 | 63,4 | 80 | 50 | 2 | 27 | 76 | 12,4 | 7 | SXMT12… | 7 | 2 |
| 7800613 | PHC12R100M32-8 | 83,4 | 100 | 63 | 2 | 32 | 96 | 14,4 | 8 | SXMT12… | 8 | 2 |

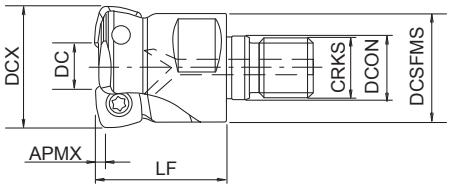
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 40 | 7808150 | PS0830 (M8x30) | Power screw |
| 40 - 63 (SDMT09) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 40 - 63 (SDMT09) | 7808208 | T15-D (Torx 15) | Wrench |
| 40 - 100 (SXMT12) | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 40 - 100 (SXMT12) | 7808209 | T20-D (Torx 20) | Wrench |

# PHC

**Milling | Indexable**

## SCREW FIT




- High feed radius cutter
- 4 corners high feed inserts
- Screw fit type
- 16 - 40 mm

C.866 C.879 C.1056

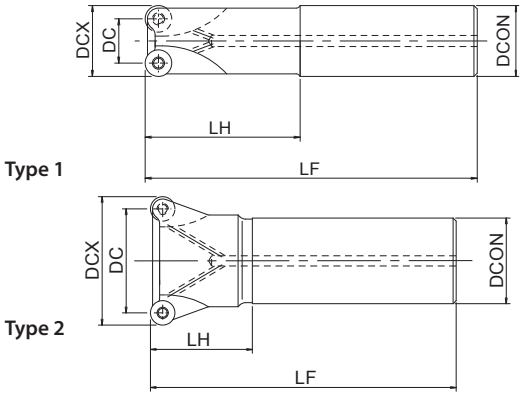
| EDP | Designation | DC | DCX | LF | APMX | DCON | DCSFMS | CRKS | Wrench size | Applicable inserts type | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7801520 | PHC07R016SF8-2 | 7,4 | 16 | 27 | 0,8 | 8,5 | 14,5 | 8 | 10 | SPMT07… | 2 |
| 7801523 | PHC07R020SF10-3 | 11,4 | 20 | 33 | 0,8 | 10,5 | 18 | 10 | 14 | SPMT07… | 3 |
| 7801525 | PHC07R022SF10-3 | 13,4 | 22 | 33 | 0,8 | 10,5 | 18 | 10 | 14 | SPMT07… | 3 |
| 7801526 | PHC07R025SF12-4 | 16,4 | 25 | 35 | 0,8 | 12,5 | 23 | 12 | 17 | SPMT07… | 4 |
| 7801529 | PHC07R030SF16-4 | 21,4 | 30 | 40 | 0,8 | 17 | 28 | 16 | 22 | SPMT07… | 4 |
| 7801530 | PHC07R032SF16-5 | 23,4 | 32 | 40 | 0,8 | 17 | 28 | 16 | 22 | SPMT07… | 5 |
| 7801532 | PHC07R035SF16-5 | 26,4 | 35 | 40 | 0,8 | 17 | 28 | 16 | 22 | SPMT07… | 5 |
| 7801500 | PHC09R025SF12-3 | 13,2 | 25 | 35 | 1 | 12,5 | 23 | 12 | 17 | SDMT09… | 3 |
| 7801501 | PHC09R028SF12-3 | 16,2 | 28 | 35 | 1 | 12,5 | 23 | 12 | 17 | SDMT09… | 3 |
| 7801502 | PHC09R030SF16-3 | 18,2 | 30 | 40 | 1 | 17 | 28 | 16 | 22 | SDMT09… | 3 |
| 7801503 | PHC09R032SF16-3 | 20,2 | 32 | 40 | 1 | 17 | 28 | 16 | 22 | SDMT09… | 3 |
| 7801504 | PHC09R035SF16-3 | 23,2 | 35 | 40 | 1 | 17 | 28 | 16 | 22 | SDMT09… | 3 |
| 7801505 | PHC09R040SF16-4 | 28,2 | 40 | 40 | 1 | 17 | 28 | 16 | 22 | SDMT09… | 4 |
| 7801506 | PHC12R030SF16-2 | 13,4 | 30 | 40 | 2 | 17 | 28 | 16 | 22 | SXMT12… | 2 |
| 7801507 | PHC12R032SF16-2 | 15,4 | 32 | 40 | 2 | 17 | 28 | 16 | 22 | SXMT12… | 2 |
| 7801508 | PHC12R035SF16-3 | 18,4 | 35 | 40 | 2 | 17 | 28 | 16 | 22 | SXMT12… | 3 |
| 7801509 | PHC12R040SF16-3 | 23,4 | 40 | 40 | 2 | 17 | 28 | 16 | 22 | SXMT12… | 3 |

### Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 16 - 35 (SPMT07) | 7808105 | FS25550 (Torx 8) | Clamping screw |
| 16 - 35 (SPMT07) | 7808205 | T8-D (Torx 8) | Wrench |
| 25 - 35 (SDMT09) | 7808111 | FS35572 (Torx 15) | Clamping screw |
| 25 - 35 (SDMT09) | 7808208 | T15-D (Torx 15) | Wrench |
| 40 (SDMT09) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 40 (SDMT09) | 7808208 | T15-D (Torx 15) | Wrench |
| 30 - 40 (SXMT12) | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 30 - 40 (SXMT12) | 7808209 | T20-D (Torx 20) | Wrench |

# PRC SS

**Milling | Indexable**




- Radius cutter
- Round inserts
- Cylindrical type, with internal coolant
- 20 - 63 mm

C.880 C.1057

| EDP | Designation | DC | DCX | LF | LH | DCON | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|
| 7800300 | PRC10R020SS20-2S | 10 | 20 | 130 | 50 | 20 | RP10 | 2 | 1 |
| 7800303 | PRC10R020SS20-2L | 10 | 20 | 180 | 80 | 20 | RP10 | 2 | 1 |
| 7800301 | PRC10R025SS25-3S | 15 | 25 | 140 | 60 | 25 | RP10 | 3 | 1 |
| 7800304 | PRC10R025SS25-3L | 15 | 25 | 200 | 120 | 25 | RP10 | 3 | 1 |
| 7800302 | PRC10R032SS32-4S | 22 | 32 | 150 | 70 | 32 | RP10 | 4 | 1 |
| 7800305 | PRC10R032SS32-4L | 22 | 32 | 200 | 120 | 32 | RP10 | 4 | 1 |
| 7800318 | PRC12R030SS32-2S | 18 | 30 | 150 | 70 | 32 | RP12 | 2 | 1 |
| 7800319 | PRC12R030SS32-2L | 18 | 30 | 200 | 120 | 32 | RP12 | 2 | 1 |
| 7800306 | PRC12R032SS32-2S | 20 | 32 | 150 | 70 | 32 | RP12 | 2 | 1 |
| 7800309 | PRC12R032SS32-2L | 20 | 32 | 200 | 120 | 32 | RP12 | 2 | 1 |
| 7800320 | PRC12R032SS32-3S | 20 | 32 | 150 | 70 | 32 | RP12 | 3 | 1 |
| 7800321 | PRC12R032SS32-3L | 20 | 32 | 200 | 120 | 32 | RP12 | 3 | 1 |
| 7800307 | PRC12R040SS32-3S | 28 | 40 | 150 | 50 | 32 | RP12 | 3 | 2 |
| 7800310 | PRC12R040SS32-3L | 28 | 40 | 250 | 50 | 32 | RP12 | 3 | 2 |
| 7800308 | PRC12R050SS42-4S | 38 | 50 | 150 | 50 | 42 | RP12 | 4 | 2 |
| 7800311 | PRC12R050SS42-4L | 38 | 50 | 250 | 50 | 42 | RP12 | 4 | 2 |
| 7800312 | PRC16R040SS32-2S | 24 | 40 | 150 | 50 | 32 | RP16 | 2 | 2 |
| 7800315 | PRC16R040SS32-2L | 24 | 40 | 250 | 50 | 32 | RP16 | 2 | 2 |
| 7800313 | PRC16R050SS42-3S | 34 | 50 | 150 | 50 | 42 | RP16 | 3 | 2 |
| 7800316 | PRC16R050SS42-3L | 34 | 50 | 250 | 50 | 42 | RP16 | 3 | 2 |
| 7800314 | PRC16R063SS42-4S | 47 | 63 | 150 | 50 | 42 | RP16 | 4 | 2 |
| 7800317 | PRC16R063SS42-4L | 47 | 63 | 250 | 50 | 42 | RP16 | 4 | 2 |

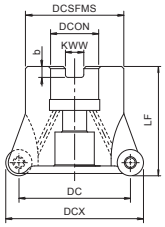
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 20 - 40 (RPH-10) | 7808116 | FS30573A (Torx 10) | Clamping screw |
| 20 - 40 (RPH-10) | 7808207 | T10-D (Torx 10) | Wrench |
| 32 - 50 (RPH-12) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 32 - 50 (RPH-12) | 7808208 | T15-D (Torx 15) | Wrench |
| 40 - 63 (RPH-16) | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 40 - 63 (RPH-16) | 7808209 | T20-D (Torx 20) | Wrench |

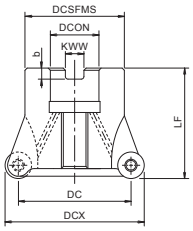
# PRC

## Milling | Indexable

## BORE




Type 1




Type 2

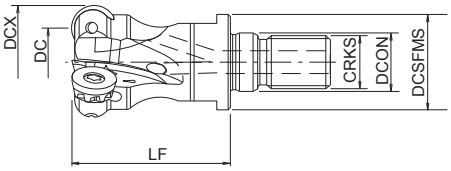
- Radius cutter
- Round inserts
- Bore type
- 50 - 100 mm

C.880 C.1057

| EDP | Designation | DC | DCX | LF | DCON | DCSFMS | KWW | b | Applicable inserts type | ZEFP | Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7800200 | PRC12R050M22-4 | 38 | 50 | 40 | 22 | 45 | 10,4 | 6,3 | RP12 | 4 | 2 |
| 7800204 | PRC12R050M22-5 | 38 | 50 | 40 | 22 | 45 | 10,4 | 6,3 | RP12 | 5 | 2 |
| 7800201 | PRC12R063M22-4 | 51 | 63 | 40 | 22 | 50 | 10,4 | 6,3 | RP12 | 4 | 2 |
| 7800206 | PRC12R063M22-6 | 51 | 63 | 40 | 22 | 50 | 10,4 | 6,3 | RP12 | 6 | 2 |
| 7800202 | PRC12R080M27-5 | 68 | 80 | 50 | 27 | 60 | 12,4 | 7 | RP12 | 5 | 2 |
| 7800207 | PRC12R080M27-8 | 68 | 80 | 50 | 27 | 60 | 12,4 | 7 | RP12 | 8 | 2 |
| 7800203 | PRC12R100M32-6 | 88 | 100 | 50 | 32 | 70 | 14,4 | 8 | RP12 | 6 | 2 |
| 7800208 | PRC12R100M32-10 | 88 | 100 | 50 | 32 | 70 | 14,4 | 8 | RP12 | 10 | 2 |
| 7800213 | PRC16R050M22-3 | 34 | 50 | 40 | 22 | 45 | 10,4 | 6,3 | RP16 | 3 | 1 |
| 7800214 | PRC16R063M22-5 | 47 | 63 | 40 | 22 | 50 | 10,4 | 6,3 | RP16 | 5 | 2 |
| 7800216 | PRC16R080M27-6 | 64 | 80 | 50 | 27 | 60 | 12,4 | 7 | RP16 | 6 | 2 |
| 7800217 | PRC16R100M32-7 | 84 | 100 | 50 | 32 | 70 | 14,4 | 8 | RP16 | 7 | 2 |

### Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 | 7808151 | PS1031 (M10x31) | Power screw |
| 50 - 100 (RPH-12) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 50 - 100 (RPH-12) | 7808208 | T15-D (Torx 15) | Wrench |
| 50 - 100 (RPH-16) | 7808113 | FS45510 (Torx 20) | Clamping screw |
| 50 - 100 (RPH-16) | 7808209 | T20-D (Torx 20) | Wrench |




- Radius cutter
- Round inserts
- Screw fit type
- 20 - 40 mm

C.866 C.880 C.1057

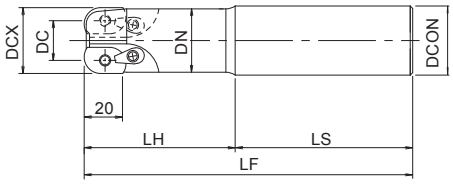
| EDP | Designation | DC | DCX | LF | DCON | DCSFMS | CRKS | Wrench size | Applicable inserts type | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7801700 | PRC10R020SF10-2 | 10 | 20 | 33 | 10,5 | 18 | 10 | 14 | RP...10... | 2 |
| 7801701 | PRC10R025SF12-3 | 15 | 25 | 35 | 12,5 | 23 | 12 | 17 | RP...10... | 3 |
| 7801702 | PRC10R030SF16-3 | 20 | 30 | 40 | 17 | 28 | 16 | 22 | RP...10... | 3 |
| 7801703 | PRC10R032SF16-4 | 22 | 32 | 40 | 17 | 28 | 16 | 22 | RP...10... | 4 |
| 7801704 | PRC10R040SF16-4 | 30 | 40 | 40 | 17 | 28 | 16 | 22 | RP...10... | 4 |
| 7801705 | PRC12R030SF16-2 | 18 | 30 | 40 | 17 | 28 | 16 | 22 | RP...12... | 2 |
| 7801706 | PRC12R032SF16-3 | 20 | 32 | 40 | 17 | 28 | 16 | 22 | RP...12... | 3 |
| 7801707 | PRC12R040SF16-3 | 28 | 40 | 40 | 17 | 28 | 16 | 22 | RP...12... | 3 |

## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 20 - 40 (RPH-10) | 7808116 | FS30573A (Torx 10) | Clamping screw |
| 20 - 40 (RPH-10) | 7808207 | T10-D (Torx 10) | Wrench |
| 32 - 40 (RPH-12) | 7808112 | FS35586 (Torx 15) | Clamping screw |
| 32 - 40 (RPH-12) | 7808208 | T15-D (Torx 15) | Wrench |

# PDR SS

**Milling | Indexable**




- High feed radius cutter, deep depth of cut
- 2 corners inserts
- Cylindrical type
- 40 - 50 mm

C.881 C.1058

| EDP | Designation | DC | DCX | LF | LH | APMX | DCON | DN | LS | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7800000 | PDR20R040SS42-2S | 20 | 40 | 150 | 50 | 20 | 42 | 38,9 | 100 | 2 |
| 7800009 | PDR20R040SS42-2L | 20 | 40 | 250 | 150 | 20 | 42 | 38,9 | 100 | 2 |
| 7800004 | PDR20R050SS42-3S | 30 | 50 | 150 | 50 | 20 | 42 | 48,5 | 100 | 3 |
| 7800013 | PDR20R050SS42-3L | 30 | 50 | 250 | 150 | 20 | 42 | 48,5 | 100 | 3 |

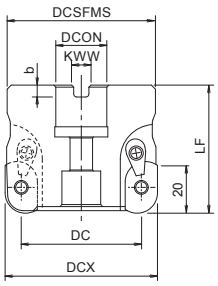
Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 50 - 40 | 7808001 | CSPB-5 (Torx 20IP) | Clamping screw |
| 50 - 40 | 7808000 | 20IP-T (Torx 20IP) | Wrench |
| 50 - 40 | 7808002 | CSY-20 | Clamping set |

# PDR

**Milling | Indexable**

**BORE**




- High feed radius cutter, deep depth of cut
- 2 corners inserts
- Bore type
- 63 - 125 mm

C.881 C.1058

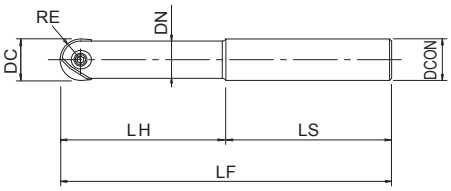
| EDP | Designation | DC | DCX | LF | APMX | DCON | DCSFMS | KWW | b | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7800057 | PDR20R063M22-3 | 43 | 63 | 63 | 20 | 22 | 60 | 10,4 | 6,3 | 3 |
| 7800058 | PDR20R063M22-4 | 43 | 63 | 63 | 20 | 22 | 60 | 10,4 | 6,3 | 4 |
| 7800059 | PDR20R080M27-4 | 60 | 80 | 63 | 20 | 27 | 76 | 12,4 | 7 | 4 |
| 7800060 | PDR20R080M27-5 | 60 | 80 | 63 | 20 | 27 | 76 | 12,4 | 7 | 5 |
| 7800061 | PDR20R100M32-5 | 80 | 100 | 63 | 20 | 32 | 96 | 14,4 | 8 | 5 |
| 7800062 | PDR20R100M32-6 | 80 | 100 | 63 | 20 | 32 | 96 | 14,4 | 8 | 6 |
| 7800063 | PDR20R125M40-6 | 105 | 125 | 63 | 20 | 40 | 100 | 16,4 | 9 | 6 |

## Accessories and spare parts

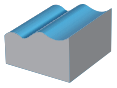
| Applicable cutter DC | EDP | Designation | Specification |
|---|---|---|---|
| 63 - 125 | 7808001 | CSPB-5 (Torx 20IP) | Clamping screw |
| 63 - 125 | 7808000 | 20IP-T (Torx 20IP) | Wrench |
| 63 - 125 | 7808002 | CSY-20 | Clamping set |

# PFB

**Milling | Indexable**




- Finishing ball nose cutter
- Excellent sharpness
- Cylindrical type
- 6 - 32 mm

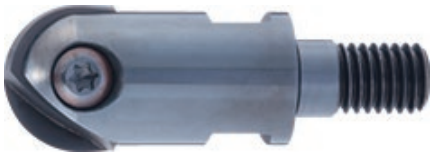


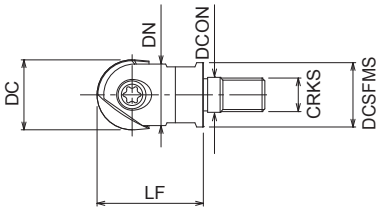
C.882 C.1059

| EDP | Designation | DC | RE | LF | LH | DCON | DN | LS | ULDR | Seat size | ZEFP | Specification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7801429 | PFB-R060SS06-S80CS | 6 | 3 | 80 | 15 | 6 | 5,4 | 65 | 2,5 | 1 | 2 | Carbide |
| 7801439 | PFB-R060SS06-L100CS | 6 | 3 | 100 | 30 | 6 | 5,4 | 70 | 5 | 1 | 2 | Carbide |
| 7801419 | PFB-R060SS06-LL120CS | 6 | 3 | 120 | 42 | 6 | 5,4 | 78 | 7 | 1 | 2 | Carbide |
| 7801430 | PFB-R080SS08-S100CS | 8 | 4 | 100 | 20 | 8 | 7 | 80 | 2,5 | 2 | 2 | Carbide |
| 7801440 | PFB-R080SS08-L120CS | 8 | 4 | 120 | 40 | 8 | 7 | 80 | 5 | 2 | 2 | Carbide |
| 7801420 | PFB-R080SS08-LL140CS | 8 | 4 | 140 | 56 | 8 | 7 | 84 | 7 | 2 | 2 | Carbide |
| 7801431 | PFB-R100SS10-S100CS | 10 | 5 | 100 | 25 | 10 | 9 | 75 | 2,5 | 3 | 2 | Carbide |
| 7801441 | PFB-R100SS10-L130CS | 10 | 5 | 130 | 50 | 10 | 9 | 80 | 5 | 3 | 2 | Carbide |
| 7801421 | PFB-R100SS10-LL150CS | 10 | 5 | 150 | 70 | 10 | 9 | 80 | 7 | 3 | 2 | Carbide |
| 7801432 | PFB-R120SS12-S110CS | 12 | 6 | 110 | 30 | 12 | 11 | 80 | 2,5 | 4 | 2 | Carbide |
| 7801442 | PFB-R120SS12-L140CS | 12 | 6 | 140 | 60 | 12 | 11 | 80 | 5 | 4 | 2 | Carbide |
| 7801422 | PFB-R120SS12-LL160CS | 12 | 6 | 160 | 84 | 12 | 11 | 76 | 7 | 4 | 2 | Carbide |
| 7801433 | PFB-R160SS16-S140CS | 16 | 8 | 140 | 40 | 16 | 14 | 100 | 2,5 | 5 | 2 | Carbide |
| 7801443 | PFB-R160SS16-L160CS | 16 | 8 | 160 | 72 | 16 | 14 | 88 | 4,5 | 5 | 2 | Carbide |
| 7801423 | PFB-R160SS16-LL200CS | 16 | 8 | 200 | 96 | 16 | 14 | 104 | 6 | 5 | 2 | Carbide |
| 7801434 | PFB-R200SS20-S160CS | 20 | 10 | 160 | 50 | 20 | 18 | 110 | 2,5 | 6 | 2 | Carbide |
| 7801444 | PFB-R200SS20-L180CS | 20 | 10 | 180 | 90 | 20 | 18 | 90 | 4,5 | 6 | 2 | Carbide |
| 7801424 | PFB-R200SS20-LL240CS | 20 | 10 | 240 | 120 | 20 | 18 | 120 | 6 | 6 | 2 | Carbide |
| 7801435 | PFB-R250SS25-S160CS | 25 | 12,5 | 160 | 62,5 | 25 | 22 | 97,5 | 2,5 | 7 | 2 | Carbide |
| 7801445 | PFB-R250SS25-L200CS | 25 | 12,5 | 200 | 100 | 25 | 22 | 100 | 4 | 7 | 2 | Carbide |
| 7801425 | PFB-R250SS25-LL260CS | 25 | 12,5 | 260 | 137,5 | 25 | 22 | 122,5 | 5,5 | 7 | 2 | Carbide |
| 7801436 | PFB-R300SS32-S170CS | 30 | 15 | 170 | 75 | 32 | 27 | 95 | 2,5 | 8 | 2 | Carbide |
| 7801446 | PFB-R300SS32-L220CS | 30 | 15 | 220 | 120 | 32 | 27 | 100 | 4 | 8 | 2 | Carbide |
| 7801426 | PFB-R300SS32-LL290CS | 30 | 15 | 290 | 165 | 32 | 27 | 125 | 5,5 | 8 | 2 | Carbide |
| 7801437 | PFB-R320SS32-S180CS | 32 | 16 | 180 | 80 | 32 | 29 | 100 | 2,5 | 9 | 2 | Carbide |
| 7801447 | PFB-R320SS32-L230CS | 32 | 16 | 230 | 128 | 32 | 29 | 102 | 4 | 9 | 2 | Carbide |
| 7801427 | PFB-R320SS32-LL300CS | 32 | 16 | 300 | 176 | 32 | 29 | 124 | 5,5 | 9 | 2 | Carbide |
| 7801400 | PFB-R080SS08-S120 | 8 | 4 | 120 | 36 | 8 | 7 | 84 | 4,5 | 2 | 2 | Steel |
| 7801401 | PFB-R100SS10-S130 | 10 | 5 | 130 | 45 | 10 | 9 | 85 | 4,5 | 3 | 2 | Steel |
| 7801402 | PFB-R120SS12-S130 | 12 | 6 | 130 | 54 | 12 | 11 | 76 | 4,5 | 4 | 2 | Steel |
| 7801403 | PFB-R160SS16-S140 | 16 | 8 | 140 | 64 | 16 | 14 | 76 | 4 | 5 | 2 | Steel |
| 7801404 | PFB-R200SS20-S160 | 20 | 10 | 160 | 80 | 20 | 18 | 80 | 4 | 6 | 2 | Steel |
| 7801405 | PFB-R250SS25-S160 | 25 | 12,5 | 160 | 75 | 25 | 22 | 85 | 3 | 7 | 2 | Steel |
| 7801406 | PFB-R300SS32-S170 | 30 | 15 | 170 | 90 | 32 | 27 | 80 | 3 | 8 | 2 | Steel |
| 7801407 | PFB-R320SS32-S180 | 32 | 16 | 180 | 96 | 32 | 29 | 84 | 3 | 9 | 2 | Steel |

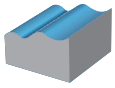
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 6 | 7808124 | FS20652RB | 0,8 N.m | Clamping screw |
| 8 | 7808123 | FS25669RB | 1,0 N.m | Clamping screw |
| 10 | 7808117 | FS30686RB | 1,2 N.m | Clamping screw |
| 12 | 7808118 | FS35610RB | 2,0 N.m | Clamping screw |
| 16 | 7808119 | FS40613RB | 3,0 N.m | Clamping screw |
| 20 | 7808120 | FS50615RB | 5,0 N.m | Clamping screw |
| 25 | 7808121 | FS60620RB | 5,0 N.m | Clamping screw |
| 30 - 32 | 7808122 | FS80624RB | 6,0 N.m | Clamping screw |
| 6 | 7808203 | T6-D (Torx 6) | - | Wrench |
| 8 | 7808204 | T7-D (Torx 7) | - | Wrench |
| 10 | 7808205 | T8-D (Torx 8) | - | Wrench |
| 12 | 7808207 | T10-D (Torx 10) | - | Wrench |
| 16 | 7808208 | T15-D (Torx 15) | - | Wrench |
| 20 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 25 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 30 - 32 | 7808212 | T30-T (Torx 30) | - | Wrench |






- Finishing ball nose cutter
- Excellent sharpness
- Screw fit type
- 10 - 30 mm



C.866 C.882 C.1059

| EDP | Designation | DC | RE | LF | DCON | DCSFMS | DN | Seat size | CRKS | Wrench size | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7801490 | PFB-R100SF6 | 10 | 6 | 26 | 6,5 | 9 | 9 | 3 | 6 | 7 | 2 |
| 7801491 | PFB-R120SF6 | 12 | 8 | 26 | 6,5 | 11 | 11 | 4 | 6 | 7 | 2 |
| 7801492 | PFB-R160SF8 | 16 | 10 | 32 | 8,5 | 14,5 | 14 | 5 | 8 | 10 | 2 |
| 7801493 | PFB-R200SF10 | 20 | 12,5 | 38 | 10,5 | 18 | 18 | 6 | 10 | 14 | 2 |
| 7801494 | PFB-R250SF12 | 25 | 15 | 38 | 12,5 | 23 | 22 | 7 | 12 | 17 | 2 |
| 7801495 | PFB-R300SF16 | 30 | - | 43 | 17 | 28 | 27 | 8 | 16 | 22 | 2 |

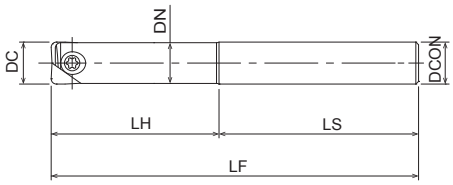
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 6 | 7808124 | FS20652RB | 0,8 N.m | Clamping screw |
| 8 | 7808123 | FS25669RB | 1,0 N.m | Clamping screw |
| 10 | 7808117 | FS30686RB | 1,2 N.m | Clamping screw |
| 12 | 7808118 | FS35610RB | 2,0 N.m | Clamping screw |
| 16 | 7808119 | FS40613RB | 3,0 N.m | Clamping screw |
| 20 | 7808120 | FS50615RB | 5,0 N.m | Clamping screw |
| 25 | 7808121 | FS60620RB | 5,0 N.m | Clamping screw |
| 30 - 32 | 7808122 | FS80624RB | 6,0 N.m | Clamping screw |
| 6 | 7808203 | T6-D (Torx 6) | - | Wrench |
| 8 | 7808204 | T7-D (Torx 7) | - | Wrench |
| 10 | 7808205 | T8-D (Torx 8) | - | Wrench |
| 12 | 7808207 | T10-D (Torx 10) | - | Wrench |
| 16 | 7808208 | T15-D (Torx 15) | - | Wrench |
| 20 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 25 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 30 - 32 | 7808212 | T30-T (Torx 30) | - | Wrench |

# PFR



**Milling | Indexable**




- Finishing corner radius cutter
- Excellent sharpness
- Cylindrical type
- 6 - 32 mm

C.885 C.1060

| EDP | Designation | DC | LF | LH | DCON | DN | LS | ULDR | Seat size | ZEFP | Specification |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7832029 | PFR-R060SS06-S80CS | 6 | 80 | 15 | 6 | 5,4 | 65 | 2,5 | 1 | 2 | Carbide |
| 7832039 | PFR-R060SS06-L100CS | 6 | 100 | 30 | 6 | 5,4 | 70 | 5 | 1 | 2 | Carbide |
| 7832019 | PFR-R060SS06-LL120CS | 6 | 120 | 42 | 6 | 5,4 | 79 | 7 | 1 | 2 | Carbide |
| 7832030 | PFR-R080SS08-S100CS | 8 | 100 | 20 | 8 | 7,5 | 80 | 2,5 | 2 | 2 | Carbide |
| 7832040 | PFR-R080SS08-L120CS | 8 | 120 | 40 | 8 | 7,5 | 80 | 5 | 2 | 2 | Carbide |
| 7832020 | PFR-R080SS08-LL140CS | 8 | 140 | 56 | 8 | 7,5 | 84 | 7 | 2 | 2 | Carbide |
| 7832031 | PFR-R100SS10-S100CS | 10 | 100 | 25 | 10 | 9,5 | 75 | 2,5 | 3 | 2 | Carbide |
| 7832041 | PFR-R100SS10-L130CS | 10 | 130 | 50 | 10 | 9,5 | 80 | 5 | 3 | 2 | Carbide |
| 7832021 | PFR-R100SS10-LL150CS | 10 | 150 | 70 | 10 | 9,5 | 80 | 7 | 3 | 2 | Carbide |
| 7832032 | PFR-R120SS12-S110CS | 12 | 110 | 30 | 12 | 11,5 | 80 | 2,5 | 4 | 2 | Carbide |
| 7832042 | PFR-R120SS12-L140CS | 12 | 140 | 60 | 12 | 11,5 | 80 | 5 | 4 | 2 | Carbide |
| 7832022 | PFR-R120SS12-LL160CS | 12 | 160 | 84 | 12 | 11,5 | 76 | 7 | 4 | 2 | Carbide |
| 7832033 | PFR-R160SS16-S140CS | 16 | 140 | 40 | 16 | 15,5 | 100 | 2,5 | 5 | 2 | Carbide |
| 7832043 | PFR-R160SS16-L160CS | 16 | 160 | 72 | 16 | 15,5 | 88 | 4,5 | 5 | 2 | Carbide |
| 7832023 | PFR-R160SS16-LL200CS | 16 | 200 | 96 | 16 | 15,5 | 104 | 6 | 5 | 2 | Carbide |
| 7832034 | PFR-R200SS20-S160CS | 20 | 160 | 50 | 20 | 19,5 | 110 | 2,5 | 6 | 2 | Carbide |
| 7832044 | PFR-R200SS20-L180CS | 20 | 180 | 90 | 20 | 19,5 | 90 | 4,5 | 6 | 2 | Carbide |
| 7832024 | PFR-R200SS20-LL240CS | 20 | 240 | 120 | 20 | 19,5 | 120 | 6 | 6 | 2 | Carbide |
| 7832035 | PFR-R250SS25-S160CS | 25 | 160 | 62,5 | 25 | 24,5 | 97,5 | 2,5 | 7 | 2 | Carbide |
| 7832045 | PFR-R250SS25-L200CS | 25 | 200 | 100 | 25 | 24,5 | 100 | 4 | 7 | 2 | Carbide |
| 7832025 | PFR-R250SS25-LL260CS | 25 | 260 | 137,5 | 25 | 24,5 | 122,5 | 5,5 | 7 | 2 | Carbide |
| 7832036 | PFR-R300SS32-S170CS | 30 | 170 | 75 | 32 | 29,5 | 95 | 2,5 | 8 | 2 | Carbide |
| 7832046 | PFR-R300SS32-L220CS | 30 | 220 | 120 | 32 | 29,5 | 100 | 4 | 8 | 2 | Carbide |
| 7832026 | PFR-R300SS32-LL290CS | 30 | 290 | 165 | 32 | 29,5 | 125 | 5,5 | 8 | 2 | Carbide |
| 7832037 | PFR-R320SS32-S180CS | 32 | 180 | 80 | 32 | 31,5 | 100 | 2,5 | 9 | 2 | Carbide |
| 7832047 | PFR-R320SS32-L230CS | 32 | 230 | 128 | 32 | 31,5 | 102 | 4 | 9 | 2 | Carbide |
| 7832027 | PFR-R320SS32-LL300CS | 32 | 300 | 176 | 32 | 31,5 | 124 | 5,5 | 9 | 2 | Carbide |
| 7832000 | PFR-R080SS08-S120 | 8 | 120 | 36 | 8 | 7,5 | 84 | 4,5 | 2 | 2 | Steel |
| 7832001 | PFR-R100SS10-S130 | 10 | 130 | 45 | 10 | 9,5 | 85 | 4,5 | 3 | 2 | Steel |
| 7832002 | PFR-R120SS12-S130 | 12 | 130 | 54 | 12 | 11,5 | 76 | 4,5 | 4 | 2 | Steel |
| 7832003 | PFR-R160SS16-S140 | 16 | 140 | 64 | 16 | 15,5 | 76 | 4 | 5 | 2 | Steel |
| 7832004 | PFR-R200SS20-S160 | 20 | 160 | 80 | 20 | 19,5 | 80 | 4 | 6 | 2 | Steel |
| 7832005 | PFR-R250SS25-S160 | 25 | 160 | 75 | 25 | 24,5 | 85 | 3 | 7 | 2 | Steel |
| 7832006 | PFR-R300SS32-S170 | 30 | 170 | 90 | 32 | 29,5 | 80 | 3 | 8 | 2 | Steel |
| 7832007 | PFR-R320SS32-S180 | 32 | 180 | 96 | 32 | 31,5 | 84 | 3 | 9 | 2 | Steel |

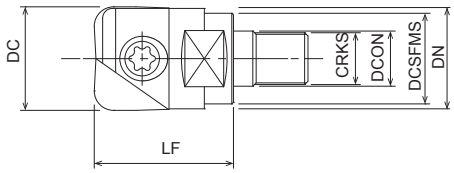
## Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 6 | 7808124 | FS20652RB | 0,8 N.m | Clamping screw |
| 8 | 7808123 | FS25669RB | 1,0 N.m | Clamping screw |
| 10 | 7808117 | FS30686RB | 1,2 N.m | Clamping screw |
| 12 | 7808118 | FS35610RB | 2,0 N.m | Clamping screw |
| 16 | 7808119 | FS40613RB | 3,0 N.m | Clamping screw |
| 20 | 7808120 | FS50615RB | 5,0 N.m | Clamping screw |
| 25 | 7808121 | FS60620RB | 5,0 N.m | Clamping screw |
| 30 - 32 | 7808122 | FS80624RB | 6,0 N.m | Clamping screw |
| 6 | 7808203 | T6-D (Torx 6) | - | Wrench |
| 8 | 7808204 | T7-D (Torx 7) | - | Wrench |
| 10 | 7808205 | T8-D (Torx 8) | - | Wrench |
| 12 | 7808207 | T10-D (Torx 10) | - | Wrench |
| 16 | 7808208 | T15-D (Torx 15) | - | Wrench |
| 20 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 25 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 30 - 32 | 7808212 | T30-T (Torx 30) | - | Wrench |

# PFR

**Milling | Indexable**

## SCREW FIT




- Finishing corner radius cutter
- Excellent sharpness
- Screw fit type
- 10 - 32 mm

C.866 C.885 C.1060

| EDP | Designation | DC | LF | DCON | DCSFMS | DN | Seat size | CRKS | Wrench size | ZEFP |
|---|---|---|---|---|---|---|---|---|---|---|
| 7832090 | PFR-R100SF6 | 10 | 26 | 6,5 | 9 | 9 | 3 | 6 | 7 | 2 |
| 7832091 | PFR-R120SF6 | 12 | 26 | 6,5 | 11 | 11 | 4 | 6 | 7 | 2 |
| 7832092 | PFR-R160SF8 | 16 | 32 | 8,5 | 14,5 | 15 | 5 | 8 | 10 | 2 |
| 7832093 | PFR-R200SF10 | 20 | 38 | 10,5 | 18 | 19 | 6 | 10 | 14 | 2 |
| 7832094 | PFR-R250SF12 | 25 | 38 | 12,5 | 23 | 24 | 7 | 12 | 17 | 2 |
| 7832095 | PFR-R300SF16 | 30 | 43 | 17 | 28 | 29 | 8 | 16 | 22 | 2 |
| 7832096 | PFR-R320SF16 | 32 | 43 | 17 | 28 | 31 | 9 | 16 | 22 | 2 |

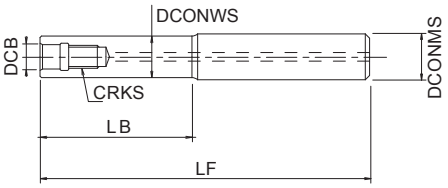
### Accessories and spare parts

| Applicable cutter DC | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 6 | 7808124 | FS20652RB | 0,8 N.m | Clamping screw |
| 8 | 7808123 | FS25669RB | 1,0 N.m | Clamping screw |
| 10 | 7808117 | FS30686RB | 1,2 N.m | Clamping screw |
| 12 | 7808118 | FS35610RB | 2,0 N.m | Clamping screw |
| 16 | 7808119 | FS40613RB | 3,0 N.m | Clamping screw |
| 20 | 7808120 | FS50615RB | 5,0 N.m | Clamping screw |
| 25 | 7808121 | FS60620RB | 5,0 N.m | Clamping screw |
| 30 - 32 | 7808122 | FS80624RB | 6,0 N.m | Clamping screw |
| 6 | 7808203 | T6-D (Torx 6) | - | Wrench |
| 8 | 7808204 | T7-D (Torx 7) | - | Wrench |
| 10 | 7808205 | T8-D (Torx 8) | - | Wrench |
| 12 | 7808207 | T10-D (Torx 10) | - | Wrench |
| 16 | 7808208 | T15-D (Torx 15) | - | Wrench |
| 20 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 25 | 7808209 | T20-D (Torx 20) | - | Wrench |
| 30 - 32 | 7808212 | T30-T (Torx 30) | - | Wrench |

# OP-SFA



**Milling | Indexable**



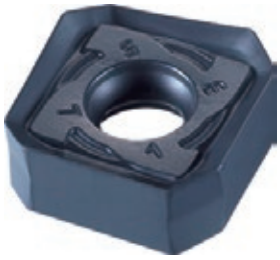

- Arbor for Screw fit type

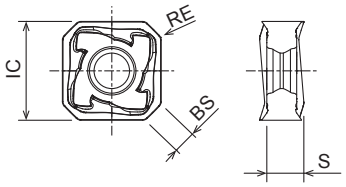
| EDP | Designation | LF | LB | DCON | DCONWS | DCB | CRKS | Specification |
|---|---|---|---|---|---|---|---|---|
| 7801904 | SF-M06SS10-4 | 104 | 4 | 10 | 9 | 6,5 | 6 | Steel |
| 7801905 | SF-M06SS12-10 | 104 | 10 | 12 | 11 | 6,5 | 6 | Steel |
| 7801900 | SF-M08SS16-15 | 95 | 15 | 16 | 14,5 | 8,5 | 8 | Steel |
| 7801901 | SF-M10SS20-20 | 120 | 20 | 20 | 18 | 10,5 | 10 | Steel |
| 7801902 | SF-M12SS25-35 | 135 | 35 | 25 | 23 | 12,5 | 12 | Steel |
| 7801903 | SF-M16SS32-35 | 155 | 35 | 32 | 28 | 17 | 16 | Steel |
| 7801918 | SF-M06SS10-24CS | 124 | 24 | 10 | 9 | 6,5 | 6 | Carbide |
| 7801919 | SF-M06SS12-34CS | 134 | 34 | 12 | 11 | 6,5 | 6 | Carbide |
| 7801910 | SF-M08SS16-55CS | 115 | 55 | 16 | 14,5 | 8,5 | 8 | Carbide |
| 7801911 | SF-M08SS16-85CS | 145 | 85 | 16 | 14,5 | 8,5 | 8 | Carbide |
| 7801912 | SF-M10SS20-70CS | 140 | 70 | 20 | 18 | 10,5 | 10 | Carbide |
| 7801913 | SF-M10SS20-110CS | 180 | 110 | 20 | 18 | 10,5 | 10 | Carbide |
| 7801914 | SF-M12SS25-90CS | 170 | 90 | 25 | 23 | 12,5 | 12 | Carbide |
| 7801915 | SF-M12SS25-140CS | 220 | 140 | 25 | 23 | 12,5 | 12 | Carbide |
| 7801916 | SF-M16SS32-120CS | 220 | 120 | 32 | 28 | 17 | 16 | Carbide |
| 7801917 | SF-M16SS32-190CS | 290 | 190 | 32 | 28 | 17 | 16 | Carbide |

# PAS

**Milling | Indexable | Inserts**

## INSERTS

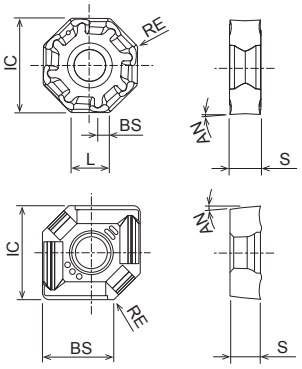





- 45° face milling cutter
- Double sided 8 corners inserts

C.836

| EDP | Designation | IC | S | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814061 | SNKU1505AZER-GM | 15,88 | 7,18 | 1 | 3,65 | 6,5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7819061 | SNKU1505AZER-GM | 15,88 | 7,18 | 1 | 3,65 | 6,5 | XC3025 | ◉ | | | | ◎ | ◎ | | | | | | |
| 7813061 | SNKU1505AZER-GM | 15,88 | 7,18 | 1 | 3,65 | 6,5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7812060 | SNKU1505AZER-GR | 15,88 | 7,18 | 1 | 3,65 | 6,5 | XC1015 | | | | | ◉ | ◉ | | | | | | |




- 45° face milling cutter
- Double sided 16 corners inserts

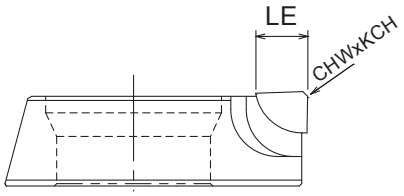
C.837

| EDP | Designation | IC | S | L | AN | RE | BS | APMX | Type | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7825062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XC3030 | ◉ | | | | ◎ | ◎ | | | | | | |
| 7813062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7826062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XP2025 | | ◎ | | ◉ | | | | | | ◎ | | |
| 7816085 | OZKU060508ER-SM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XC5040 | | | | ◎ | | | | | | ◉ | | |
| 7812062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XC1015 | | | | | ◉ | ◎ | | | | | | |
| 7812086 | OZKU060508SR-GR | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XC1015 | | | | | ◉ | ◎ | | | | | | |
| 7821062 | OZKU060508SR-GM | 17,1 | 5,66 | 6 | 3 | 0,8 | 2 | 3,5 | 1 | XP1020 | | | | | ◎ | ◉ | | | | | | |
| 7814064 | XAHT060525SR-GM | 17,1 | 5,66 | 10 | 3 | 2,5 | 10 | 3,5 | 2 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7812064 | XAHT060525SR-GM | 17,1 | 5,66 | 10 | 3 | 2,5 | 10 | 3,5 | 2 | XC1015 | | | | | ◉ | ◉ | | | | | | |

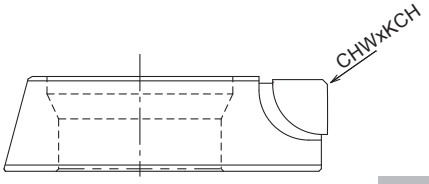
# PFAL

**Milling | Indexable | Inserts**

**Type 1**




**Type 2**




- Face milling finishing cutter for aluminium
- PCD blades

C.838

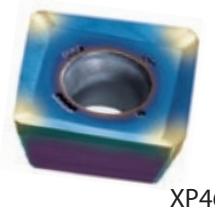
| EDP | Designation | KCH | CHW | LE | Type | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820500 | FR1204 | 45 | 0,4 | 4 | 1 | DP010 | | | | | | | ◉ | ◉ | | | | |
| 7820502 | FR1206 | 45 | 0,4 | 6 | 1 | DP010 | | | | | | | ◉ | ◉ | | | | |
| 7820501 | FR1204-W | 45 | 0,4 | - | 2 | DP010 | | | | | | | ◉ | ◉ | | | | |

# PFDC

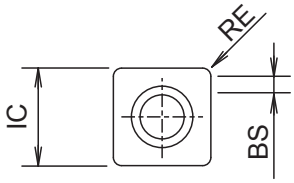
**Milling | Indexable | Inserts**

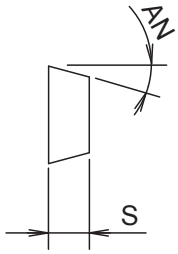
**INSERTS**

CK010



XP4610




- 90° Facemill cutter
- 4-corner inserts

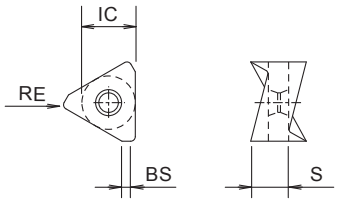
C.839

| EDP | Designation | IC | S | AN | RE | BS | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7811076 | SDHT09T308FR-NM | 9,07 | 3,97 | 15° | 0,8 | 2,5 | CK010 | | | | | | | | ◉ | | | | |
| 7818076 | SDHT09T308FR-NM | 9,07 | 3,97 | 15° | 0,8 | 2,5 | XP4610 | | | | | | | ◉ | ◉ | | | | |

# PSTW

**Milling | Indexable | Inserts**

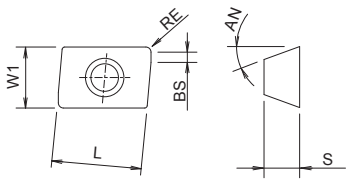
## INSERTS




- 90° shoulder cutter
- Double sided 6 corners inserts

C.841

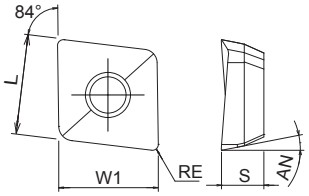
| EDP | Designation | IC | S | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7813104 | TNHU090404FR-NM | 7,46 | 4,64 | 0,4 | 1,15 | 9 | CK010 | | | | | | | | ● | | | | |
| 7811087 | TNHU120608ER-NM | 10,8 | 6,55 | 0,8 | 1,25 | 12 | CK010 | | | | | | | | ● | | | | |
| 7821091 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7827088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7821092 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7828088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7821095 | TNKU090404ER-GL | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825089 | TNKU120608ER-GL | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7821093 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7813101 | TNKU090404ER-GL | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814089 | TNKU120608ER-GL | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813097 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813105 | TNKU090408ER-GM | 7,46 | 4,64 | 0,8 | 0,9 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813107 | TNKU090412ER-GM | 7,46 | 4,64 | 1,2 | 0,6 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814094 | TNKU120612ER-GM | 10,8 | 6,55 | 1,2 | 1,0 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814095 | TNKU120616ER-GM | 10,8 | 6,55 | 1,6 | 0,75 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814096 | TNKU120620ER-GM | 10,8 | 6,55 | 2,0 | 0,60 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813098 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813106 | TNKU090408ER-GM | 7,46 | 4,64 | 0,8 | 0,9 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813108 | TNKU090412ER-GM | 7,46 | 4,64 | 1,2 | 0,6 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813094 | TNKU120612ER-GM | 10,8 | 6,55 | 1,2 | 1,0 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813095 | TNKU120616ER-GM | 10,8 | 6,55 | 1,6 | 0,75 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813096 | TNKU120620ER-GM | 10,8 | 6,55 | 2,0 | 0,60 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813100 | TNKU090404ER-GL | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813089 | TNKU120608ER-GL | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813099 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC1015 | | | | | ● | ◎ | | | | | | |
| 7812088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC1015 | | | | | ● | ◎ | | | | | | |
| 7813102 | TNKU090404ER-GR | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC1015 | | | | | ● | ◎ | | | | | | |
| 7812090 | TNKU120608ER-GR | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC1015 | | | | | ● | ◎ | | | | | | |
| 7821094 | TNKU090404ER-GM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP1020 | | | | | ◎ | ● | | | | | | |
| 7821088 | TNKU120608ER-GM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP1020 | | | | | ◎ | ● | | | | | | |
| 7821096 | TNKU090404ER-GR | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XP1020 | | | | | ◎ | ● | | | | | | |
| 7821090 | TNKU120608ER-GR | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XP1020 | | | | | ◎ | ● | | | | | | |
| 7813103 | TNKU090404ER-SM | 7,46 | 4,64 | 0,4 | 1,2 | 12 | XC5040 | | | | ◎ | | | | | ● | | | |
| 7816091 | TNKU120608ER-SM | 10,8 | 6,55 | 0,8 | 1,5 | 12 | XC5040 | | | | ◎ | | | | | ● | | | |




- 90° shoulder cutter
- 2 corners inserts with bottom notch

C.844

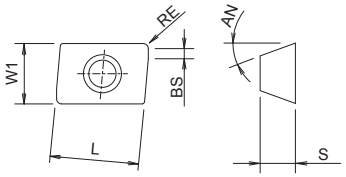
| EDP | Designation | S | W1 | L | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7811023 | ZDKT11T308FR-NM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | CK010 | | | | | | | | ● | | | | |
| 7827026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7827032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7827033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7828026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7828032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7828033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7825026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7814026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7826026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7826032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7813026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7812033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC1015 | | | | | ● | ● | | | | | | |
| 7815031 | ZDKT11T308ER-SM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC5035 | | | ● | ◎ | | | | | | ◎ | | |
| 7816031 | ZDKT11T308ER-SM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC5040 | | | | ◎ | | | | | | ● | | |
| 7824035 | ZDKT11T308SR-HR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP6015 | ◎ | | | | ◎ | ◎ | | | | | ● | |




- Counterboring cutter
- 2 corners inserts

C.852

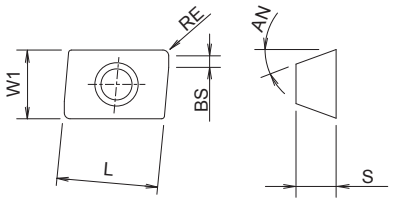
| EDP | Designation | S | W1 | L | AN | RE | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814108 | ZPNT100408EN | 4,65 | 10,95 | 10,95 | 11 | 0,8 | XP8030 | | ◉ | | ◉ | ◎ | ◎ | | ◎ | | ◎ | | ◎ |
| 7814110 | ZPNT130508EN | 5,46 | 13,92 | 13,92 | 11 | 0,8 | XP8030 | | ◉ | | ◉ | ◎ | ◎ | | ◎ | | ◎ | | ◎ |
| 7814111 | ZPNT170608EN | 6,31 | 17,85 | 17,85 | 11 | 0,8 | XP8030 | | ◉ | | ◉ | ◎ | ◎ | | ◎ | | ◎ | | ◎ |




- 90° shoulder cutter
- 2 corners inserts with bottom notch

C.842

| EDP | Designation | S | W1 | L | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7811112 | ZDKT070302FR-NM | 2,54 | 4 | 8,2 | 15 | 0,2 | 1,1 | | CK010 | | | | | | | | ● | | | | |
| 7811113 | ZDKT070304FR-NM | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | CK010 | | | | | | | | ● | | | | |
| 7825127 | ZDKT070304SR-GL | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825129 | ZDKT070308SR-GL | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825128 | ZDKT070304SR-GM | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825130 | ZDKT070308SR-GM | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XC3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7814123 | ZDKT070304SR-GL | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814125 | ZDKT070308SR-GL | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814124 | ZDKT070304SR-GM | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814126 | ZDKT070308SR-GM | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7826121 | ZDKT070304SR-GL | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7826122 | ZDKT070308SR-GL | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7813117 | ZDKT070304SR-GL | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813119 | ZDKT070308SR-GL | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813116 | ZDKT070302SR-GM | 2,54 | 4 | 8,2 | 15 | 0,2 | 1,1 | | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813118 | ZDKT070304SR-GM | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7813120 | ZDKT070308SR-GM | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ◎ | |
| 7812114 | ZDKT070304SR-GM | 2,54 | 4 | 8,2 | 15 | 0,4 | 0,9 | | XC1015 | | | | | ● | ● | | | | | | |
| 7812115 | ZDKT070308SR-GM | 2,54 | 4 | 8,2 | 15 | 0,8 | 0,5 | | XC1015 | | | | | ● | ● | | | | | | |
| 7814026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814025 | ZDKT11T304SR-GM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814053 | ZDKT11T312SR-GM | 3,8 | 6,8 | 11 | 15 | 1,2 | 1 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814038 | ZDKT11T320SR-GM | 3,8 | 6,8 | 11 | 15 | 2 | 2,1 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814054 | ZDKT11T330SR-GM | 3,8 | 6,8 | 11 | 15 | 3 | 1,5 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814055 | ZDKT11T340SR-GM | 3,8 | 6,8 | 11 | 15 | 4 | - | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7825026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825025 | ZDKT11T304SR-GM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7828026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7828032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7828033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP3025 | | ● | | | ◎ | ◎ | | | | | | |
| 7813026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7813025 | ZDKT11T304SR-GM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7813032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7813033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7826026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7826025 | ZDKT11T304SR-GM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7826032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7815031 | ZDKT11T308ER-SM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC5035 | | | ● | ◎ | | | | | | ◎ | ◎ | |
| 7815027 | ZDKT11T316ER-SM | 3,8 | 6,8 | 11 | 15 | 1,6 | 0,8 | 10 | XC5035 | | | ● | ◎ | | | | | | ◎ | ◎ | |
| 7816034 | ZDKT11T304ER-SM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XC5040 | | | | ◎ | | | | | | ● | | |
| 7816031 | ZDKT11T308ER-SM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC5040 | | | | ◎ | | | | | | ● | | |
| 7816027 | ZDKT11T316ER-SM | 3,8 | 6,8 | 11 | 15 | 1,6 | 0,8 | 10 | XC5040 | | | | ◎ | | | | | | ● | | |
| 7827026 | ZDKT11T308SR-GL | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7827032 | ZDKT11T308SR-GM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7827033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC3020 | ● | | | | ◎ | ◎ | | | | | | |
| 7812025 | ZDKT11T304SR-GM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | XC1015 | | | | | ● | ● | | | | | | |
| 7812033 | ZDKT11T308SR-GR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XC1015 | | | | | ● | ● | | | | | | |
| 7824035 | ZDKT11T308SR-HR | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | XP6015 | ◎ | | | | ◎ | ◎ | | | | | ● | |
| 7811048 | ZDKT11T302FR-NM | 3,8 | 6,8 | 11 | 15 | 0,2 | 2 | 10 | CK010 | | | | | | | | ● | | | | |
| 7811049 | ZDKT11T304FR-NM | 3,8 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | CK010 | | | | | | | | ● | | | | |
| 7811024 | ZDHT11T304FR-NM | 3,5 | 6,8 | 11 | 15 | 0,4 | 1,8 | 10 | CK010 | | | | | | | | ● | | | | |
| 7811023 | ZDKT11T308FR-NM | 3,8 | 6,8 | 11 | 15 | 0,8 | 1,4 | 10 | CK010 | | | | | | | | ● | | | | |
| 7814057 | ZDKT150508SR-GL | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814029 | ZDKT150508SR-GM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814077 | ZDKT150512SR-GM | 5,56 | 9,3 | 15 | 15 | 1,2 | 1,2 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814078 | ZDKT150516SR-GM | 5,56 | 9,3 | 15 | 15 | 1,6 | 0,8 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814079 | ZDKT150520SR-GM | 5,56 | 9,3 | 15 | 15 | 2 | 2,1 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |




- 90° shoulder cutter
- 2 corners inserts with bottom notch

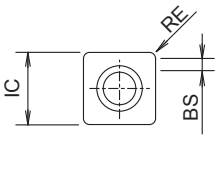
C.842

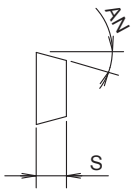
| EDP | Designation | S | W1 | L | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814080 | ZDKT150530SR-GM | 5,56 | 9,3 | 15 | 15 | 3 | 1,9 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814081 | ZDKT150540SR-GM | 5,56 | 9,3 | 15 | 15 | 4 | 1,1 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814082 | ZDKT150550SR-GM | 5,56 | 9,3 | 15 | 15 | 5 | 0,7 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814058 | ZDKT150508SR-GR | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3035 | ● | ● | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7825057 | ZDKT150508SR-GL | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825029 | ZDKT150508SR-GM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7825058 | ZDKT150508SR-GR | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP3030 | ● | | | | ◎ | ◎ | | | | | | |
| 7813057 | ZDKT150508SR-GL | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7813028 | ZDKT150508SR-GM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7813058 | ZDKT150508SR-GR | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP2040 | ◎ | ◎ | ◎ | ● | | | | | | ◎ | ● | |
| 7826057 | ZDKT150508SR-GL | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7826029 | ZDKT150508SR-GM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP2025 | | ◎ | | ● | | | | | | ◎ | | |
| 7815056 | ZDKT150508ER-SM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XC5035 | | | ● | ◎ | | | | | | ◎ | ◎ | |
| 7816056 | ZDKT150508ER-SM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XC5040 | | | | ◎ | | | | | | ● | | |
| 7812029 | ZDKT150508SR-GM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XC1015 | | | | | ● | ● | | | | | | |
| 7812058 | ZDKT150508SR-GR | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XC1015 | | | | | ● | ● | | | | | | |
| 7824036 | ZDKT150508SR-HR | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | XP6015 | ◎ | | | | ◎ | ◎ | | | | | ● | |
| 7811046 | ZDKT150508FR-NM | 5,56 | 9,3 | 15 | 15 | 0,8 | 1,6 | 14 | CK010 | | | | | | | | ● | | | | |

# PSF/PSFL

**Milling | Indexable | Inserts**

## INSERTS

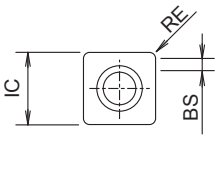



- Shoulder cutter
- 4 corners inserts

C.848

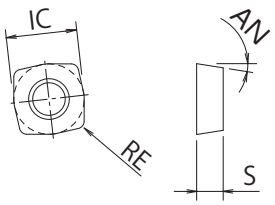
| EDP | Designation | IC | S | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7811076 | SDHT09T308FR-NM | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | CK010 | | | | | | | | ◉ | | | | |
| 7811625 | SDHT120508FR-NM | 12,38 | 5 | 15 | 0,8 | 1,2 | 5 | CK010 | | | | | | | | ◉ | | | | |
| 7825073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC3030 | ◉ | | | | | | | | | | | |
| 7825074 | SDKT09T308SR-GM | 12,38 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC3030 | ◉ | | | | ◎ | ◎ | | | | | | |
| 7825622 | SDKT120508SR-GM | 9,07 | 5 | 15 | 0,8 | 1,2 | 5 | XC3030 | ◉ | | | | ◎ | ◎ | | | | | | |
| 7814073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814074 | SDKT09T308SR-GM | 12,38 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814621 | SDKT120508SR-GM | 9,07 | 5 | 15 | 0,8 | 1,2 | 5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813073 | SDKT09T308SR-GL | 12,38 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7813074 | SDKT09T308SR-GM | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7813623 | SDKT120508SR-GL | 9,07 | 5 | 15 | 0,8 | 1,2 | 5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7812075 | SDKT09T308SR-GR | 12,38 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC1015 | | | | | ◉ | ◉ | | | | | | |
| 7812624 | SDKT120508SR-GR | 9,07 | 5 | 15 | 0,8 | 1,2 | 5 | XC1015 | | | | | ◉ | ◉ | | | | | | |
| 7816073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC5040 | | | | ◎ | | | | | | ◉ | | |
| 7816620 | SDKT120508SR-GL | 12,38 | 5 | 15 | 0,8 | 1,2 | 5 | XC5040 | | | | ◎ | | | | | | ◉ | | |




- Shoulder cutter
- 4 corners inserts

C.848

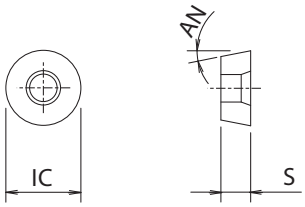
| EDP | Designation | IC | S | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7814074 | SDKT09T308SR-GM | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP3035 | ◉ | ◉ | ◎ | ◎ | ◎ | ◎ | | | | | | |
| 7813073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7813074 | SDKT09T308SR-GM | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XP2040 | ◎ | ◎ | ◎ | ◉ | | | | | | ◎ | ◎ | |
| 7816073 | SDKT09T308SR-GL | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC5040 | | | | ◎ | | | | | | ◉ | | |
| 7812075 | SDKT09T308SR-GR | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | XC1015 | | | | | ◉ | ◉ | | | | | | |
| 7811076 | SDHT09T308FR-NM | 9,07 | 3,97 | 15 | 0,8 | 2,5 | 5 | CK010 | | | | | | | | ◉ | | | | |




- High feed radius cutter for long over hang
- 4 corners inserts

C.854

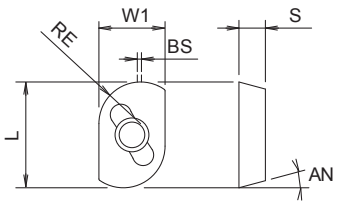
| EDP | Designation | IC | S | AN | RE | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7828092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XP3025 | | ● | | | ○ | ○ | | | | | | |
| 7827092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XC3020 | ● | | | | ○ | ○ | | | | | | |
| 7825092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7816093 | SPMT070305ER-SM | 7 | 2,75 | 11 | 0,5 | 0,8 | XC5040 | | | | ○ | | | | | | ● | | |
| 7812092 | SPMT070305SR-GM | 7 | 2,75 | 11 | 0,5 | 0,8 | XC1015 | | | | | ● | ● | | | | | | |
| 7814020 | SDMT09T308SR-GM | 9,52 | 3,97 | 15 | 0,8 | 1 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7825020 | SDMT09T308SR-GM | 9,52 | 3,97 | 15 | 0,8 | 1 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813020 | SDMT09T308SR-GM | 9,52 | 3,97 | 15 | 0,8 | 1 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826020 | SDMT09T308SR-GM | 9,52 | 3,97 | 15 | 0,8 | 1 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7815021 | SDMT09T308ER-SM | 9,52 | 3,97 | 15 | 0,8 | 1 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7816021 | SDMT09T308ER-SM | 9,52 | 3,97 | 15 | 0,8 | 1 | XC5040 | | | | ○ | | | | | | ● | | |
| 7812020 | SDMT09T308SR-GM | 9,52 | 3,97 | 15 | 0,8 | 1 | XC1015 | | | | | ● | ● | | | | | | |
| 7814022 | SXMT120410SR-GM | 12,7 | 4,76 | 9 | 1 | 2 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7825022 | SXMT120410SR-GM | 12,7 | 4,76 | 9 | 1 | 2 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813022 | SXMT120410SR-GM | 12,7 | 4,76 | 9 | 1 | 2 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826022 | SXMT120410SR-GM | 12,7 | 4,76 | 9 | 1 | 2 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7815023 | SXMT120410ER-SM | 12,7 | 4,76 | 9 | 1 | 2 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7816023 | SXMT120410ER-SM | 12,7 | 4,76 | 9 | 1 | 2 | XC5040 | | | | ○ | | | | | | ● | | |
| 7812022 | SXMT120410SR-GM | 12,7 | 4,76 | 9 | 1 | 2 | XC1015 | | | | | ● | ● | | | | | | |




- Radius cutter
- Round inserts

C.857

| EDP | Designation | IC | S | AN | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7814030 | RPHW10T3MOSN | 10 | 3,97 | 11 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7825017 | RPHW10T3MOSN | 10 | 3,97 | 11 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813008 | RPHT10T3MOEN-GL | 10 | 3,97 | 11 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826008 | RPHT10T3MOEN-GL | 10 | 3,97 | 11 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7815050 | RPHT10T3M8EN-SM | 10 | 3,97 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7815010 | RPHT10T3MOEN-SM | 10 | 3,97 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7816050 | RPHT10T3M8EN-SM | 10 | 3,97 | 11 | XC5040 | | | | ○ | | | | | | ● | | |
| 7824083 | RPMT10T3M8EN-HR | 10 | 3,97 | 11 | XP6015 | ○ | | | | ○ | ○ | | | | | ● | |
| 7812017 | RPHW10T3MOEN | 10 | 3,97 | 11 | XC1015 | | | | | ● | ● | | | | | | |
| 7811009 | RPHT10T3MOFN-NM | 10 | 3,97 | 11 | CK010 | | | | | | | | ● | | | | |
| 7814018 | RPHW1204MOSN | 12 | 4,76 | 11 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7825018 | RPHW1204MOSN | 12 | 4,76 | 11 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813011 | RPHT1204MOEN-GL | 12 | 4,76 | 11 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826011 | RPHT1204MOEN-GL | 12 | 4,76 | 11 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7815051 | RPHT1204M8EN-SM | 12 | 4,76 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7815012 | RPHT1204MOEN-SM | 12 | 4,76 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7816051 | RPHT1204M8EN-SM | 12 | 4,76 | 11 | XC5040 | | | | ○ | | | | | | ● | | |
| 7824084 | RPMT1204M8EN-HR | 12 | 4,76 | 11 | XP6015 | ○ | | | | ○ | ○ | | | | | ● | |
| 7812018 | RPHW1204MOSN | 12 | 4,76 | 11 | XC1015 | | | | | ● | ● | | | | | | |
| 7811013 | RPHT1204MOFN-NM | 12 | 4,76 | 11 | CK010 | | | | | | | | ● | | | | |
| 7814019 | RPHW1605MOSN | 16 | 5,56 | 11 | XP3035 | ● | ● | ○ | ○ | ○ | ○ | | | | | | |
| 7825019 | RPHW1605MOSN | 16 | 5,56 | 11 | XC3030 | ● | | | | ○ | ○ | | | | | | |
| 7813014 | RPHT1605MOEN-GL | 16 | 5,56 | 11 | XP2040 | ○ | ○ | ○ | ● | | | | | | ○ | ○ | |
| 7826014 | RPHT1605MOEN-GL | 16 | 5,56 | 11 | XP2025 | | ○ | | ● | | | | | | ○ | | |
| 7815052 | RPHT1605M8EN-SM | 16 | 5,56 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7815015 | RPHT1605MOEN-SM | 16 | 5,56 | 11 | XC5035 | | | ● | ○ | | | | | | ○ | | |
| 7816052 | RPHT1605M8EN-SM | 16 | 5,56 | 11 | XC5040 | | | | ○ | | | | | | ● | | |
| 7812019 | RPHW1605MOSN | 16 | 5,56 | 11 | XC1015 | | | | | ● | ● | | | | | | |
| 7811016 | RPHT1605MOFN-NM | 16 | 5,56 | 11 | CK010 | | | | | | | | ● | | | | |



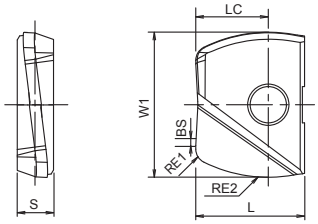

- High feed radius cutter, deep depth of cut
- 2 corners inserts

C.860

| EDP | Designation | S | W1 | L | AN | RE | BS | APMX | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7810000 | ADMT2006100PDR-GM | 6,35 | 16 | 24,18 | 15 | 10 | 1 | 20 | XP3930 | ◉ | | | | ◉ | ◉ | | | | | | |

# PFB-BR

**Milling | Indexable | Inserts**



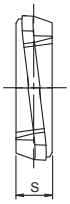

- Barrel type
- Contour milling of vertical slope
- Flat bottom milling
- 10 - 32 mm

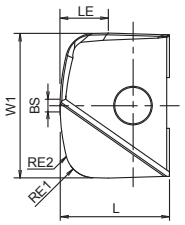
C.862

| EDP | Designation | ZEFP | S | W1 | L | RE | RE2 | BS | LC | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820071 | PFB100R150-BR-ST | 2 | 2,6 | 10 | 8,5 | 1 | 15 | 0,3 | 5 | XP3225 | 3 | ◉ | | ○ | | | | | | ○ | | | |
| 7820072 | PFB120R180-BR-ST | 2 | 3 | 12 | 10 | 1 | 18 | 0,3 | 6 | XP3225 | 4 | ◉ | | ○ | | | | | | ○ | | | |
| 7820073 | PFB160R240-BR-ST | 2 | 4 | 16 | 12 | 2 | 24 | 0,5 | 8 | XP3225 | 5 | ◉ | | ○ | | | | | | ○ | | | |
| 7820074 | PFB200R300-BR-ST | 2 | 5 | 20 | 15 | 2 | 30 | 0,5 | 10 | XP3225 | 6 | ◉ | | ○ | | | | | | ○ | | | |
| 7820075 | PFB250R375-BR-ST | 2 | 6 | 25 | 18,5 | 2,5 | 37,5 | 0,5 | 12,5 | XP3225 | 7 | ◉ | | ○ | | | | | | ○ | | | |
| 7820076 | PFB320R480-BR-ST | 2 | 7 | 32 | 23,5 | 3 | 48 | 0,5 | 16 | XP3225 | 9 | ◉ | | ○ | | | | | | ○ | | | |
| 7820081 | PFB100R150-BR-SH | 2 | 2,6 | 10 | 8,5 | 1 | 15 | 0,3 | 5 | XP3310 | 3 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820082 | PFB120R180-BR-SH | 2 | 3 | 12 | 10 | 1 | 18 | 0,3 | 6 | XP3310 | 4 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820083 | PFB160R240-BR-SH | 2 | 4 | 16 | 12 | 2 | 24 | 0,5 | 8 | XP3310 | 5 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820084 | PFB200R300-BR-SH | 2 | 5 | 20 | 15 | 2 | 30 | 0,5 | 10 | XP3310 | 6 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820085 | PFB250R375-BR-SH | 2 | 6 | 25 | 18,5 | 2,5 | 37,5 | 0,5 | 12,5 | XP3310 | 7 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820086 | PFB320R480-BR-SH | 2 | 7 | 32 | 23,5 | 3 | 48 | 0,5 | 16 | XP3310 | 9 | | | | | ◉ | ◉ | | | | | ◉ | |

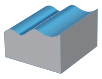
# PFB-LZ

**Milling | Indexable | Inserts**




- Lens type
- Copy milling of horizontal slope
- Copy milling of curved surface
- 10 - 32 mm



C.862

| EDP | Designation | ZEFP | S | W1 | L | RE | RE2 | BS | LC | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820091 | PFB100R150-LZ-ST | 2 | 2,6 | 10 | 8,5 | 1 | 15 | 0,75 | 3,3 | XP3225 | 3 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820092 | PFB120R180-LZ-ST | 2 | 3 | 12 | 10 | 1 | 18 | 0,75 | 4 | XP3225 | 4 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820093 | PFB160R240-LZ-ST | 2 | 4 | 16 | 12 | 2 | 24 | 1 | 5,3 | XP3225 | 5 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820094 | PFB200R300-LZ-ST | 2 | 5 | 20 | 15 | 2 | 30 | 1,75 | 6,7 | XP3225 | 6 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820095 | PFB250R375-LZ-ST | 2 | 6 | 25 | 18,5 | 2,5 | 37,5 | 1,75 | 8,3 | XP3225 | 7 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820096 | PFB320R480-LZ-ST | 2 | 7 | 32 | 23,5 | 3 | 48 | 2 | 10,7 | XP3225 | 9 | ◉ | | ◎ | | | | | | ◎ | | | |
| 7820101 | PFB100R150-LZ-SH | 2 | 2,6 | 10 | 8,5 | 1 | 15 | 0,75 | 3,3 | XP3310 | 3 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820102 | PFB120R180-LZ-SH | 2 | 3 | 12 | 10 | 1 | 18 | 0,75 | 4 | XP3310 | 4 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820103 | PFB160R240-LZ-SH | 2 | 4 | 16 | 12 | 2 | 24 | 1 | 5,3 | XP3310 | 5 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820104 | PFB200R300-LZ-SH | 2 | 5 | 20 | 15 | 2 | 30 | 1,75 | 6,7 | XP3310 | 6 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820105 | PFB250R375-LZ-SH | 2 | 6 | 25 | 18,5 | 2,5 | 37,5 | 1,75 | 8,3 | XP3310 | 7 | | | | | ◉ | ◉ | | | | | ◉ | |
| 7820106 | PFB320R480-LZ-SH | 2 | 7 | 32 | 23,5 | 3 | 48 | 2 | 10,7 | XP3310 | 9 | | | | | ◉ | ◉ | | | | | ◉ | |

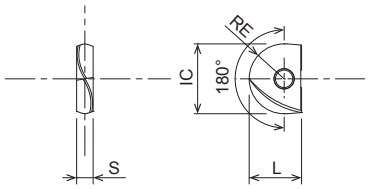
# PFB

**Milling | Indexable | Inserts**

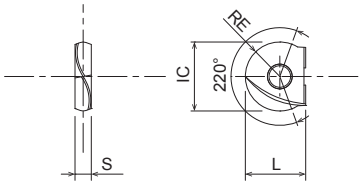
## INSERTS

- Finishing ball nose cutter
- Excellent sharpness
- 6 - 32 mm

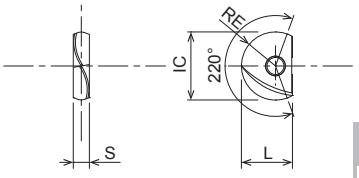
**Type 1**




**Type 2**




**Type 3**



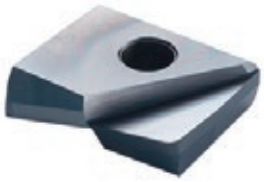

C.862

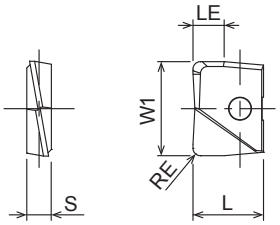
| EDP | Designation | Range de-gree | IC | S | L | RE | Type | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820030 | PFB080-SP | 180 | 8 | 2,4 | 7 | 4 | 1 | XP3225 | 2 | ● | | ● | | | | ● | | | ○ | | |
| 7820031 | PFB100-SP | 180 | 10 | 2,6 | 8,5 | 5 | 1 | XP3225 | 3 | ● | | ● | | | | ● | | | ○ | | |
| 7820032 | PFB120-SP | 180 | 12 | 3 | 10 | 6 | 1 | XP3225 | 4 | ● | | ● | | | | ● | | | ○ | | |
| 7820033 | PFB160-SP | 180 | 16 | 4 | 12 | 8 | 1 | XP3225 | 5 | ● | | ● | | | | ● | | | ○ | | |
| 7820034 | PFB200-SP | 180 | 20 | 5 | 15 | 10 | 1 | XP3225 | 6 | ● | | ● | | | | ● | | | ○ | | |
| 7820035 | PFB250-SP | 180 | 25 | 6 | 18,5 | 12,5 | 1 | XP3225 | 7 | ● | | ● | | | | ● | | | ○ | | |
| 7820036 | PFB300-SP | 180 | 30 | 7 | 22,5 | 15 | 1 | XP3225 | 8 | ● | | ● | | | | ● | | | ○ | | |
| 7820010 | PFB080-SP | 180 | 8 | 2,4 | 7 | 4 | 1 | XP3320 | 2 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820011 | PFB100-SP | 180 | 10 | 2,6 | 8,5 | 5 | 1 | XP3320 | 3 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820012 | PFB120-SP | 180 | 12 | 3 | 10 | 6 | 1 | XP3320 | 4 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820013 | PFB160-SP | 180 | 16 | 4 | 12 | 8 | 1 | XP3320 | 5 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820014 | PFB200-SP | 180 | 20 | 5 | 15 | 10 | 1 | XP3320 | 6 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820015 | PFB250-SP | 180 | 25 | 6 | 18,5 | 12,5 | 1 | XP3320 | 7 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820016 | PFB300-SP | 180 | 30 | 7 | 22,5 | 15 | 1 | XP3320 | 8 | ○ | | ○ | | ○ | ○ | | | | ● | ○ | |
| 7820039 | PFB060-SH | 220 | 6 | 2 | 5 | 3 | 2 | XP3310 | 1 | | | | | ● | ● | | | | | ● | |
| 7820040 | PFB080-SH | 180 | 8 | 2,4 | 7 | 4 | 1 | XP3310 | 2 | | | | | ● | ● | | | | | ● | |
| 7820041 | PFB100-SH | 180 | 10 | 2,6 | 8,5 | 5 | 1 | XP3310 | 3 | | | | | ● | ● | | | | | ● | |
| 7820042 | PFB120-SH | 180 | 12 | 3 | 10 | 6 | 1 | XP3310 | 4 | | | | | ● | ● | | | | | ● | |
| 7820043 | PFB160-SH | 180 | 16 | 4 | 12 | 8 | 1 | XP3310 | 5 | | | | | ● | ● | | | | | ● | |
| 7820044 | PFB200-SH | 180 | 20 | 5 | 15 | 10 | 1 | XP3310 | 6 | | | | | ● | ● | | | | | ● | |
| 7820045 | PFB250-SH | 180 | 25 | 6 | 18,5 | 12,5 | 1 | XP3310 | 7 | | | | | ● | ● | | | | | ● | |
| 7820046 | PFB300-SH | 180 | 30 | 7 | 22,5 | 15 | 1 | XP3310 | 8 | | | | | ● | ● | | | | | ● | |
| 7820047 | PFB320-SH | 180 | 32 | 7 | 23,5 | 16 | 1 | XP3310 | 9 | | | | | ● | ● | | | | | ● | |
| 48333000 | PFB160-Q-SH | 220 | 16 | 4 | 12 | 8 | 2 | XP3310 | 5 | | | | | ● | ● | | | | | ● | |
| 48333001 | PFB200-Q-SH | 220 | 20 | 5 | 15 | 10 | 2 | XP3310 | 6 | | | | | ● | ● | | | | | ● | |
| 7820107 | PFB100-HH | 180 | 10 | 2,6 | 8,5 | 5 | 1 | XP6703 | 3 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820108 | PFB120-HH | 180 | 12 | 3 | 10 | 6 | 1 | XP6703 | 4 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820109 | PFB160-HH | 180 | 16 | 4 | 12 | 8 | 1 | XP6703 | 5 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820110 | PFB200-HH | 180 | 20 | 5 | 15 | 10 | 1 | XP6703 | 6 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820111 | PFB250-HH | 180 | 25 | 6 | 18,5 | 12,5 | 1 | XP6703 | 7 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820112 | PFB300-HH | 180 | 30 | 7 | 22,5 | 15 | 1 | XP6703 | 8 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820113 | PFB320-HH | 180 | 32 | 7 | 23,5 | 16 | 1 | XP6703 | 9 | ○ | | | | ○ | ○ | | | | | ● | |
| 7820018 | PFB060-D | 220 | 6 | 2 | 5 | 3 | 2 | XC4505 | 1 | | | | | | | ● | | | | | |
| 7820019 | PFB070-D | 220 | 7 | 2 | 5,5 | 3,5 | 2 | XC4505 | 1 | | | | | | | ● | | | | | |
| 7820020 | PFB080-D | 180 | 8 | 2,4 | 7 | 4 | 1 | XC4505 | 2 | | | | | | | ● | | | | | |
| 7820021 | PFB100-D | 180 | 10 | 2,6 | 8,5 | 5 | 1 | XC4505 | 3 | | | | | | | ● | | | | | |
| 7820022 | PFB120-D | 180 | 12 | 3 | 10 | 6 | 1 | XC4505 | 4 | | | | | | | ● | | | | | |
| 7820023 | PFB160-D | 180 | 16 | 4 | 12 | 8 | 1 | XC4505 | 5 | | | | | | | ● | | | | | |
| 7820024 | PFB200-D | 180 | 20 | 5 | 15 | 10 | 1 | XC4505 | 6 | | | | | | | ● | | | | | |
| 7820025 | PFB250-D | 180 | 25 | 6 | 18,5 | 12,5 | 1 | XC4505 | 7 | | | | | | | ● | | | | | |
| 7820026 | PFB300-D | 180 | 30 | 7 | 22,5 | 15 | 1 | XC4505 | 8 | | | | | | | ● | | | | | |
| 7820048 | PFB060-Q | 220 | 6 | 2 | 5 | 3 | 2 | XP3225 | 1 | ● | | ● | | | | ● | | | ○ | | |
| 7820049 | PFB070-Q | 220 | 7 | 2 | 5,5 | 3,5 | 2 | XP3225 | 1 | ● | | ● | | | | ● | | | ○ | | |
| 7820050 | PFB080-Q | 220 | 8 | 2,4 | 7 | 4 | 2 | XP3225 | 2 | ● | | ● | | | | ● | | | ○ | | |
| 7820051 | PFB100-Q | 220 | 10 | 2,6 | 8,5 | 5 | 2 | XP3225 | 3 | ● | | ● | | | | ● | | | ○ | | |
| 7820052 | PFB120-Q | 220 | 12 | 3 | 10 | 6 | 2 | XP3225 | 4 | ● | | ● | | | | ● | | | ○ | | |
| 7820053 | PFB160-Q | 220 | 16 | 4 | 12 | 8 | 3 | XP3225 | 5 | ● | | ● | | | | ● | | | ○ | | |
| 7820054 | PFB200-Q | 220 | 20 | 5 | 15 | 10 | 3 | XP3225 | 6 | ● | | ● | | | | ● | | | ○ | | |
| 7820055 | PFB250-Q | 220 | 25 | 6 | 18,5 | 12,5 | 3 | XP3225 | 7 | ● | | ● | | | | ● | | | ○ | | |
| 7820056 | PFB300-Q | 220 | 30 | 7 | 22,5 | 15 | 3 | XP3225 | 8 | ● | | ● | | | | ● | | | ○ | | |
| 7820060 | PFB080-Q-ST | 200 | 8 | 2,4 | 7 | 4 | 2 | XP2225 | 2 | ○ | | ● | | | | | | | ● | ○ | |
| 7820061 | PFB100-Q-ST | 200 | 10 | 2,6 | 8,5 | 5 | 2 | XP2225 | 3 | ○ | | ● | | | | | | | ● | ○ | |
| 7820062 | PFB120-Q-ST | 200 | 12 | 3 | 10 | 6 | 2 | XP2225 | 4 | ○ | | ● | | | | | | | ● | ○ | |
| 7820063 | PFB160-Q-ST | 220 | 16 | 4 | 12 | 8 | 3 | XP2225 | 5 | ○ | | ● | | | | | | | ● | ○ | |
| 7820064 | PFB200-Q-ST | 220 | 20 | 5 | 15 | 10 | 3 | XP2225 | 6 | ○ | | ● | | | | | | | ● | ○ | |
| 7820065 | PFB250-Q-ST | 220 | 25 | 6 | 18,5 | 12,5 | 3 | XP2225 | 7 | ○ | | ● | | | | | | | ● | ○ | |
| 7820066 | PFB300-Q-ST | 220 | 30 | 7 | 22,5 | 15 | 3 | XP2225 | 8 | ○ | | ● | | | | | | | ● | ○ | |

# PFR

**Milling | Indexable | Inserts**

## INSERTS






- Finishing corner radius cutter
- Excellent sharpness
- 6 - 32 mm

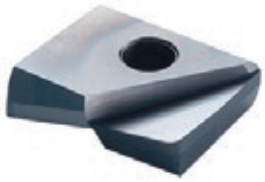
C.864

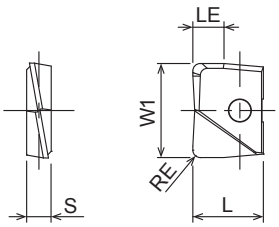
| EDP | Designation | S | W1 | L | RE | LE | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820350 | PFR060R03-ST | 2 | 6 | 5 | 0,3 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820351 | PFR060R05-ST | 2 | 6 | 5 | 0,5 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820352 | PFR060R10-ST | 2 | 6 | 5 | 1 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820353 | PFR070R03-ST | 2 | 7 | 5,5 | 0,3 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820354 | PFR070R05-ST | 2 | 7 | 5,5 | 0,5 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820355 | PFR070R10-ST | 2 | 7 | 5,5 | 1 | 2 | XP3225 | 1 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820200 | PFR080R03-ST | 2,4 | 8 | 7 | 0,3 | 2,7 | XP3225 | 2 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820201 | PFR080R05-ST | 2,4 | 8 | 7 | 0,5 | 2,7 | XP3225 | 2 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820202 | PFR080R10-ST | 2,4 | 8 | 7 | 1 | 2,7 | XP3225 | 2 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820203 | PFR080R20-ST | 2,4 | 8 | 7 | 2 | 2,7 | XP3225 | 2 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820204 | PFR100R03-ST | 2,6 | 10 | 8,5 | 0,3 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820205 | PFR100R05-ST | 2,6 | 10 | 8,5 | 0,5 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820206 | PFR100R10-ST | 2,6 | 10 | 8,5 | 1 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820207 | PFR100R20-ST | 2,6 | 10 | 8,5 | 2 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820356 | PFR110R03-ST | 2,6 | 11 | 8,5 | 0,3 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820357 | PFR110R05-ST | 2,6 | 11 | 8,5 | 0,5 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820358 | PFR110R10-ST | 2,6 | 11 | 8,5 | 1 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820359 | PFR110R20-ST | 2,6 | 11 | 8,5 | 2 | 3,3 | XP3225 | 3 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820208 | PFR120R03-ST | 3 | 12 | 10 | 0,3 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820209 | PFR120R05-ST | 3 | 12 | 10 | 0,5 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820210 | PFR120R10-ST | 3 | 12 | 10 | 1 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820211 | PFR120R20-ST | 3 | 12 | 10 | 2 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820212 | PFR120R30-ST | 3 | 12 | 10 | 3 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820360 | PFR130R03-ST | 3 | 13 | 10 | 0,3 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820361 | PFR130R05-ST | 3 | 13 | 10 | 0,5 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820362 | PFR130R10-ST | 3 | 13 | 10 | 1 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820363 | PFR130R20-ST | 3 | 13 | 10 | 2 | 4 | XP3225 | 4 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820213 | PFR160R03-ST | 4 | 16 | 12 | 0,3 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820214 | PFR160R05-ST | 4 | 16 | 12 | 0,5 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820215 | PFR160R10-ST | 4 | 16 | 12 | 1 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820216 | PFR160R20-ST | 4 | 16 | 12 | 2 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820217 | PFR160R30-ST | 4 | 16 | 12 | 3 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820364 | PFR170R03-ST | 4 | 17 | 12 | 0,3 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820365 | PFR170R05-ST | 4 | 17 | 12 | 0,5 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820366 | PFR170R10-ST | 4 | 17 | 12 | 1 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820367 | PFR170R20-ST | 4 | 17 | 12 | 2 | 5,3 | XP3225 | 5 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820218 | PFR200R03-ST | 5 | 20 | 15 | 0,3 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820219 | PFR200R05-ST | 5 | 20 | 15 | 0,5 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820220 | PFR200R10-ST | 5 | 20 | 15 | 1 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820221 | PFR200R20-ST | 5 | 20 | 15 | 2 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820222 | PFR200R30-ST | 5 | 20 | 15 | 3 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820368 | PFR210R03-ST | 5 | 21 | 15 | 0,3 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820369 | PFR210R05-ST | 5 | 21 | 15 | 0,5 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820370 | PFR210R10-ST | 5 | 21 | 15 | 1 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820371 | PFR210R20-ST | 5 | 21 | 15 | 2 | 6,7 | XP3225 | 6 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820223 | PFR250R03-ST | 6 | 25 | 18,5 | 0,3 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820224 | PFR250R05-ST | 6 | 25 | 18,5 | 0,5 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820225 | PFR250R10-ST | 6 | 25 | 18,5 | 1 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820226 | PFR250R20-ST | 6 | 25 | 18,5 | 2 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820227 | PFR250R30-ST | 6 | 25 | 18,5 | 3 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820372 | PFR260R03-ST | 6 | 26 | 18,5 | 0,3 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820373 | PFR260R05-ST | 6 | 26 | 18,5 | 0,5 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820374 | PFR260R10-ST | 6 | 26 | 18,5 | 1 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |

# PFR

**Milling | Indexable | Inserts**

## INSERTS






- Finishing corner radius cutter
- Excellent sharpness
- 6 - 32 mm

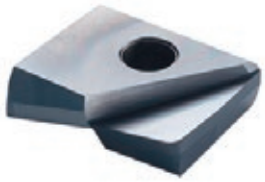
C.864

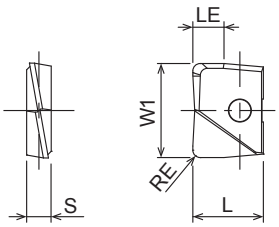
| EDP | Designation | S | W1 | L | RE | LE | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820375 | PFR260R20-ST | 6 | 26 | 18,5 | 2 | 8,3 | XP3225 | 7 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820228 | PFR300R03-ST | 7 | 30 | 22,5 | 0,3 | 10 | XP3225 | 8 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820229 | PFR300R05-ST | 7 | 30 | 22,5 | 0,5 | 10 | XP3225 | 8 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820230 | PFR300R10-ST | 7 | 30 | 22,5 | 1 | 10 | XP3225 | 8 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820231 | PFR300R20-ST | 7 | 30 | 22,5 | 2 | 10 | XP3225 | 8 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820232 | PFR300R30-ST | 7 | 30 | 22,5 | 3 | 10 | XP3225 | 8 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820233 | PFR320R03-ST | 7 | 32 | 23,5 | 0,3 | 10,3 | XP3225 | 9 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820234 | PFR320R05-ST | 7 | 32 | 23,5 | 0,5 | 10,3 | XP3225 | 9 | ● | | ● | | ○ | ○ | ● | | | ● | ○ | |
| 7820235 | PFR320R10-ST | 7 | 32 | 23,5 | 1 | 10,3 | XP3225 | 9 | ● | | ● | | ○ | ○ | ● | | | ● | ● | |
| 7820236 | PFR320R20-ST | 7 | 32 | 23,5 | 2 | 10,3 | XP3225 | 9 | ● | | ● | | ○ | ○ | ● | | | ● | ● | |
| 7820237 | PFR320R30-ST | 7 | 32 | 23,5 | 3 | 10,3 | XP3225 | 9 | ● | | ● | | ○ | ○ | ● | | | ● | ● | |
| 7820400 | PFR060R03-SH | 2 | 6 | 5 | 0,3 | 2 | XP3310 | 1 | ○ | | ○ | | ● | ● | | | | | ● | |
| 7820401 | PFR060R05-SH | 2 | 6 | 5 | 0,5 | 2 | XP3310 | 1 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820402 | PFR060R10-SH | 2 | 6 | 5 | 1 | 2 | XP3310 | 1 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820403 | PFR070R03-SH | 2 | 7 | 5,5 | 0,3 | 2 | XP3310 | 1 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820404 | PFR070R05-SH | 2 | 7 | 5,5 | 0,5 | 2 | XP3310 | 1 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820405 | PFR070R10-SH | 2 | 7 | 5,5 | 1 | 2 | XP3310 | 1 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820250 | PFR080R03-SH | 2,4 | 8 | 7 | 0,3 | 2,7 | XP3310 | 2 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820251 | PFR080R05-SH | 2,4 | 8 | 7 | 0,5 | 2,7 | XP3310 | 2 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820252 | PFR080R10-SH | 2,4 | 8 | 7 | 1 | 2,7 | XP3310 | 2 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820253 | PFR080R20-SH | 2,4 | 8 | 7 | 2 | 2,7 | XP3310 | 2 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820254 | PFR100R03-SH | 2,6 | 10 | 8,5 | 0,3 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820255 | PFR100R05-SH | 2,6 | 10 | 8,5 | 0,5 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820256 | PFR100R10-SH | 2,6 | 10 | 8,5 | 1 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820257 | PFR100R20-SH | 2,6 | 10 | 8,5 | 2 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820406 | PFR110R03-SH | 2,6 | 11 | 8,5 | 0,3 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820407 | PFR110R05-SH | 2,6 | 11 | 8,5 | 0,5 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820408 | PFR110R10-SH | 2,6 | 11 | 8,5 | 1 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820409 | PFR110R20-SH | 2,6 | 11 | 8,5 | 2 | 3,3 | XP3310 | 3 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820258 | PFR120R03-SH | 3 | 12 | 10 | 0,3 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820259 | PFR120R05-SH | 3 | 12 | 10 | 0,5 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820260 | PFR120R10-SH | 3 | 12 | 10 | 1 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820261 | PFR120R20-SH | 3 | 12 | 10 | 2 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820262 | PFR120R30-SH | 3 | 12 | 10 | 3 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820410 | PFR130R03-SH | 3 | 13 | 10 | 0,3 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820411 | PFR130R05-SH | 3 | 13 | 10 | 0,5 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820412 | PFR130R10-SH | 3 | 13 | 10 | 1 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820413 | PFR130R20-SH | 3 | 13 | 10 | 2 | 4 | XP3310 | 4 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820263 | PFR160R03-SH | 4 | 16 | 12 | 0,3 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820264 | PFR160R05-SH | 4 | 16 | 12 | 0,5 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820265 | PFR160R10-SH | 4 | 16 | 12 | 1 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820266 | PFR160R20-SH | 4 | 16 | 12 | 2 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820267 | PFR160R30-SH | 4 | 16 | 12 | 3 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820414 | PFR170R03-SH | 4 | 17 | 12 | 0,3 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820415 | PFR170R05-SH | 4 | 17 | 12 | 0,5 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820416 | PFR170R10-SH | 4 | 17 | 12 | 1 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820417 | PFR170R20-SH | 4 | 17 | 12 | 2 | 5,3 | XP3310 | 5 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820268 | PFR200R03-SH | 5 | 20 | 15 | 0,3 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820269 | PFR200R05-SH | 5 | 20 | 15 | 0,5 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820270 | PFR200R10-SH | 5 | 20 | 15 | 1 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820271 | PFR200R20-SH | 5 | 20 | 15 | 2 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820272 | PFR200R30-SH | 5 | 20 | 15 | 3 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |
| 7820418 | PFR210R03-SH | 5 | 21 | 15 | 0,3 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ● | ● | | | | | ● | |

# PFR

**Milling | Indexable | Inserts**

## INSERTS





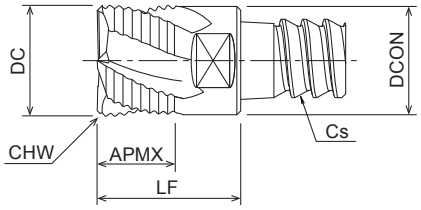

- Finishing corner radius cutter
- Excellent sharpness
- 6 - 32 mm

C.864

| EDP | Designation | S | W1 | L | RE | LE | Grade | Body size | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7820419 | PFR210R05-SH | 5 | 21 | 15 | 0,5 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820420 | PFR210R10-SH | 5 | 21 | 15 | 1 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820421 | PFR210R20-SH | 5 | 21 | 15 | 2 | 6,7 | XP3310 | 6 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820273 | PFR250R03-SH | 6 | 25 | 18,5 | 0,3 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820274 | PFR250R05-SH | 6 | 25 | 18,5 | 0,5 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820275 | PFR250R10-SH | 6 | 25 | 18,5 | 1 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820276 | PFR250R20-SH | 6 | 25 | 18,5 | 2 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820277 | PFR250R30-SH | 6 | 25 | 18,5 | 3 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820422 | PFR260R03-SH | 6 | 26 | 18,5 | 0,3 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820423 | PFR260R05-SH | 6 | 26 | 18,5 | 0,5 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820424 | PFR260R10-SH | 6 | 26 | 18,5 | 1 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820425 | PFR260R20-SH | 6 | 26 | 18,5 | 2 | 8,3 | XP3310 | 7 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820278 | PFR300R03-SH | 7 | 30 | 22,5 | 0,3 | 10 | XP3310 | 8 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820279 | PFR300R05-SH | 7 | 30 | 22,5 | 0,5 | 10 | XP3310 | 8 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820280 | PFR300R10-SH | 7 | 30 | 22,5 | 1 | 10 | XP3310 | 8 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820281 | PFR300R20-SH | 7 | 30 | 22,5 | 2 | 10 | XP3310 | 8 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820282 | PFR300R30-SH | 7 | 30 | 22,5 | 3 | 10 | XP3310 | 8 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820283 | PFR320R03-SH | 7 | 32 | 23,5 | 0,3 | 10,3 | XP3310 | 9 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820284 | PFR320R05-SH | 7 | 32 | 23,5 | 0,5 | 10,3 | XP3310 | 9 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820285 | PFR320R10-SH | 7 | 32 | 23,5 | 1 | 10,3 | XP3310 | 9 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820286 | PFR320R20-SH | 7 | 32 | 23,5 | 2 | 10,3 | XP3310 | 9 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820287 | PFR320R30-SH | 7 | 32 | 23,5 | 3 | 10,3 | XP3310 | 9 | ◎ | | ◎ | | ◉ | ◉ | | | | | ◉ | |
| 7820450 | PFR060R03-D | 2 | 6 | 5 | 0,3 | 2 | XC4505 | 1 | | | | | | | ◉ | | | | | |
| 7820451 | PFR060R05-D | 2 | 6 | 5 | 0,5 | 2 | XC4505 | 1 | | | | | | | ◉ | | | | | |
| 7820452 | PFR060R10-D | 2 | 6 | 5 | 1 | 2 | XC4505 | 1 | | | | | | | ◉ | | | | | |
| 7820300 | PFR080R03-D | 2,4 | 8 | 7 | 0,3 | 2,7 | XC4505 | 2 | | | | | | | ◉ | | | | | |
| 7820301 | PFR080R05-D | 2,4 | 8 | 7 | 0,5 | 2,7 | XC4505 | 2 | | | | | | | ◉ | | | | | |
| 7820302 | PFR080R10-D | 2,4 | 8 | 7 | 1 | 2,7 | XC4505 | 2 | | | | | | | ◉ | | | | | |
| 7820303 | PFR100R03-D | 2,6 | 10 | 8,5 | 0,3 | 3,3 | XC4505 | 3 | | | | | | | ◉ | | | | | |
| 7820304 | PFR100R05-D | 2,6 | 10 | 8,5 | 0,5 | 3,3 | XC4505 | 3 | | | | | | | ◉ | | | | | |
| 7820305 | PFR100R10-D | 2,6 | 10 | 8,5 | 1 | 3,3 | XC4505 | 3 | | | | | | | ◉ | | | | | |
| 7820306 | PFR120R03-D | 3 | 12 | 10 | 0,3 | 4 | XC4505 | 4 | | | | | | | ◉ | | | | | |
| 7820307 | PFR120R05-D | 3 | 12 | 10 | 0,5 | 4 | XC4505 | 4 | | | | | | | ◉ | | | | | |
| 7820308 | PFR120R10-D | 3 | 12 | 10 | 1 | 4 | XC4505 | 4 | | | | | | | ◉ | | | | | |
| 7820309 | PFR160R03-D | 4 | 16 | 12 | 0,3 | 5,3 | XC4505 | 5 | | | | | | | ◉ | | | | | |
| 7820310 | PFR160R05-D | 4 | 16 | 12 | 0,5 | 5,3 | XC4505 | 5 | | | | | | | ◉ | | | | | |
| 7820311 | PFR160R10-D | 4 | 16 | 12 | 1 | 5,3 | XC4505 | 5 | | | | | | | ◉ | | | | | |
| 7820312 | PFR200R03-D | 5 | 20 | 15 | 0,3 | 6,7 | XC4505 | 6 | | | | | | | ◉ | | | | | |
| 7820313 | PFR200R05-D | 5 | 20 | 15 | 0,5 | 6,7 | XC4505 | 6 | | | | | | | ◉ | | | | | |
| 7820314 | PFR200R10-D | 5 | 20 | 15 | 1 | 6,7 | XC4505 | 6 | | | | | | | ◉ | | | | | |

# PXNL / PXNH

**Milling | Indexable | Heads**



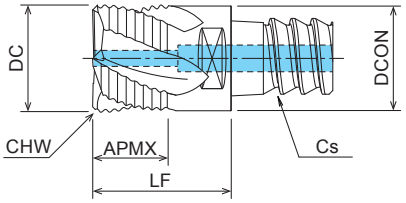

- Variable helix solid carbide head
- Roughing shape in 45 HRC work materials
- For PXMZ straight shank holder
- 10 - 25 mm

C.901
C.1065

| EDP | Designation | ZEFP | DC | CHW | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830400 | PXNL100C10-04C005 | 4 | 10 | 0,5 | 7 | 13 | 9,7 | C10 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830401 | PXNL120C12-04C005 | 4 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830402 | PXNL160C16-04C006 | 4 | 16 | 0,6 | 11,2 | 18,7 | 15,7 | C16 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830403 | PXNL200C20-04C006 | 4 | 20 | 0,6 | 14 | 21,5 | 19,6 | C20 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830404 | PXNL250C25-04C006 | 4 | 25 | 0,6 | 17,5 | 27,5 | 24 | C25 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830450 | PXNH100C10-04C005 | 4 | 10 | 0,5 | 7 | 13 | 9,7 | C10 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830451 | PXNH120C12-04C005 | 4 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830452 | PXNH160C16-04C006 | 4 | 16 | 0,6 | 11,2 | 18,7 | 15,7 | C16 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830453 | PXNH200C20-04C006 | 4 | 20 | 0,6 | 14 | 21,5 | 19,6 | C20 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830454 | PXNH250C25-04C006 | 4 | 25 | 0,6 | 17,5 | 27,5 | 24 | C25 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXNL OH

**Milling | Indexable | Heads**



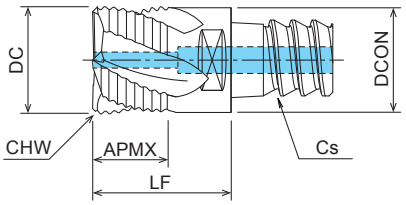

- Variable helix solid carbide head with coolant hole
- Roughing shape in 45 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

C.901
C.1065

| EDP | Designation | ZEFP | DC | CHW | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830411 | PXNL120C12-04C005-O | 4 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830412 | PXNL160C16-04C006-O | 4 | 16 | 0,6 | 11,2 | 18,7 | 15,7 | C16 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830413 | PXNL200C20-04C006-O | 4 | 20 | 0,6 | 14 | 21,5 | 19,6 | C20 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830414 | PXNL250C25-04C006-O | 4 | 25 | 0,6 | 17,5 | 27,5 | 24 | C25 | 19/21 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXNH OH

**Milling | Indexable | Heads**



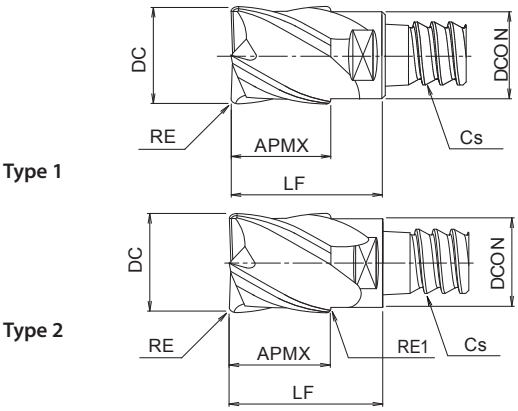

- Variable helix solid carbide head with coolant hole
- Roughing shape in 45 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

C.901 C.1065

| EDP | Designation | ZEFP | DC | CHW | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830461 | PXNH120C12-04C005-O | 4 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830462 | PXNH160C16-04C006-O | 4 | 16 | 0,6 | 11,2 | 18,7 | 15,7 | C16 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830463 | PXNH200C20-04C006-O | 4 | 20 | 0,6 | 14 | 21,5 | 19,6 | C20 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830464 | PXNH250C25-04C006-O | 4 | 25 | 0,6 | 17,5 | 27,5 | 24 | C25 | 40/42 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXVC

**Milling | Indexable | Heads**



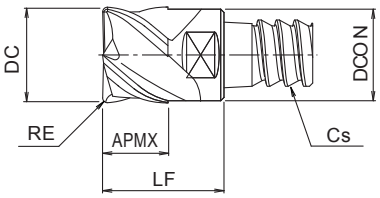

- High variable helix solid carbide head
- Up to 7xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 10 - 32 mm

C.901
C.1066

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Type | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7834994 | PXVC100C10-04R000 | 4 | 10 | 0 | 10 | 16 | 9,8 | C10 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7834995 | PXVC100C10-04R005 | 4 | 10 | 0,5 | 10 | 16 | 9,8 | C10 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7834996 | PXVC100C10-04R010 | 4 | 10 | 1 | 10 | 16 | 9,8 | C10 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7834997 | PXVC100C10-04R020 | 4 | 10 | 2 | 10 | 16 | 9,8 | C10 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7834998 | PXVC100C10-04R030 | 4 | 10 | 3 | 10 | 16 | 9,8 | C10 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7834999 | PXVC120C10-04R000 | 4 | 12 | 0 | 12 | 18 | 9,8 | C10 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835000 | PXVC120C10-04R005 | 4 | 12 | 0,5 | 12 | 18 | 9,8 | C10 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835001 | PXVC120C10-04R010 | 4 | 12 | 1 | 12 | 18 | 9,8 | C10 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835002 | PXVC120C10-04R020 | 4 | 12 | 2 | 12 | 18 | 9,8 | C10 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835003 | PXVC120C10-04R030 | 4 | 12 | 3 | 12 | 18 | 9,8 | C10 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835004 | PXVC120C12-04R000 | 4 | 12 | 0 | 12 | 18 | 11,7 | C12 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835005 | PXVC120C12-04R005 | 4 | 12 | 0,5 | 12 | 18 | 11,7 | C12 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835006 | PXVC120C12-04R010 | 4 | 12 | 1 | 12 | 18 | 11,7 | C12 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835007 | PXVC120C12-04R020 | 4 | 12 | 2 | 12 | 18 | 11,7 | C12 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835008 | PXVC120C12-04R030 | 4 | 12 | 3 | 12 | 18 | 11,7 | C12 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835009 | PXVC140C12-04R000 | 4 | 14 | 0 | 14 | 20 | 11,7 | C12 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835010 | PXVC140C12-04R005 | 4 | 14 | 0,5 | 14 | 20 | 11,7 | C12 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835011 | PXVC140C12-04R010 | 4 | 14 | 1 | 14 | 20 | 11,7 | C12 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835012 | PXVC140C12-04R020 | 4 | 14 | 2 | 14 | 20 | 11,7 | C12 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835013 | PXVC140C12-04R030 | 4 | 14 | 3 | 14 | 20 | 11,7 | C12 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835014 | PXVC160C16-04R000 | 4 | 16 | 0 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835015 | PXVC160C16-04R005 | 4 | 16 | 0,5 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835016 | PXVC160C16-04R010 | 4 | 16 | 1 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835017 | PXVC160C16-04R015 | 4 | 16 | 1,5 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835018 | PXVC160C16-04R020 | 4 | 16 | 2 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835019 | PXVC160C16-04R030 | 4 | 16 | 3 | 16 | 23,5 | 15,7 | C16 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835020 | PXVC180C16-04R000 | 4 | 18 | 0 | 18 | 25,5 | 15,7 | C16 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835021 | PXVC180C16-04R005 | 4 | 18 | 0,5 | 18 | 25,5 | 15,7 | C16 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835022 | PXVC180C16-04R010 | 4 | 18 | 1 | 18 | 25,5 | 15,7 | C16 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835023 | PXVC180C16-04R020 | 4 | 18 | 2 | 18 | 25,5 | 15,7 | C16 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835024 | PXVC180C16-04R030 | 4 | 18 | 3 | 18 | 25,5 | 15,7 | C16 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835025 | PXVC200C20-04R000 | 4 | 20 | 0 | 20 | 27,5 | 19,6 | C20 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835026 | PXVC200C20-04R005 | 4 | 20 | 0,5 | 20 | 27,5 | 19,6 | C20 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835027 | PXVC200C20-04R010 | 4 | 20 | 1 | 20 | 27,5 | 19,6 | C20 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835028 | PXVC200C20-04R020 | 4 | 20 | 2 | 20 | 27,5 | 19,6 | C20 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835029 | PXVC200C20-04R030 | 4 | 20 | 3 | 20 | 27,5 | 19,6 | C20 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835030 | PXVC220C20-04R000 | 4 | 22 | 0 | 22 | 29,5 | 19,6 | C20 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835038 | PXVC220C20-04R005 | 4 | 22 | 0,5 | 22 | 29,5 | 19,6 | C20 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835031 | PXVC220C20-04R010 | 4 | 22 | 1 | 22 | 29,5 | 19,6 | C20 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835032 | PXVC220C20-04R020 | 4 | 22 | 2 | 22 | 29,5 | 19,6 | C20 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835033 | PXVC220C20-04R030 | 4 | 22 | 3 | 22 | 29,5 | 19,6 | C20 | 45/48 | 2 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835034 | PXVC250C25-04R000 | 4 | 25 | 0 | 25 | 35 | 24 | C25 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835035 | PXVC250C25-04R010 | 4 | 25 | 1 | 25 | 35 | 24 | C25 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835036 | PXVC250C25-04R020 | 4 | 25 | 2 | 25 | 35 | 24 | C25 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835037 | PXVC250C25-04R030 | 4 | 25 | 3 | 25 | 35 | 24 | C25 | 45/48 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835039 | PXVC320C32-05R010 | 5 | 32 | 1 | 32 | 44,7 | 28 | C32 | 45 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7835040 | PXVC320C32-08R010 | 8 | 32 | 1 | 32 | 44,7 | 28 | C32 | 38 | 1 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXSE

**Milling | Indexable | Heads**



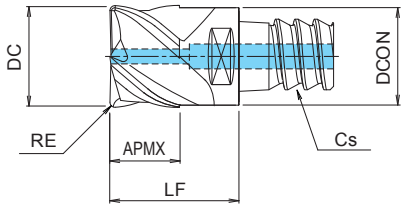

- Variable helix solid carbide head
- Up to 5xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 10 - 25 mm

C.901
C.1068

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7829994 | PXSE100C10-04R000 | 4 | 10 | 0 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7829995 | PXSE100C10-04R005 | 4 | 10 | 0,5 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7829996 | PXSE100C10-04R010 | 4 | 10 | 1 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7829997 | PXSE100C10-04R020 | 4 | 10 | 2 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7829998 | PXSE100C10-04R030 | 4 | 10 | 3 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830004 | PXSE120C12-04R000 | 4 | 12 | 0 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830005 | PXSE120C12-04R005 | 4 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830006 | PXSE120C12-04R010 | 4 | 12 | 1 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830007 | PXSE120C12-04R020 | 4 | 12 | 2 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830008 | PXSE120C12-04R030 | 4 | 12 | 3 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830009 | PXSE160C16-04R000 | 4 | 16 | 0 | 8,4 | 14,4 | 11,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830010 | PXSE160C16-04R005 | 4 | 16 | 0,5 | 8,4 | 14,4 | 11,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830011 | PXSE160C16-04R010 | 4 | 16 | 1 | 8,4 | 14,4 | 11,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830012 | PXSE160C16-04R015 | 4 | 16 | 1,5 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830013 | PXSE160C16-04R020 | 4 | 16 | 2 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830014 | PXSE160C16-04R030 | 4 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830015 | PXSE200C20-04R000 | 4 | 20 | 0 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830016 | PXSE200C20-04R005 | 4 | 20 | 0,5 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830017 | PXSE200C20-04R010 | 4 | 20 | 1 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830018 | PXSE200C20-04R020 | 4 | 20 | 2 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830019 | PXSE200C20-04R030 | 4 | 20 | 3 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830020 | PXSE250C25-04R000 | 4 | 25 | 0 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830021 | PXSE250C25-04R010 | 4 | 25 | 1 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830022 | PXSE250C25-04R020 | 4 | 25 | 2 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830023 | PXSE250C25-04R030 | 4 | 25 | 3 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXSE OH

**Milling | Indexable | Heads**



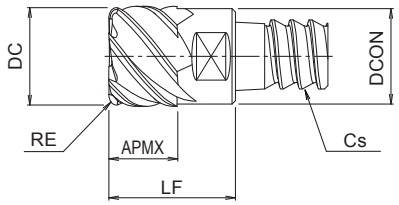

- Variable helix solid carbide head with coolant hole
- Up to 5xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

C.901
C.1068

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830054 | PXSE120C12-04R000-O | 4 | 12 | 0 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830056 | PXSE120C12-04R010-O | 4 | 12 | 1 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830058 | PXSE120C12-04R030-O | 4 | 12 | 3 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830059 | PXSE160C16-04R000-O | 4 | 16 | 0 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830061 | PXSE160C16-04R010-O | 4 | 16 | 1 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830064 | PXSE160C16-04R030-O | 4 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830065 | PXSE200C20-04R000-O | 4 | 20 | 0 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830067 | PXSE200C20-04R010-O | 4 | 20 | 1 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830069 | PXSE200C20-04R030-O | 4 | 20 | 3 | 14 | 21,5 | 19,6 | C20 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830070 | PXSE250C25-04R000-O | 4 | 25 | 0 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830071 | PXSE250C25-04R010-O | 4 | 25 | 1 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830074 | PXSE250C25-04R030-O | 4 | 25 | 3 | 17,5 | 27,5 | 24 | C25 | 38 | XP3225 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |

# PXSM

**Milling | Indexable | Heads**



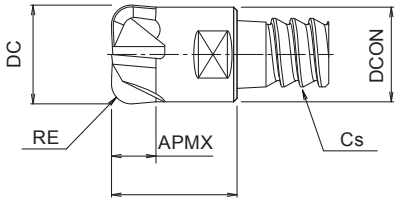

- Multi flute variable helix solid carbide head
- Up to 5xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 10 - 25 mm

C.901 C.1068

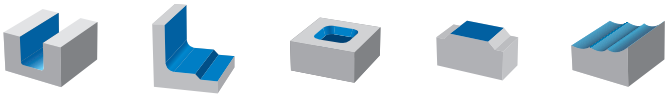
| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830094 | PXSM100C10-06R000 | 6 | 10 | 0 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830095 | PXSM100C10-06R005 | 6 | 10 | 0,5 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830096 | PXSM100C10-06R010 | 6 | 10 | 1 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830097 | PXSM100C10-06R020 | 6 | 10 | 2 | 7 | 13 | 9,7 | C10 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830104 | PXSM120C12-06R000 | 6 | 12 | 0 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830105 | PXSM120C12-06R005 | 6 | 12 | 0,5 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830106 | PXSM120C12-06R010 | 6 | 12 | 1 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830107 | PXSM120C12-06R020 | 6 | 12 | 2 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830108 | PXSM120C12-06R030 | 6 | 12 | 3 | 8,4 | 14,4 | 11,7 | C12 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830109 | PXSM160C16-06R000 | 6 | 16 | 0 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830115 | PXSM160C16-08R000 | 8 | 16 | 0 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830110 | PXSM160C16-06R005 | 6 | 16 | 0,5 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830116 | PXSM160C16-08R005 | 8 | 16 | 0,5 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830111 | PXSM160C16-06R010 | 6 | 16 | 1 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830117 | PXSM160C16-08R010 | 8 | 16 | 1 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830112 | PXSM160C16-06R015 | 6 | 16 | 1,5 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830118 | PXSM160C16-08R015 | 8 | 16 | 1,5 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830113 | PXSM160C16-06R020 | 6 | 16 | 2 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830119 | PXSM160C16-08R020 | 8 | 16 | 2 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830114 | PXSM160C16-06R030 | 6 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 38 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830120 | PXSM160C16-08R030 | 8 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830121 | PXSM200C20-10R000 | 10 | 20 | 0 | 14 | 21,5 | 19,6 | C20 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830122 | PXSM200C20-10R005 | 10 | 20 | 0,5 | 14 | 21,5 | 19,6 | C20 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830123 | PXSM200C20-10R010 | 10 | 20 | 1 | 14 | 21,5 | 19,6 | C20 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830124 | PXSM200C20-10R020 | 10 | 20 | 2 | 14 | 21,5 | 19,6 | C20 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830125 | PXSM200C20-10R030 | 10 | 20 | 3 | 14 | 21,5 | 19,6 | C20 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830126 | PXSM250C25-10R000 | 10 | 25 | 0 | 17,5 | 27,5 | 24 | C25 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830127 | PXSM250C25-10R010 | 10 | 25 | 1 | 17,5 | 27,5 | 24 | C25 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830128 | PXSM250C25-10R020 | 10 | 25 | 2 | 17,5 | 27,5 | 24 | C25 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830129 | PXSM250C25-10R030 | 10 | 25 | 3 | 17,5 | 27,5 | 24 | C25 | 42 | XP3225 | ● | | | ● | ● | | | | | ○ | ○ | |

# PXDR / PXRE

**Milling | Indexable | Heads**




- Corner radius with straight flutes solid carbide head
- Up to 7xD application in 60 HRC work materials
- For PXMZ straight shank holder
- 10 - 20 mm



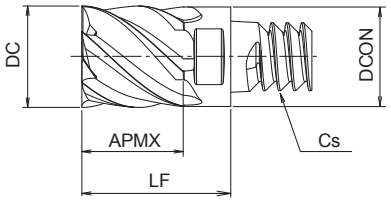
C.901 C.1069

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830200 | PXRE100C10-04R020 | 4 | 10 | 2 | 4,5 | 13 | 9,7 | C10 | - | XP6305 | ◉ | | | | ◉ | | | | | | ◉ | |
| 7830201 | PXRE120C12-04R020 | 4 | 12 | 2 | 5 | 14,4 | 11,7 | C12 | - | XP6305 | ◉ | | | | ◉ | | | | | | ◉ | |
| 7830202 | PXRE160C16-6R030 | 6 | 16 | 3 | 7 | 18,7 | 15,7 | C16 | - | XP6305 | ◉ | | | | ◉ | | | | | | ◉ | |
| 7830203 | PXRE200C20-06R030 | 6 | 20 | 3 | 10 | 21,5 | 19,6 | C20 | - | XP6305 | ◉ | | | | ◉ | | | | | | ◉ | |
| 7830369 | PXDR100C10-03R015-N | 3 | 10 | 1,5 | 7 | 13 | 9,7 | C10 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830370 | PXDR100C10-03R020-N | 3 | 10 | 2 | 7 | 13 | 9,7 | C10 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830371 | PXDR120C12-03R015-N | 3 | 12 | 1,5 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830372 | PXDR120C12-03R020-N | 3 | 12 | 2 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830373 | PXDR160C16-03R020-N | 3 | 16 | 2 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830374 | PXDR160C16-03R030-N | 3 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830375 | PXDR200C20-03R020-N | 3 | 20 | 2 | 14 | 21,5 | 19,6 | C20 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830376 | PXDR200C20-03R030-N | 3 | 20 | 3 | 14 | 21,5 | 19,6 | C20 | 45 | XP6305 | ◉ | | | ◉ | | | | | | | ◉ | |
| 7830349 | PXDR100C10-03R015-P | 3 | 10 | 1,5 | 7 | 13 | 9,7 | C10 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830350 | PXDR100C10-03R020-P | 3 | 10 | 2 | 7 | 13 | 9,7 | C10 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830351 | PXDR120C12-03R015-P | 3 | 12 | 1,5 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830352 | PXDR120C12-03R020-P | 3 | 12 | 2 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830353 | PXDR160C16-03R020-P | 3 | 16 | 2 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830354 | PXDR160C16-03R030-P | 3 | 16 | 3 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830355 | PXDR200C20-03R020-P | 3 | 20 | 2 | 14 | 21,5 | 19,6 | C20 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |
| 7830356 | PXDR200C20-03R030-P | 3 | 20 | 3 | 14 | 21,5 | 19,6 | C20 | 45 | XP3225 | ◉ | | | ◉ | ◉ | | | | | | ○ | |

# PXSH

Milling | Indexable | Heads

## HEADS NEW



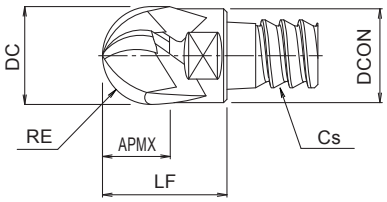

- Multi flute square solid carbide head
- For high hardness steels
- For PXMZ straight shank holder
- 12 - 25 mm

C.901 C.1070

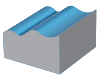
| EDP | Designation | ZEFP | DC | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830380 | PXSH120C12-06R000 | 6 | 12 | 12 | 18 | 11,7 | C12 | 43 | XP6703 | | | | | | | | | | | ◉ | |
| 7830381 | PXSH160C16-06R000 | 6 | 16 | 16 | 23,5 | 15,7 | C16 | 43 | XP6703 | | | | | | | | | | | ◉ | |
| 7830382 | PXSH200C20-06R000 | 6 | 20 | 20 | 27,5 | 19,6 | C20 | 43 | XP6703 | | | | | | | | | | | ◉ | |
| 7830383 | PXSH250C25-08R000 | 8 | 25 | 25 | 35 | 24 | C25 | 43 | XP6703 | | | | | | | | | | | ◉ | |

# PXBE / PXBM

**Milling | Indexable | Heads**




- 3 flutes ball nose solid carbide head
- Up to 5xD application in 60 HRC work materials
- For PXMZ straight shank holder
- 10 - 20 mm

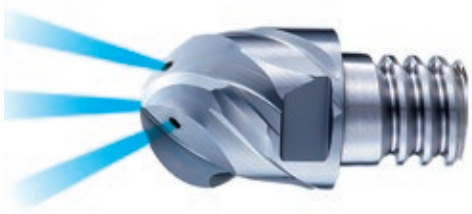


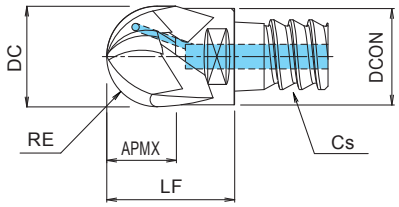
C.901
C.1072

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830270 | PXBE100C10-03R050-P | 3 | 10 | 5 | 7 | 13 | 9,7 | C10 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830271 | PXBE120C12-03R060-P | 3 | 12 | 6 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830272 | PXBE160C16-03R080-P | 3 | 16 | 8 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830273 | PXBE200C20-03R100-P | 3 | 20 | 10 | 14 | 21,5 | 19,6 | C20 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ○ | |
| 7830250 | PXBE100C10-03R050-N | 3 | 10 | 5 | 7 | 13 | 9,7 | C10 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830251 | PXBE120C12-03R060-N | 3 | 12 | 6 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830252 | PXBE160C16-03R080-N | 3 | 16 | 8 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830253 | PXBE200C20-03R100-N | 3 | 20 | 10 | 14 | 21,5 | 19,6 | C20 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830300 | PXBM100C10-04R050 | 4 | 10 | 5 | 7 | 13 | 9,7 | C10 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830301 | PXBM120C12-04R060 | 4 | 12 | 6 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830302 | PXBM160C16-06R080 | 6 | 16 | 8 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |
| 7830303 | PXBM200C20-06R100 | 6 | 20 | 10 | 14 | 21,5 | 19,6 | C20 | 45 | XP3320 | ● | | | ● | ● | | | | | ○ | ● | |

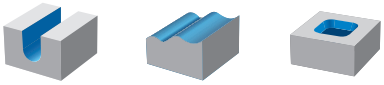
# PXBE OH

**Milling | Indexable | Heads**






- Multi flute variable helix solid carbide head with coolant holes
- Up to 5xD application in 60 HRC work materials
- For PXMZ straight shank holder
- 12 - 20 mm



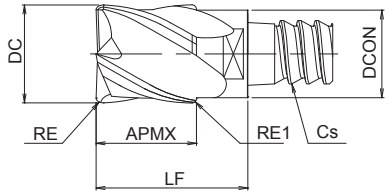
C.901 C.1072

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830281 | PXBE120C12-03R060-P-O | 3 | 12 | 6 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830282 | PXBE160C16-03R080-P-O | 3 | 16 | 8 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830283 | PXBE200C20-03R100-P-O | 3 | 20 | 10 | 14 | 21,5 | 19,6 | C20 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ○ | |
| 7830261 | PXBE120C12-03R060-N-O | 3 | 12 | 6 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ◉ | |
| 7830262 | PXBE160C16-03R080-N-O | 3 | 16 | 8 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ◉ | |
| 7830263 | PXBE200C20-03R100-N-O | 3 | 20 | 10 | 14 | 21,5 | 19,6 | C20 | 45 | XP3320 | ◉ | | | ◉ | ◉ | | | | | ○ | ◉ | |

# PXAL

**Milling | Indexable | Heads**

## HEADS



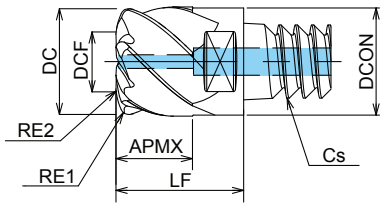

- 3 flutes solid carbide head
- For Non-ferrous materials
- For PXMZ straight shank holder
- 10 - 25 mm

C.901 C.1073

| EDP | Designation | ZEFP | DC | RE | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7834930 | PXAL100C10-03R000 | 3 | 10 | - | 10 | 16 | 9,8 | C10 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834931 | PXAL100C10-03R100 | 3 | 10 | 1 | 10 | 16 | 9,8 | C10 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834932 | PXAL100C10-03R250 | 3 | 10 | 2,5 | 10 | 16 | 9,8 | C10 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834933 | PXAL120C10-03R000 | 3 | 12 | - | 12 | 18 | 9,8 | C10 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834934 | PXAL120C12-03R000 | 3 | 12 | - | 12 | 18 | 11,7 | C12 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834935 | PXAL120C12-03R100 | 3 | 12 | 1 | 12 | 18 | 11,7 | C12 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834936 | PXAL120C12-03R300 | 3 | 12 | 3 | 12 | 18 | 11,7 | C12 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834937 | PXAL140C12-03R000 | 3 | 14 | - | 14 | 20 | 11,7 | C12 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834938 | PXAL160C16-03R000 | 3 | 16 | - | 16 | 23,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834939 | PXAL160C16-03R100 | 3 | 16 | 1 | 16 | 23,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834940 | PXAL160C16-03R200 | 3 | 16 | 2 | 16 | 23,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834941 | PXAL160C16-03R300 | 3 | 16 | 3 | 16 | 23,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834942 | PXAL160C16-03R400 | 3 | 16 | 4 | 16 | 23,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834943 | PXAL180C16-03R000 | 3 | 18 | - | 18 | 25,5 | 15,7 | C16 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834944 | PXAL200C20-03R000 | 3 | 20 | - | 20 | 27,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834945 | PXAL200C20-03R100 | 3 | 20 | 1 | 20 | 27,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834946 | PXAL200C20-03R200 | 3 | 20 | 2 | 20 | 27,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834947 | PXAL200C20-03R300 | 3 | 20 | 3 | 20 | 27,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834948 | PXAL200C20-03R400 | 3 | 20 | 4 | 20 | 27,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834949 | PXAL220C20-03R000 | 3 | 22 | - | 22 | 29,5 | 19,6 | C20 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834950 | PXAL250C25-03R000 | 3 | 25 | - | 25 | 35 | 24 | C25 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834951 | PXAL250C25-03R100 | 3 | 25 | 1 | 25 | 35 | 24 | C25 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834952 | PXAL250C25-03R300 | 3 | 25 | 3 | 25 | 35 | 24 | C25 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |
| 7834953 | PXAL250C25-03R500 | 3 | 25 | 5 | 25 | 35 | 24 | C25 | 45 | XP4625 | | | | | | | ◉ | ◉ | | | | |

# PXHF-AM

**Milling | Indexable | Heads**




- Multi flute solid carbide head with coolant holes
- For high feed additive manufacturing milling
- For PXMZ straight shank holder

C.901
C.1039

| EDP | Designation | ZEFP | DC | RE1 | RE2 | APMX | LF | DCON | CS | FHA | Grade | P | | M | | K | | N | | S | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | dry | | dry | | GG | GGG | dry | | dry | | dry | |
| 7830377 | PXHF-AM120C12-06R150-O | 6 | 12 | 1,5 | 1,2 | 8,4 | 14,4 | 11,7 | C12 | 45 | XP6703 | ● | | | ● | | | | | ○ | ● | ● | |
| 7830378 | PXHF-AM160C16-06R200-O | 6 | 16 | 2 | 1,6 | 11,2 | 18,7 | 15,7 | C16 | 45 | XP6703 | ● | | | ● | | | | | ○ | ● | ● | |
| 7830379 | PXHF-AM200C20-06R250-O | 6 | 20 | 2,5 | 2 | 14 | 21,5 | 19,6 | C20 | 45 | XP6703 | ● | | | ● | | | | | ○ | ● | ● | |

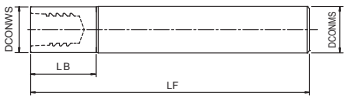
# PXMZ



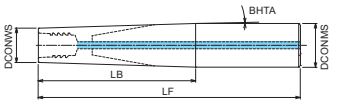
**Milling | Indexable | Arbors**

- Exchangeable carbide/steel body for PXM

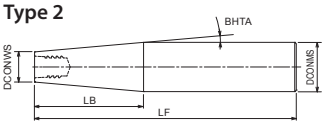
**Type 1**



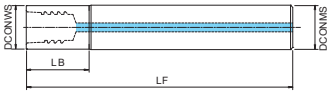

**Type 4**



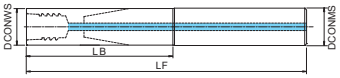

**Type 2**




**Type 5**




**Type 3**




| EDP | Designation | CS | LF | DCONWS | LB | DCON | BHTA | Type | Shank material |
|---|---|---|---|---|---|---|---|---|---|
| 48174001 | PXMZ-C12SS12-S100 | C12 | 100 | 11,7 | 18 | 12 | 0 | 1 | Steel |
| 48174002 | PXMZ-C12TP20-S145 | C12 | 145 | 11,7 | 47,4 | 20 | 5 | 2 | Steel |
| 48174003 | PXMZ-C16SS16-S100 | C16 | 100 | 15,7 | 23 | 16 | 0 | 1 | Steel |
| 48174004 | PXMZ-C16TP25-S155 | C16 | 155 | 15,7 | 53,1 | 25 | 5 | 2 | Steel |
| 48174005 | PXMZ-C20SS20-S120 | C20 | 120 | 19,6 | 28 | 20 | 0 | 1 | Steel |
| 48174006 | PXMZ-C20TP32-S170 | C20 | 170 | 19,6 | 70,8 | 32 | 5 | 2 | Steel |
| 48174007 | PXMZ-C25SS25-S140 | C25 | 140 | 24 | 34,5 | 25 | 0 | 1 | Steel |
| 48174022 | PXMZ-C32SS32-S160 | C32 | 160 | 28 | 33 | 32 | 0 | 1 | Steel |
| 48309001 | PXMZ-C12SS12-S100-O | C12 | 100 | 11,7 | 18 | 12 | 0 | 5 | Steel |
| 48309002 | PXMZ-C16SS16-S100-O | C16 | 100 | 15,7 | 23 | 16 | 0 | 5 | Steel |
| 48309003 | PXMZ-C20SS20-S120-O | C20 | 120 | 19,6 | 28 | 20 | 0 | 5 | Steel |
| 48309004 | PXMZ-C25SS25-S140-O | C25 | 140 | 24 | 34,5 | 25 | 0 | 5 | Steel |
| 48174008 | PXMZ-C12SS12-S075CS | C12 | 75 | 11,7 | 24 | 12 | 0 | 1 | Carbide |
| 48174009 | PXMZ-C12SS12-L100CS | C12 | 100 | 11,7 | 45,9 | 12 | 0 | 1 | Carbide |
| 48174010 | PXMZ-C12SS12-L115CS | C12 | 115 | 11,7 | 64,2 | 12 | 0 | 1 | Carbide |
| 48174011 | PXMZ-C12TP16-LL135CS | C12 | 135 | 11,7 | 83,8 | 16 | 1,3 | 2 | Carbide |
| 48174012 | PXMZ-C16SS16-S090CS | C16 | 90 | 15,7 | 39,2 | 16 | 0 | 1 | Carbide |
| 48174013 | PXMZ-C16SS16-L130CS | C16 | 130 | 15,7 | 61,2 | 16 | 0 | 1 | Carbide |
| 48174014 | PXMZ-C16SS16-L135CS | C16 | 135 | 15,7 | 84,2 | 16 | 0 | 1 | Carbide |
| 48174015 | PXMZ-C16TP20-LL165CS | C16 | 165 | 15,7 | 115 | 20 | 1,1 | 2 | Carbide |
| 48174016 | PXMZ-C20SS20-S090CS | C20 | 90 | 19,6 | 39,1 | 20 | 0 | 1 | Carbide |
| 48174017 | PXMZ-C20SS20-L150CS | C20 | 150 | 19,6 | 78,4 | 20 | 0 | 1 | Carbide |
| 48174018 | PXMZ-C20SS20-L180CS | C20 | 180 | 19,6 | 109,1 | 20 | 0 | 1 | Carbide |
| 48174019 | PXMZ-C20TP25-LL200CS | C20 | 200 | 19,6 | 140 | 25 | 1,1 | 2 | Carbide |
| 48174020 | PXMZ-C25SS25-L200CS | C25 | 200 | 24 | 96,6 | 25 | 0 | 1 | Carbide |
| 48174021 | PXMZ-C10SS10-S075 | C10 | 75 | 9,8 | 12 | 10 | 0 | 1 | Carbide |
| 48174023 | PXMZ-C10SS10-L100CS | C10 | 100 | 9,8 | 37,3 | 10 | 0 | 1 | Carbide |
| 48174024 | PXMZ-C32SS32-L250CS | C32 | 250 | 28 | 115,2 | 32 | 0 | 1 | Carbide |
| 48174025 | PXMZ-C10SS10-S075CS | C10 | 75 | 9,8 | 17,3 | 10 | 0 | 1 | Carbide |
| 48174026 | PXMZ-C10TP12-LL130CS | C10 | 130 | 9,8 | 67 | 12 | 0,9 | 2 | Carbide |
| 48309005 | PXMZ-C12SS12-S075CS-O | C12 | 75 | 11,7 | 25 | 12 | 0 | 3 | Carbide |
| 48309006 | PXMZ-C12SS12-L100CS-O | C12 | 100 | 11,7 | 46,3 | 12 | 0 | 3 | Carbide |
| 48309007 | PXMZ-C12SS12-L115CS-O | C12 | 115 | 11,7 | 65 | 12 | 0 | 3 | Carbide |
| 48309008 | PXMZ-C12TP16-LL135CS-O | C12 | 135 | 11,7 | 85 | 16 | 1,3 | 4 | Carbide |
| 48309009 | PXMZ-C12TP16-LL150CS-O | C12 | 150 | 11,7 | 85,6 | 16 | 1 | 4 | Carbide |
| 48309010 | PXMZ-C16SS16-S090CS-O | C16 | 90 | 15,7 | 40 | 16 | 0 | 3 | Carbide |
| 48309011 | PXMZ-C16SS16-L130CS-O | C16 | 130 | 15,7 | 62 | 16 | 0 | 3 | Carbide |
| 48309012 | PXMZ-C16SS16-L135CS-O | C16 | 135 | 15,7 | 85 | 16 | 0 | 3 | Carbide |
| 48309013 | PXMZ-C16TP20-LL165CS-O | C16 | 165 | 15,7 | 115 | 20 | 1 | 4 | Carbide |
| 48309014 | PXMZ-C16TP20-LL180CS-O | C16 | 180 | 15,7 | 116,6 | 20 | 1 | 4 | Carbide |
| 48309015 | PXMZ-C20SS20-S090CS-O | C20 | 90 | 19,6 | 40 | 20 | 0 | 3 | Carbide |
| 48309016 | PXMZ-C20SS20-L150CS-O | C20 | 150 | 19,6 | 79,3 | 20 | 0 | 3 | Carbide |
| 48309017 | PXMZ-C20SS20-L180CS-O | C20 | 180 | 19,6 | 110 | 20 | 0 | 3 | Carbide |
| 48309018 | PXMZ-C20TP25-LL200CS-O | C20 | 200 | 19,6 | 140 | 25 | 1 | 4 | Carbide |
| 48309019 | PXMZ-C20TP25-LL210CS-O | C20 | 210 | 19,6 | 145 | 25 | 1 | 4 | Carbide |
| 48309020 | PXMZ-C25SS25-L200CS-O | C25 | 200 | 24 | 98 | 25 | 0 | 3 | Carbide |

## Accessories and spare parts

| Applicable head | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 10-12 | 7801890 | PXMP8-10 | 10 N.m | Spanner |
| 12-14 | 7801890 | PXMP8-10 | 12 N.m | Spanner |
| 16-18 | 7801891 | PXMP13-16 | 30 N.m | Spanner |
| 20-22 | 7801891 | PXMP13-16 | 50 N.m | Spanner |
| 25 | 7801892 | PXMP21 | 60 N.m | Spanner |
| 32 | 7801897 | PXMP24 | 60 N.m | Spanner |

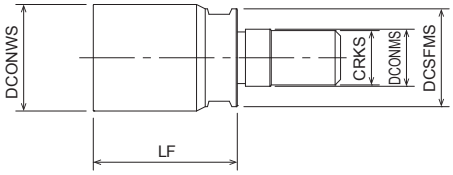
# PXMJ



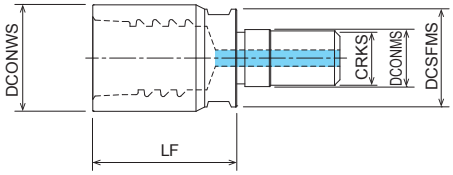
**Milling | Indexable | Arbors**

- Exchangeable screw fit body for PXM

**Type 1**




**Type 2**




| EDP | Designation | CS | LF | DCONWS | DCSFMS | DCON | Type |
|---|---|---|---|---|---|---|---|
| 7801893 | PXMJ-C12SF06 | C12 | 18 | 11,7 | 11 | 6,5 | 1 |
| 7801894 | PXMJ-C16SF08 | C16 | 21,8 | 15,7 | 14,5 | 8,5 | 1 |
| 7801895 | PXMJ-C20SF10 | C20 | 26,5 | 19,6 | 18 | 10,5 | 1 |
| 7801896 | PXMJ-C25SF12 | C25 | 34 | 24 | 23 | 12,5 | 1 |
| 7803551 | PXMJ-C12SF06-O | C12 | 18 | 11,7 | 11 | 6,5 | 2 |
| 7803552 | PXMJ-C16SF08-O | C16 | 21,8 | 15,7 | 14,5 | 8,5 | 2 |
| 7803553 | PXMJ-C20SF10-O | C20 | 26,5 | 19,6 | 18 | 10,5 | 2 |
| 7803554 | PXMJ-C25SF12-O | C25 | 34 | 24 | 23 | 12,5 | 2 |

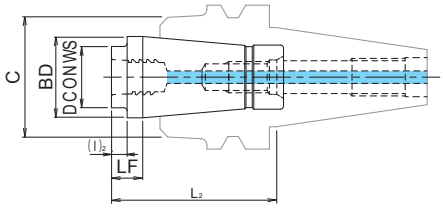
Accessories and spare parts

| Applicable head | EDP | Designation | Torque | Specification |
|---|---|---|---|---|
| 10-12 | 7801890 | PXMP8-10 | 10 N.m | Spanner |
| 12-14 | 7801890 | PXMP8-10 | 12 N.m | Spanner |
| 16-18 | 7801891 | PXMP13-16 | 30 N.m | Spanner |
| 20-22 | 7801891 | PXMP13-16 | 50 N.m | Spanner |
| 25 | 7801892 | PXMP21 | 60 N.m | Spanner |
| 32 | 7801897 | PXMP24 | 60 N.m | Spanner |

# PXMC



**Milling | Indexable | Collets**



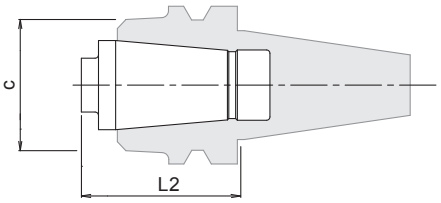

- PXMC collet for PHOENIX PXM series
- Applicable exchangeable HEADS: PXNH, PXNL, PXSE, PXSM, PXDR, PXRE, PXBE, PXBM
- With coolant hole
- Reducing overhang length allows high rigidity

| EDP | Designation | CS | LF | DCONWS | LB | BD | LU |
|---|---|---|---|---|---|---|---|
| 7834001 | PXMC-C1205 | C12 | 10,5 | 11,7 | 5 | 26 | 24 |
| 7834002 | PXMC-C1605 | C16 | 10,5 | 15,7 | 5 | 26 | 45,9 |
| 7834003 | PXMC-C2005 | C20 | 10,5 | 19,6 | 5 | 26 | 64,2 |
| 7834004 | PXMC-C2505 | C25 | 10,5 | 24 | 5 | 26 | 83,8 |
| 7834011 | PXMC-C1230 | C12 | 35,5 | 11,7 | 30 | 26 | 39,2 |
| 7834012 | PXMC-C1630 | C16 | 35,5 | 15,7 | 30 | 26 | 61,2 |
| 7834013 | PXMC-C2030 | C20 | 35,5 | 19,6 | 30 | 26 | 84,2 |
| 7834014 | PXMC-C2530 | C25 | 35,5 | 24 | 30 | 26 | 115 |

# HYPRO SHRINK CHUCKS



**Milling | Indexable | Holders**




- HY-PRO holder for PXMC

| EDP | Designation | BD | L2 extra short | L2 short |
|---|---|---|---|---|
| 8910000 | BT30SLK1235 P30T1(MAS1) | 38 | 45,5 | 70,5 |
| 8910001 | BT30SLK1235 P30T2(MAS2) | 38 | 45,5 | 70,5 |
| 8910002 | BT40SLK1245 | 38 | 55,5 | 80,5 |
| 8910003 | BT40SLK1275 | 38 | 85,5 | 110,5 |
| 8910005 | A63SLK1275 | 38 | 85,5 | 110,5 |
| 8910006 | A63SLK12135 | 38 | 145,5 | 170,5 |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

# AE-VMS

## Radius Type

### Slot Milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 (80-120) (m/min) | | 90 (70-110) (m/min) | | 80 (60-100) (m/min) | | 70 (50-80) (m/min) | | 70 (60-80) (m/min) | | 60 (50-70) (m/min) | | 25 (20-30) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 28700 | 570 | 25500 | 460 | 22300 | 360 | 19100 | 340 | 25620 | 320 | 22280 | 300 | 9550 | 120 |
| 1,5 | 19100 | 610 | 17000 | 480 | 14900 | 420 | 12700 | 360 | 16980 | 360 | 14850 | 340 | 6370 | 130 |
| 2 | 14300 | 630 | 12700 | 510 | 11100 | 440 | 9600 | 380 | 12810 | 360 | 11140 | 350 | 4770 | 140 |
| 2,5 | 11500 | 780 | 10200 | 570 | 8900 | 460 | 7600 | 430 | 10190 | 410 | 8910 | 390 | 3820 | 150 |
| 3 | 10.600 | 790 | 9.600 | 590 | 8.500 | 410 | 7.400 | 380 | 8.540 | 430 | 7.430 | 410 | 3.180 | 160 |
| 4 | 8.000 | 820 | 7.200 | 610 | 6.400 | 410 | 5.600 | 390 | 6.410 | 460 | 5.570 | 440 | 2.390 | 170 |
| 5 | 6.400 | 870 | 5.700 | 680 | 5.100 | 490 | 4.500 | 450 | 5.120 | 490 | 4.460 | 470 | 1.910 | 180 |
| 6 | 5.300 | 1.010 | 4.800 | 860 | 4.200 | 600 | 3.700 | 330 | 4.270 | 480 | 3.710 | 460 | 1.590 | 180 |
| 8 | 4.000 | 870 | 3.600 | 680 | 3.200 | 580 | 2.800 | 330 | 2.750 | 450 | 2.390 | 430 | 1.190 | 200 |
| 10 | 3.200 | 800 | 2.900 | 660 | 2.500 | 500 | 2.200 | 320 | 2.200 | 420 | 1.910 | 400 | 950 | 180 |
| 12 | 2.700 | 770 | 2.400 | 640 | 2.100 | 490 | 1.900 | 300 | 1.830 | 420 | 1.590 | 400 | 800 | 180 |
| 16 | 2.000 | 570 | 1.800 | 480 | 1.600 | 370 | 1.200 | 290 | 1.140 | 260 | 990 | 250 | 500 | 110 |
| 20 | 1.600 | 460 | 1.400 | 370 | 1.300 | 300 | 900 | 230 | 920 | 270 | 800 | 260 | 400 | 120 |
| 25 | 1.300 | 370 | 1.100 | 290 | 1.000 | 230 | 600 | 150 | 730 | 250 | 640 | 240 | 250 | 90 |
| Depth of cut | ap: 1D | | | | | | Dc: Dc≤6 → ap: 0,5D; 6<Dc → ap: 1D | | | | ap: 0,25D | | | |

### Side Milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 130 (100-150) (m/min) | | 120 (100-150) (m/min) | | 100 (80-120) (m/min) | | 80 (60-100) (m/min) | | 80 (70-90) (m/min) | | 70 (60-80) (m/min) | | 30 (25-40) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 38200 | 840 | 28700 | 690 | 25550 | 510 | 22300 | 450 | 29280 | 370 | 25460 | 350 | 12730 | 160 |
| 1,5 | 25500 | 920 | 21200 | 760 | 17000 | 540 | 14900 | 460 | 19520 | 410 | 16980 | 400 | 8490 | 180 |
| 2 | 19900 | 1430 | 17500 | 840 | 14300 | 630 | 11100 | 470 | 14640 | 440 | 12730 | 420 | 6370 | 190 |
| 2,5 | 15900 | 1590 | 14000 | 900 | 11500 | 690 | 8900 | 480 | 11710 | 480 | 10190 | 460 | 5090 | 210 |
| 3 | 13.800 | 1.660 | 12.700 | 1.070 | 10.600 | 760 | 8.000 | 480 | 9.760 | 510 | 8.490 | 480 | 4.240 | 220 |
| 4 | 10.400 | 1.830 | 9.600 | 1.150 | 8.000 | 800 | 6.000 | 530 | 7.320 | 550 | 6.370 | 530 | 3.180 | 240 |
| 5 | 8.300 | 1.990 | 7.600 | 1.220 | 6.400 | 900 | 4.800 | 560 | 5.860 | 560 | 5.090 | 540 | 2.550 | 250 |
| 6 | 6.900 | 2.070 | 6.400 | 1.540 | 5.300 | 1.060 | 4.200 | 640 | 4.880 | 580 | 4.240 | 550 | 2.120 | 250 |
| 8 | 5.200 | 1.770 | 4.800 | 1.540 | 4.000 | 1.040 | 3.200 | 610 | 3.200 | 450 | 2.790 | 430 | 1.590 | 230 |
| 10 | 4.100 | 1.640 | 3.800 | 1.370 | 3.200 | 900 | 2.500 | 580 | 2.560 | 430 | 2.230 | 410 | 1.270 | 220 |
| 12 | 3.500 | 1.400 | 3.200 | 1.280 | 2.700 | 760 | 2.100 | 530 | 2.140 | 420 | 1.860 | 400 | 1.060 | 210 |
| 16 | 2.600 | 1.250 | 2.400 | 1.060 | 2.000 | 640 | 1.400 | 450 | 1.370 | 410 | 1.190 | 400 | 700 | 210 |
| 20 | 2.100 | 1.010 | 1.900 | 840 | 1.600 | 510 | 1.100 | 370 | 1.100 | 390 | 950 | 380 | 560 | 200 |
| 25 | 1.700 | 820 | 1.500 | 660 | 1.300 | 420 | 900 | 310 | 880 | 510 | 760 | 490 | 320 | 190 |
| Depth of cut | ap: 1,5D; ae: 0,2D | | | | | | | | | | | | | |

1. The above milling condition is a guideline for the overhang length is 3×D.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble oil when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

### Fix rate cutting condition

#### DC≥Ø6

| Work Material | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø / L/D | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| Side Milling 4 | 80% | | 70% | | 70% | | 60% | | 60% | | 50% | | 50% | |
| Side Milling 5 | 70% | | 60% | | 60% | | 50% | | 50% | | 50% | | 50% | |
| Slotting 4 | 90% | | 90% | | 80% | | 70% | | 70% | | 60% | | 60% | |
| Slotting 5 | 80% | | 80% | | 70% | | 70% | | 70% | | 60% | | 60% | |

# CUTTING CONDITIONS



# AE-VMSS

## Square Type / Right Angle Type*

### Slot milling

* For right angle type, please use 70% of the speed and feed shown in the table below as reference.

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 (80-120) (m/min) | | 90 (70-110) (m/min) | | 80 (60-100) (m/min) | | 70 (50-80) (m/min) | | 70 (60-80) (m/min) | | 60 (50-70) (m/min) | | 25 (20-30) (m/min) | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 1 | 28.700 | 570 | 25.500 | 460 | 22.300 | 360 | 19.100 | 340 | 25.620 | 320 | 22.280 | 300 | 9.550 | 120 |
| 1,5 | 19.100 | 610 | 17.000 | 480 | 14.900 | 420 | 12.700 | 360 | 16.980 | 360 | 14.850 | 340 | 6.370 | 130 |
| 2 | 14.300 | 630 | 12.700 | 510 | 11.100 | 440 | 9.600 | 380 | 12.810 | 360 | 11.140 | 350 | 4.770 | 140 |
| 2,5 | 11.500 | 780 | 10.200 | 570 | 8.900 | 460 | 7.600 | 430 | 10.190 | 410 | 8.910 | 390 | 3.820 | 150 |
| 3 | 10.600 | 930 | 9.600 | 690 | 8.500 | 510 | 7.400 | 470 | 8.540 | 430 | 7.430 | 410 | 3.180 | 160 |
| 4 | 8.000 | 960 | 7.200 | 720 | 6.400 | 510 | 5.600 | 490 | 6.410 | 460 | 5.570 | 440 | 2.390 | 170 |
| 5 | 6.400 | 1.020 | 5.700 | 800 | 5.100 | 610 | 4.500 | 560 | 5.120 | 490 | 4.460 | 470 | 1.910 | 180 |
| 6 | 5.300 | 1.060 | 4.800 | 900 | 4.200 | 670 | 3.700 | 370 | 4.270 | 480 | 3.710 | 460 | 1.590 | 180 |
| 8 | 4.000 | 910 | 3.600 | 720 | 3.200 | 640 | 2.800 | 370 | 2.750 | 450 | 2.390 | 430 | 1.190 | 200 |
| 10 | 3.200 | 840 | 2.900 | 700 | 2.500 | 550 | 2.200 | 350 | 2.200 | 420 | 1.910 | 400 | 950 | 180 |
| 12 | 2.700 | 810 | 2.400 | 670 | 2.100 | 550 | 1.900 | 330 | 1.830 | 420 | 1.590 | 400 | 800 | 180 |
| Depth of cut | | | ap: 1D | | | | Dc: Dc≤6 → ap: 0,5D; Dc>6 → ap: 1D | | | | ap: 0,25D | | | |

### Side milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 130 (100-150) (m/min) | | 120 (100-150) (m/min) | | 100 (80-120) (m/min) | | 80 (60-100) (m/min) | | 80 (70-90) (m/min) | | 70 (60-80) (m/min) | | 30 (25-40) (m/min) | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 1 | 38.200 | 840 | 28.700 | 690 | 25.500 | 510 | 22.300 | 450 | 29.280 | 370 | 25.460 | 350 | 12.730 | 160 |
| 1,5 | 25.500 | 920 | 21.200 | 760 | 17.000 | 540 | 14.900 | 460 | 19.520 | 410 | 16.980 | 400 | 8.490 | 180 |
| 2 | 19.900 | 1.430 | 17.500 | 840 | 14.300 | 630 | 11.100 | 470 | 14.640 | 440 | 12.730 | 420 | 6.370 | 190 |
| 2,5 | 15.900 | 1.590 | 14.000 | 900 | 11.500 | 690 | 8.900 | 480 | 11.710 | 480 | 10.190 | 460 | 5.039 | 210 |
| 3 | 13.800 | 1.660 | 12.700 | 1.070 | 10.600 | 760 | 8.000 | 480 | 9.760 | 510 | 8.490 | 480 | 4.240 | 220 |
| 4 | 10.400 | 1.830 | 9.600 | 1.150 | 8.000 | 800 | 6.000 | 530 | 7.320 | 550 | 6.370 | 530 | 3.180 | 240 |
| 5 | 8.300 | 1.990 | 7.600 | 1.220 | 6.400 | 900 | 4.800 | 560 | 5.860 | 560 | 5.090 | 540 | 2.550 | 250 |
| 6 | 6.900 | 2.070 | 6.400 | 1.540 | 5.300 | 1.060 | 4.200 | 640 | 4.880 | 580 | 4.240 | 550 | 2.120 | 250 |
| 8 | 5.200 | 1.770 | 4.800 | 1.540 | 4.000 | 1.040 | 3.200 | 610 | 3.200 | 450 | 2.790 | 430 | 1.590 | 230 |
| 10 | 4.100 | 1.640 | 3.800 | 1.370 | 3.200 | 900 | 2.500 | 580 | 2.560 | 430 | 2.230 | 410 | 1.270 | 220 |
| 12 | 3.500 | 1.400 | 3.200 | 1.280 | 2.700 | 760 | 2.100 | 530 | 2.140 | 420 | 1.860 | 400 | 1.060 | 210 |
| Depth of cut | | | | | | | ap: 1,5D; ae: 0,2D | | | | | | | |

1. The above milling condition is a guideline for the overhang length is 3×D.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble oil when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

# AE-VMSS

## Long Neck Type

### Side milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 105 (80-120) (m/min) | | 95 (70-110) (m/min) | | 70 (50-90) (m/min) | | 60 (40-80) (m/min) | | 60 (50-70) (m/min) | | 50 (40-60) (m/min) | | 30 (20-35) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 5.520 | 1.660 | 5.120 | 1.230 | 3.710 | 740 | 2.940 | 450 | 3.420 | 410 | 2.970 | 390 | 1.480 | 180 |
| 8 | 4.160 | 1.420 | 3.840 | 1.230 | 2.800 | 730 | 2.240 | 430 | 2.240 | 320 | 1.950 | 300 | 1.110 | 160 |
| 10 | 3.280 | 1.310 | 3.040 | 1.100 | 2.240 | 630 | 1.750 | 410 | 1.790 | 300 | 1.560 | 290 | 890 | 150 |
| 12 | 2.800 | 1.120 | 2.560 | 1.020 | 1.890 | 530 | 1.470 | 370 | 1.500 | 290 | 1.300 | 280 | 740 | 150 |
| Depth of cut | ap: 1,5D; ae: 0,2D | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
5. Please use water-soluble oil when machining stainless steel.
6. Reduce speed and feed as well as depth of cut when high precision is required.

### Fix rate cutting condition

#### DC≥Ø6

| Work Material | | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | L/D | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| Side Milling | 4 | 80% | | 70% | | 70% | | 60% | | 60% | | 50% | | 50% | |
| | 5 | 70% | | 60% | | 60% | | 50% | | 50% | | 50% | | 50% | |
| Slotting | 4 | 90% | | 90% | | 80% | | 70% | | 70% | | 60% | | 60% | |
| | 5 | 80% | | 80% | | 70% | | 70% | | 70% | | 60% | | 60% | |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

# AE-VML

**Long Type** (Applies to square / radius / chipbreaker type)

## ae=0.05D • Standard side milling 3D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 160 (140-180) (m/min) | | 150 (130-170) (m/min) | | 140 (120-160) (m/min) | | 125 (100-140) (m/min) | | 115 (90-130) (m/min) | | 105 (80-120) (m/min) | | 85 (70-90) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 8.500 | 2.480 | 8.000 | 2.180 | 7.400 | 2.010 | 6.600 | 1.660 | 6.100 | 1.530 | 5.600 | 1.400 | 4.500 | 1.080 |
| 8 | 6.400 | 1.870 | 6.000 | 1.630 | 5.600 | 1.520 | 5.000 | 1.260 | 4.600 | 1.160 | 4.200 | 1.050 | 3.400 | 820 |
| 10 | 5.100 | 1.730 | 4.800 | 1.440 | 4.500 | 1.350 | 4.000 | 1.120 | 3.700 | 1.040 | 3.300 | 920 | 2.700 | 720 |
| 12 | 4.200 | 1.430 | 4.000 | 1.200 | 3.700 | 1.110 | 3.300 | 920 | 3.000 | 840 | 2.800 | 780 | 2.200 | 590 |
| 16 | 3.180 | 1.590 | 2.990 | 1.350 | 2.790 | 1.260 | 2.490 | 1.000 | 2.290 | 920 | 2.090 | 840 | 1.690 | 630 |
| 20 | 2.550 | 1.280 | 2.390 | 1.080 | 2.230 | 1.000 | 1.990 | 800 | 1.830 | 730 | 1.670 | 670 | 1.350 | 510 |
| Depth of cut | | | | | | | ap: 3D | ae: 0,05D | | | | | | |

1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.

## ae=0.1D • High efficiency side milling 3D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 220 (200-240) (m/min) | | 170 (150-190) (m/min) | | 135 (110-150) (m/min) | | 130 (110-150) (m/min) | | 120 (100-140) (m/min) | | 110 (90-130) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 11.700 | 3.180 | 9.000 | 2.270 | 7.200 | 1.810 | 6.900 | 1.600 | 6.400 | 1.480 | 5.800 | 1.340 |
| 8 | 8.800 | 2.390 | 6.800 | 1.710 | 5.400 | 1.360 | 5.200 | 1.210 | 4.800 | 1.120 | 4.400 | 1.020 |
| 10 | 7.000 | 2.240 | 5.400 | 1.510 | 4.300 | 1.200 | 4.100 | 1.070 | 3.800 | 990 | 3.500 | 910 |
| 12 | 5.800 | 1.860 | 4.500 | 1.260 | 3.600 | 1.010 | 3.500 | 910 | 3.200 | 830 | 2.900 | 750 |
| 16 | 4.380 | 1.970 | 3.380 | 1.350 | 2.690 | 1.080 | 2.590 | 910 | 2.390 | 840 | 2.190 | 770 |
| 20 | 3.500 | 1.580 | 2.710 | 1.080 | 2.150 | 860 | 2.070 | 720 | 1.910 | 670 | 1.750 | 610 |
| Depth of cut | | | | | | | ap: 3D | ae: 0,1D | | | | |

## ae=0.15D • High efficiency side milling 3D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 140 (120-160) (m/min) | | 100 (80-120) (m/min) | | 90 (70-110) (m/min) | | 85 (60-100) (m/min) | | 75 (50-90) (m/min) | | 65 (40-80) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 7.400 | 1.860 | 5.600 | 1.300 | 4.800 | 1.110 | 4.500 | 950 | 4.000 | 840 | 3.400 | 720 |
| 8 | 5.600 | 1.410 | 4.200 | 970 | 3.600 | 840 | 3.400 | 720 | 3.000 | 640 | 2.600 | 550 |
| 10 | 4.500 | 1.350 | 3.300 | 860 | 2.900 | 750 | 2.700 | 650 | 2.400 | 580 | 2.100 | 510 |
| 12 | 3.700 | 1.110 | 2.800 | 730 | 2.400 | 620 | 2.300 | 550 | 2.000 | 480 | 1.700 | 410 |
| 16 | 2.790 | 1.120 | 1.990 | 700 | 1.790 | 630 | 1.690 | 570 | 1.490 | 510 | 1.290 | 420 |
| 20 | 2.230 | 890 | 1.590 | 560 | 1.430 | 500 | 1.350 | 460 | 1.190 | 400 | 1.040 | 340 |
| Depth of cut | | | | | | | ap: 3D | ae: 0,15D | | | | |

## ae≤0.2D • High efficiency side milling 3D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 (80-120) (m/min) | | 80 (60-100) (m/min) | | 70 (50-90) (m/min) | | 65 (40-80) (m/min) | | 55 (30-70) (m/min) | | 45 (20-60) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 5.300 | 1.230 | 4.200 | 890 | 3.700 | 780 | 3.500 | 670 | 2.900 | 560 | 2.400 | 460 |
| 8 | 4.000 | 930 | 3.200 | 680 | 2.800 | 590 | 2.600 | 500 | 2.200 | 420 | 1.800 | 350 |
| 10 | 3.200 | 900 | 2.500 | 600 | 2.200 | 530 | 2.100 | 460 | 1.800 | 390 | 1.400 | 310 |
| 12 | 2.700 | 760 | 2.100 | 500 | 1.900 | 460 | 1.700 | 370 | 1.500 | 330 | 1.200 | 260 |
| 16 | 1.990 | 800 | 1.590 | 560 | 1.390 | 490 | 1.290 | 420 | 1.090 | 350 | 900 | 270 |
| 20 | 1.590 | 640 | 1.270 | 440 | 1.110 | 390 | 1.040 | 340 | 880 | 290 | 720 | 220 |
| Depth of cut | | | | | | | ap: 3D | ae: 0,20D | | | | |

# AE-VML

**Long type** (Applies to square / radius / chipbreaker type)

## ae=0.05D • Standard side milling 4D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 140 (120-160) (m/min) | | 130 (110-150) (m/min) | | 120 (100-140) (m/min) | | 115 (90-130) (m/min) | | 105 (80-120) (m/min) | | 95 (70-110) (m/min) | | 75 (60-80) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 7.400 | 2.010 | 6.900 | 1.740 | 6.400 | 1.610 | 6.100 | 1.420 | 5.600 | 1.300 | 5.000 | 1.160 | 4.000 | 880 |
| 8 | 5.600 | 1.520 | 5.200 | 1.310 | 4.800 | 1.210 | 4.600 | 1.070 | 4.200 | 980 | 3.800 | 880 | 3.000 | 660 |
| 10 | 4.500 | 1.440 | 4.100 | 1.230 | 3.800 | 1.140 | 3.700 | 960 | 3.300 | 860 | 3.000 | 780 | 2.400 | 590 |
| 12 | 3.700 | 1.180 | 3.500 | 1.050 | 3.200 | 960 | 3.100 | 810 | 2.800 | 730 | 2.500 | 650 | 2.000 | 500 |
| 16 | 2.790 | 1.330 | 2.590 | 1.170 | 2.390 | 1.080 | 2.290 | 860 | 2.090 | 780 | 1.890 | 710 | 1.490 | 520 |
| 20 | 2.230 | 1.060 | 2.070 | 930 | 1.910 | 860 | 1.830 | 690 | 1.670 | 630 | 1.510 | 570 | 1.190 | 420 |
| Depth of cut | ap: 4D, ae: 0,05D | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel.

## ae=0.1D • High efficiency side milling 4D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 200 (180-220) (m/min) | | 160 (140-180) (m/min) | | 130 (110-150) (m/min) | | 125 (100-140) (m/min) | | 115 (90-130) (m/min) | | 105 (80-120) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 10.600 | 2.670 | 8.500 | 1.970 | 6.900 | 1.600 | 6.600 | 1.400 | 6.100 | 1.290 | 5.600 | 1.190 |
| 8 | 8.000 | 2.020 | 6.400 | 1.480 | 5.200 | 1.210 | 5.000 | 1.060 | 4.600 | 980 | 4.200 | 890 |
| 10 | 6.400 | 1.920 | 5.100 | 1.330 | 4.100 | 1.070 | 4.000 | 950 | 3.700 | 890 | 3.300 | 790 |
| 12 | 5.300 | 1.590 | 4.200 | 1.090 | 3.500 | 910 | 3.300 | 790 | 3.000 | 720 | 2.800 | 670 |
| 16 | 3.980 | 1.690 | 3.180 | 1.190 | 2.590 | 970 | 2.490 | 870 | 2.290 | 800 | 2.090 | 730 |
| 20 | 3.180 | 1.350 | 2.550 | 960 | 2.070 | 780 | 1.990 | 700 | 1.830 | 640 | 1.670 | 580 |
| Depth of cut | ap: 4D, ae: 0,1D | | | | | | | | | | | |

## ae=0.15D • High efficiency side milling 4D

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 135 (110-150) (m/min) | | 115 (100-140) (m/min) | | 85 (60-100) (m/min) | | 75 (50-90) (m/min) | | 65 (50-80) (m/min) | | 55 (40-70) (m/min) | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 7.200 | 1.670 | 6.100 | 1.290 | 4.500 | 950 | 4.000 | 770 | 3.400 | 650 | 2.900 | 560 |
| 8 | 5.400 | 1.250 | 4.600 | 980 | 3.400 | 720 | 3.000 | 580 | 2.600 | 500 | 2.200 | 430 |
| 10 | 4.300 | 1.200 | 3.700 | 890 | 2.700 | 650 | 2.400 | 530 | 2.100 | 460 | 1.800 | 400 |
| 12 | 3.600 | 1.010 | 3.100 | 740 | 2.300 | 550 | 2.000 | 440 | 1.700 | 370 | 1.500 | 330 |
| 16 | 2.690 | 1.080 | 2.290 | 800 | 1.690 | 590 | 1.490 | 480 | 1.290 | 420 | 1.090 | 330 |
| 20 | 2.150 | 860 | 1.830 | 640 | 1.350 | 470 | 1.190 | 390 | 1.040 | 340 | 880 | 260 |
| Depth of cut | ap: 4D, ae: ≤0,15D | | | | | | | | | | | |

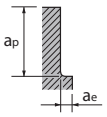
# CUTTING CONDITIONS



## AE-VMFE

(Applies to square / radius type)

### Side milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | | Ni-Based Alloy<br>Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 120 (100-140) (m/min) | | 120 (100-140) (m/min) | | 120 (100-140) (m/min) | | 120 (100-140) (m/min) | | 115 (100-130) (m/min) | | 105 (90-120) (m/min) | | 70 (60-80) (m/min) | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 6 | 6.370 | 2.550 | 6.370 | 2.290 | 6.370 | 2.040 | 6.370 | 1.910 | 6.100 | 1.590 | 5.570 | 1.340 | 3.720 | 740 |
| 8 | 4.780 | 1.910 | 4.780 | 1.720 | 4.780 | 1.530 | 4.780 | 1.430 | 4.580 | 1.190 | 4.180 | 1.000 | 2.790 | 560 |
| 10 | 3.820 | 1.530 | 3.820 | 1.380 | 3.820 | 1.220 | 3.820 | 1.150 | 3.660 | 950 | 3.340 | 800 | 2.230 | 490 |
| 12 | 3.180 | 1.270 | 3.180 | 1.140 | 3.180 | 1.020 | 3.180 | 950 | 3.050 | 790 | 2.790 | 670 | 1.860 | 410 |
| 14 | 2.730 | 1.090 | 2.730 | 980 | 2.730 | 870 | 2.730 | 820 | 2.620 | 680 | 2.390 | 570 | 1.590 | 480 |
| 18 | 2.120 | 850 | 2.120 | 760 | 2.120 | 680 | 2.120 | 640 | 2.030 | 530 | 1.860 | 450 | 1.240 | 370 |
| 22 | 1.740 | 700 | 1.740 | 630 | 1.740 | 560 | 1.740 | 520 | 1.660 | 430 | 1.520 | 360 | 1.010 | 300 |
| Depth of cut |  | | | | | | | | | | | | | |

| ap | ae |
|---|---|
| 2D | 0,1D |

1. The above milling condition is a guideline for the overhang length is 5×D.
2. Use a rigid and precise machine and holder.
3. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel, precipitation stainless steel, titanium alloy, Ni-based alloy.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

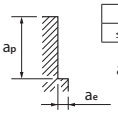
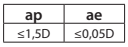
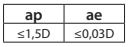
### Cutting Condition Guide for Changes in Overhang Length

| | Mild Steel • Carbon Steel • Cast Iron • Alloy Steel • Tool Steel<br>(~750N/mm²~30HRC) | | | | Prehardened Steel • Hardened Steel • Stainless Steel<br>30~45HRC | | | | Titanium Alloy • Ni-Based Alloy<br>Ti-6Al-4V - Inconel 718 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | Cutting Speed | Feed | Depth of cut | | Cutting Speed | Feed | Depth of cut | | Cutting Speed | Feed | Depth of cut | |
| L/D | (m/min) | (mm/min) | ap | ae | (m/min) | (mm/min) | ap | ae | (m/min) | (mm/min) | ap | ae |
| 6 | 80% | 80% | 1,7D | 0,08D | 80% | 80% | 1,7D | 0,08D | 80% | 80% | 1,7D | 0,08D |
| 7 | 65% | 65% | 1,6D | 0,05D | 65% | 65% | 1,6D | 0,05D | 65% | 65% | 1,6D | 0,05D |
| 8 | 50% | 50% | 1,5D | 0,03D | 40% | 40% | 1,5D | 0,03D | 30% | 30% | 1,5D | 0,03D |

## AE-MSS-H

### Square Type

### Side Milling

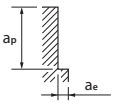
| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| Vc (m/min) | 110 ~ 130 | | 80 ~ 100 | | 60 ~ 80 | | 50 ~ 70 | | 40 ~ 60 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 X 3 | 38.220 | 1.220 | 28.660 | 860 | 22.290 | 530 | 19.110 | 400 | 15.920 | 250 |
| 2 X 6 | 19.110 | 1.220 | 14.330 | 860 | 11.150 | 530 | 9.550 | 400 | 7.960 | 250 |
| 3 X 9 | 12.740 | 1.220 | 9.550 | 880 | 7.430 | 530 | 6.370 | 400 | 5.310 | 250 |
| 4 X 12 | 9.550 | 1.220 | 7.170 | 890 | 5.570 | 530 | 4.780 | 400 | 3.980 | 250 |
| 5 X 15 | 7.640 | 1.220 | 5.730 | 920 | 4.460 | 540 | 3.820 | 400 | 3.180 | 250 |
| 6 X 18 | 6.370 | 1.830 | 4.780 | 1.350 | 3.720 | 800 | 3.180 | 600 | 2.650 | 380 |
| 8 X 24 | 4.780 | 1.840 | 3.580 | 1.350 | 2.790 | 800 | 2.390 | 600 | 1.990 | 380 |
| 10 X 30 | 3.820 | 1.830 | 2.870 | 1.340 | 2.230 | 800 | 1.910 | 600 | 1.590 | 380 |
| 12 X 36 | 3.180 | 1.830 | 2.390 | 1.330 | 1.860 | 800 | 1.590 | 600 | 1.330 | 380 |
| Depth of cut |  | |  | |  | | | | | |
| | ap ≤1,5D / ae ≤0,1D<br>ae Max = 1mm | | ap ≤1,5D / ae ≤0,05D<br>ae Max = 0,5mm | | | | ap ≤1,5D / ae ≤0,03D<br>ae Max = 0,3mm | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

## AE-MSS-H

### Square Type

### High-Speed Side Milling

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| Vc (m/min) | 290 ~ 310 | | 240 ~ 260 | | 150 ~ 170 | | 130 ~ 150 | | 90 ~ 110 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 X 3 | 50.000 | 1.800 | 50.000 | 1.800 | 50.000 | 1.500 | 44.590 | 1.160 | 31.850 | 700 |
| 2 X 6 | 47.770 | 3.440 | 39.810 | 2.870 | 25.480 | 1.530 | 22.290 | 1.160 | 15.920 | 700 |
| 3 X 9 | 31.850 | 3.440 | 26.540 | 2.870 | 16.990 | 1.530 | 14.860 | 1.190 | 10.620 | 720 |
| 4 X 12 | 23.890 | 3.440 | 19.900 | 2.870 | 12.740 | 1.530 | 11.150 | 1.190 | 7.960 | 720 |
| 5 X 15 | 19.110 | 3.440 | 15.920 | 2.870 | 10.190 | 1.530 | 8.920 | 1.190 | 6.370 | 720 |
| 6 X 18 | 15.920 | 5.160 | 13.270 | 4.300 | 8.490 | 2.290 | 7.430 | 1.780 | 5.310 | 1.080 |
| 8 X 24 | 11.940 | 5.160 | 9.950 | 4.300 | 6.370 | 2.290 | 5.570 | 1.770 | 3.980 | 1.080 |
| 10 X 30 | 9.550 | 5.160 | 7.960 | 4.300 | 5.100 | 2.300 | 4.460 | 1.770 | 3.180 | 1.080 |
| 12 X 36 | 7.960 | 5.160 | 6.630 | 4.300 | 4.250 | 2.300 | 3.720 | 1.770 | 2.650 | 1.080 |
| Depth of cut |  | | | | | | | | | |
| | | | ap ≤1,5D / ae ≤0,02D<br>ae Max = 0,2mm | | | | ap ≤1,5D / ae ≤0,01D<br>ae Max = 0,01mm | | | |

1. Tools can cause sparks. Do not use flammable fluids.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire.
Be sure to use all proper fire - prevention measures.
The conditions are for high speed / high precision machining centers.

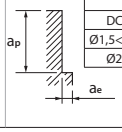
## AE-MS-H

### Square Type / Radius Type

### Side Milling

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| Vc (m/min) | 110 ~ 130 | | 80 ~ 100 | | 60 ~ 80 | | 50 ~ 70 | | 40 ~ 60 | |
| Mil.Dia (mm) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 38.220 | 1.530 | 28.660 | 1.150 | 22.290 | 620 | 19.110 | 460 | 15.920 | 330 |
| 1,5 | 25.480 | 1.530 | 19.110 | 1.150 | 14.860 | 620 | 12.740 | 460 | 10.620 | 330 |
| 2 | 19.110 | 1.530 | 14.330 | 1.150 | 11.150 | 620 | 9.550 | 460 | 7.960 | 330 |
| 2,5 | 15.290 | 1.530 | 11.460 | 1.150 | 8.920 | 620 | 7.640 | 460 | 6.370 | 330 |
| 3 | 12.740 | 1.530 | 9.550 | 1.150 | 7.430 | 620 | 6.370 | 460 | 5.310 | 340 |
| 3,5 | 10.910 | 1.220 | 8.190 | 890 | 6.370 | 540 | 5.460 | 400 | 4.550 | 250 |
| 4 | 9.550 | 1.530 | 7.170 | 1.150 | 5.570 | 620 | 4.780 | 460 | 3.980 | 340 |
| 4,5 | 8.490 | 1.220 | 6.370 | 890 | 4.950 | 530 | 4.240 | 400 | 3.540 | 250 |
| 5 | 7.640 | 1.530 | 5.730 | 1.150 | 4.460 | 620 | 3.820 | 460 | 3.180 | 360 |
| 5,5 | 6.940 | 1.220 | 5.210 | 890 | 4.050 | 530 | 3.470 | 400 | 2.890 | 250 |
| 6 | 6.370 | 2.290 | 4.780 | 1.720 | 3.720 | 940 | 3.180 | 690 | 2.650 | 510 |
| 8 | 4.780 | 2.290 | 3.580 | 1.720 | 2.790 | 940 | 2.390 | 690 | 1.990 | 510 |
| 10 | 3.820 | 2.290 | 2.870 | 1.720 | 2.230 | 940 | 1.910 | 690 | 1.590 | 510 |
| 12 | 3.180 | 2.290 | 2.390 | 1.720 | 1.860 | 950 | 1.590 | 690 | 1.330 | 510 |
| 16 | 2.390 | 1.840 | 1.790 | 1.340 | 1.390 | 800 | 1.190 | 590 | 990 | 380 |
| 20 | 1.910 | 1.830 | 1.430 | 1.340 | 1.110 | 800 | 950 | 590 | 800 | 380 |

Depth of cut




| | ap | ae |
|---|---|---|
| DC≤Ø1,5 | 1,5D | 0,02D |
| Ø1,5<DC≤Ø2,5 | 1,5D | 0,05D |
| Ø2,5<DC | 1,5D | 0,1D |

ae Max = 1mm

| ap | ae |
|---|---|
| 1,5D | 0,05D |

ae Max = 1mm

| ap | ae |
|---|---|
| 1,5D | 0,03D |

ae Max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,02D |

ae Max = 0,5mm

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

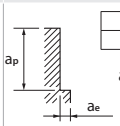
## AE-MS-H

### Square Type / Radius Type

### High-Speed Side Milling

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| Vc (m/min) | 290 ~ 310 | | 240 ~ 260 | | 150 ~ 170 | | 130 ~ 150 | | 90 ~ 110 | |
| Mil.Dia (mm) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 50.000 | 2.000 | 50.000 | 2.000 | 50.000 | 1.600 | 44.590 | 1.250 | 31.850 | 700 |
| 1,5 | 50.000 | 3.000 | 50.000 | 3.000 | 33.970 | 1.630 | 29.720 | 1.250 | 21.230 | 760 |
| 2 | 47.770 | 3.820 | 39.810 | 3.180 | 25.480 | 1.630 | 22.290 | 1.250 | 15.920 | 800 |
| 2,5 | 38.220 | 3.820 | 31.850 | 3.190 | 20.380 | 1.630 | 17.830 | 1.250 | 12.740 | 800 |
| 3 | 31.850 | 3.820 | 26.540 | 3.180 | 16.990 | 1.630 | 14.860 | 1.250 | 10.620 | 810 |
| 3,5 | 27.280 | 3.440 | 22.740 | 2.870 | 14.550 | 1.530 | 12.730 | 1.180 | 9.090 | 730 |
| 4 | 23.890 | 3.820 | 19.900 | 3.180 | 12.740 | 1.630 | 11.150 | 1.250 | 7.960 | 810 |
| 4,5 | 21.220 | 3.440 | 17.680 | 2.860 | 11.320 | 1.530 | 9.900 | 1.180 | 7.070 | 730 |
| 5 | 19.110 | 3.820 | 15.920 | 3.180 | 10.190 | 1.630 | 8.920 | 1.250 | 6.370 | 810 |
| 5,5 | 17.360 | 3.440 | 14.470 | 2.870 | 9.260 | 1.530 | 8.100 | 1.180 | 5.790 | 730 |
| 6 | 15.920 | 5.730 | 13.270 | 4.780 | 8.490 | 2.450 | 7.430 | 1.870 | 5.310 | 1.210 |
| 8 | 11.940 | 5.730 | 9.950 | 4.780 | 6.370 | 2.450 | 5.570 | 1.870 | 3.980 | 1.210 |
| 10 | 9.550 | 5.730 | 7.960 | 4.780 | 5.100 | 2.450 | 4.460 | 1.870 | 3.180 | 1.210 |
| 12 | 7.960 | 5.730 | 6.630 | 4.770 | 4.250 | 2.450 | 3.720 | 1.900 | 2.650 | 1.210 |
| 16 | 5.970 | 5.160 | 4.970 | 4.290 | 3.180 | 2.290 | 2.790 | 1.770 | 1.990 | 1.090 |
| 20 | 4.770 | 5.150 | 3.980 | 4.300 | 2.550 | 2.300 | 2.230 | 1.770 | 1.590 | 1.090 |

Depth of cut




| ap | ae |
|---|---|
| 1D | 0,05D |

ae Max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,03D |

ae Max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,02D |

ae Max = 0,2mm

| ap | ae |
|---|---|
| 1D | 0,01D |

ae Max = 0,2mm

1. Tools can cause sparks. Do not use flammable fluids.
2. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire - prevention measures.
The conditions are for high speed / high precision machining centers.

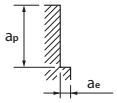
# AE-ML-H

## Square Type

### Side Milling

| | Hardened Steel • Prehardened Steel | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SCM • SKD61 • NAK80 | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| Vc (m/min) | 60 | | 45 | | 30 | | 20 | | 15 | |
| Mil.Dia (mm) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 | 6.370 | 650 | 4.780 | 370 | 3.180 | 170 | 2.120 | 100 | 1.590 | 60 |
| 4 | 4.780 | 650 | 3.580 | 370 | 2.390 | 170 | 1.590 | 100 | 1.190 | 60 |
| 5 | 3.820 | 650 | 2.870 | 370 | 1.910 | 170 | 1.270 | 100 | 960 | 60 |
| 6 | 3.180 | 970 | 2.390 | 560 | 1.590 | 260 | 1.060 | 150 | 800 | 90 |
| 8 | 2.390 | 970 | 1.790 | 560 | 1.190 | 260 | 800 | 150 | 600 | 90 |
| 10 | 1.910 | 970 | 1.430 | 560 | 960 | 260 | 640 | 150 | 480 | 90 |
| 12 | 1.590 | 970 | 1.190 | 560 | 800 | 260 | 530 | 150 | 400 | 90 |
| 16 | 1.190 | 970 | 900 | 560 | 600 | 260 | 400 | 150 | 300 | 90 |
| 20 | 960 | 970 | 720 | 560 | 480 | 260 | 320 | 150 | 240 | 90 |

Depth of cut




| ap | ae |
|---|---|
| 3D | 0,01D |

ae Max = 0,2mm

| ap | ae |
|---|---|
| 3D | 0,005D |

ae Max = 0,1mm

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.

## AE-BM-H

### Roughing

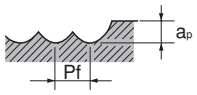
The machining path is on condition of contouring line operation.

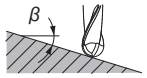
| R | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R1 | 20.700 | 3.310 | 18.300 | 1.830 | 15.900 | 1.590 | 14.300 | 1.140 | 9.600 | 770 |
| R1,5 | 13.800 | 2.760 | 12.200 | 1.710 | 10.600 | 1.480 | 9.600 | 1.150 | 6.400 | 770 |
| R2 | 10.400 | 2.500 | 9.200 | 1.660 | 8.000 | 1.440 | 7.200 | 1.150 | 4.800 | 770 |
| R2,5 | 8.300 | 2.660 | 7.300 | 1.900 | 6.400 | 1.660 | 5.700 | 1.370 | 3.800 | 910 |
| R3 | 6.900 | 2.760 | 6.100 | 1.950 | 5.300 | 1.700 | 4.800 | 1.340 | 3.200 | 900 |
| R4 | 5.200 | 2.500 | 4.600 | 1.840 | 4.000 | 1.600 | 3.600 | 1.300 | 2.400 | 860 |
| R5 | 4.500 | 2.340 | 4.000 | 1.760 | 3.500 | 1.540 | 3.200 | 1.280 | 2.200 | 850 |
| R6 | 4.000 | 2.240 | 3.600 | 1.730 | 3.200 | 1.540 | 2.900 | 1.160 | 2.100 | 840 |
| Depth of cut | | | | | | | | | | |

| | ap | Pf |
|---|---|---|
| RE<R3 | 0,1D | 0,2D |
| R3≤RE | 0,15D | 0,2D |

| | ap | Pf |
|---|---|---|
| RE<R3 | 0,07D | 0,15D |
| R3≤RE | 0,12D | 0,15D |

| ap | Pf |
|---|---|
| 0,05D | 0,15D |



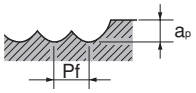

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for an end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
5. When the radius of curvature is less than 1.5 times the tool diameter, please reduce the speed to 50-80%, the feed rate to 50-80%, and the pick feed to 20-60% of the above shown cutting conditions.
6. When the machining incline angle (β) is more than 15°, please reduce the speed to 40-60%, the feed 30-50%, and the axial cutting depth to 30-60% of the above shown cutting conditions.
7. If the cutting depth is small, it is possible to further increase the speed and feed.

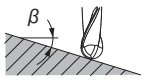
## AE-BM-H

### Finishing

The machining path is on condition of contouring line operation.

| R | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R1 | 27.100 | 4.340 | 24.700 | 2.470 | 22.300 | 1.780 | 18.300 | 1.460 | 13.500 | 1.080 |
| R1,5 | 18.000 | 3.600 | 16.500 | 2.310 | 14.900 | 1.780 | 12.200 | 1.460 | 9.000 | 1.080 |
| R2 | 13.500 | 3.240 | 12.300 | 2.210 | 11.100 | 1.780 | 9.200 | 1.470 | 6.800 | 1.090 |
| R2,5 | 10.800 | 3.460 | 9.900 | 2.570 | 8.900 | 2.140 | 7.300 | 1.750 | 5.400 | 1.300 |
| R3 | 9.000 | 3.600 | 8.200 | 2.620 | 7.400 | 2.070 | 6.100 | 1.710 | 4.500 | 1.260 |
| R4 | 6.800 | 3.260 | 6.200 | 2.480 | 5.600 | 1.790 | 4.600 | 1.470 | 3.400 | 1.090 |
| R5 | 5.700 | 2.960 | 5.300 | 2.330 | 4.800 | 1.730 | 4.000 | 1.440 | 3.000 | 1.080 |
| R6 | 5.000 | 2.800 | 4.600 | 2.210 | 4.200 | 1.680 | 3.500 | 1.400 | 2.800 | 1.120 |
| Depth of cut | | | | | | | | | | |



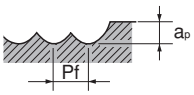
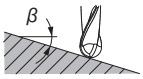




| ap | Pf |
|---|---|
| 0,02D | 0,05D |

## AE-BM-H

### High Speed Roughing

The machining path is on condition of contouring line operation.

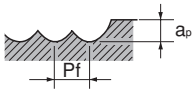
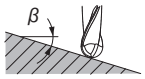
| R | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R1 | 37.300 | 5.970 | 33.000 | 3.300 | 28.700 | 2.870 | 25.800 | 2.060 | 17.200 | 1.380 |
| R1,5 | 24.800 | 4.960 | 22.000 | 3.080 | 19.100 | 2.670 | 17.200 | 2.060 | 11.500 | 1.380 |
| R2 | 20.700 | 4.970 | 18.300 | 3.290 | 15.900 | 2.860 | 14.300 | 2.290 | 9.600 | 1.540 |
| R2,5 | 16.600 | 5.310 | 14.600 | 3.800 | 12.700 | 3.300 | 11.500 | 2.760 | 7.600 | 1.820 |
| R3 | 13.800 | 5.520 | 12.200 | 3.900 | 10.600 | 3.390 | 9.600 | 2.690 | 6.400 | 1.790 |
| R4 | 10.400 | 4.990 | 9.200 | 3.680 | 8.000 | 3.200 | 7.200 | 2.590 | 4.800 | 1.730 |
| R5 | 8.900 | 4.630 | 8.000 | 3.520 | 7.000 | 3.080 | 6.400 | 2.560 | 4.500 | 1.800 |
| R6 | 8.000 | 4.480 | 7.200 | 3.460 | 6.400 | 3.070 | 5.800 | 2.320 | 4.200 | 1.680 |
| Depth of cut | ap: 0,1D; Pf: 0,2D | | ap: 0,08D; Pf: 0,2D | |   | |   | | ap: 0,05D; Pf: 0,1D | |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for an end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
5. When the radius of curvature is less than 1.5 times the tool diameter, please reduce the speed to 50-80%, the feed rate to 50-80%, and the pick feed to 20-60% of the above shown cutting conditions.
6. When the machining incline angle (β) is more than 15°, please reduce the speed to 40-60%, the feed 30-50%, and the axial cutting depth to 30-60% of the above shown cutting conditions.
7. If the cutting depth is small, it is possible to further increase the speed and feed.

## AE-BM-H

### High Speed Finishing

The machining path is on condition of contouring line operation.

| R | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R1 | 40.610 | 6.500 | 37.020 | 3.700 | 33.440 | 2.680 | 27.470 | 2.200 | 20.300 | 1.620 |
| R1,5 | 27.070 | 5.410 | 24.680 | 3.460 | 22.290 | 2.670 | 18.310 | 2.200 | 13.540 | 1.620 |
| R2 | 24.360 | 5.850 | 22.210 | 4.000 | 20.060 | 3.210 | 16.480 | 2.640 | 12.180 | 1.950 |
| R2,5 | 19.490 | 6.240 | 17.770 | 4.620 | 16.050 | 3.850 | 13.180 | 3.160 | 9.750 | 2.340 |
| R3 | 16.240 | 6.500 | 14.810 | 4.740 | 13.380 | 3.750 | 10.990 | 3.080 | 8.120 | 2.270 |
| R4 | 12.180 | 5.850 | 11.110 | 4.440 | 10.030 | 3.210 | 8.240 | 2.640 | 6.090 | 1.950 |
| R5 | 10.320 | 5.370 | 9.460 | 4.160 | 8.600 | 3.100 | 7.170 | 2.580 | 5.450 | 1.960 |
| R6 | 9.080 | 5.080 | 8.360 | 4.010 | 7.640 | 3.060 | 6.210 | 2.480 | 5.020 | 2.010 |
| Depth of cut | | |   | |   | | ap: 0,02D; Pf: 0,05D | | | |

1. Use a rigid and precise machine and holder.
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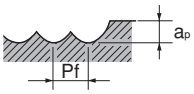
6. When the machining incline angle (β) is more than 15°, please reduce the speed to 40-60%, the feed 30-50%, and the axial cutting depth to 30-60% of the above shown cutting conditions.
7. If the cutting depth is small, it is possible to further increase the speed and feed.

## AE-BD-H

### Finishing

The machining path is on condition of contouring line operation.

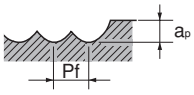
| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| R | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| R0,5 | 38.400 | 2.350 | 38.400 | 2.350 | 38.400 | 2.000 | 38.400 | 1.600 | 38.400 | 1.450 |
| R0,75 | 38.400 | 3.050 | 38.400 | 3.050 | 38.400 | 2.500 | 31.800 | 1.900 | 25.200 | 1.450 |
| R1 | 38.400 | 3.600 | 38.400 | 3.550 | 28.800 | 2.200 | 24.000 | 1.750 | 19.200 | 1.250 |
| R1,5 | 31.800 | 4.000 | 25.200 | 3.200 | 19.200 | 2.000 | 16.200 | 1.600 | 12.600 | 1.200 |
| R2 | 24.000 | 3.650 | 19.200 | 2.950 | 14.400 | 1.900 | 11.900 | 1.500 | 9.500 | 1.150 |
| R2,5 | 19.200 | 3.500 | 15.000 | 2.650 | 11.500 | 1.700 | 9.500 | 1.350 | 7.600 | 1.000 |
| R3 | 16.200 | 3.350 | 12.600 | 2.300 | 9.500 | 1.550 | 8.000 | 1.250 | 6.400 | 955 |
| R4 | 11.900 | 2.850 | 9.500 | 2.050 | 7.100 | 1.350 | 5.900 | 1.050 | 4.800 | 830 |
| R5 | 9.500 | 2.550 | 7.600 | 1.800 | 5.800 | 1.150 | 4.800 | 875 | 3.800 | 700 |
| R6 | 8.000 | 2.400 | 6.400 | 1.650 | 4.800 | 955 | 4.000 | 795 | 3.200 | 635 |
| Depth of cut |  | | ap 0,05D / Pf 0,1D | | ap 0,03D / Pf 0,1D | | ap 0,02D / Pf 0,05D | | | |



## AE-BD-H

### High speed Finishing

The machining path is on condition of contouring line operation.

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| R | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| R0,5 | 50.000 | 3.700 | 50.000 | 3.700 | 50.000 | 3.100 | 50.000 | 2.600 | 50.000 | 2.400 |
| R0,75 | 50.000 | 4.800 | 50.000 | 4.800 | 50.000 | 3.900 | 50.000 | 3.050 | 38.400 | 2.300 |
| R1 | 50.000 | 5.600 | 50.000 | 5.350 | 48.000 | 3.650 | 38.400 | 2.800 | 28.800 | 2.100 |
| R1,5 | 49.800 | 6.200 | 38.400 | 4.800 | 31.800 | 3.350 | 25.200 | 2.550 | 19.200 | 1.900 |
| R2 | 37.200 | 5.700 | 28.800 | 4.400 | 24.000 | 3.200 | 19.200 | 2.400 | 14.400 | 1.800 |
| R2,5 | 30.000 | 5.450 | 22.800 | 4.000 | 19.200 | 2.850 | 15.600 | 2.150 | 11.500 | 1.600 |
| R3 | 24.600 | 5.200 | 19.200 | 3.450 | 16.200 | 2.550 | 12.600 | 2.050 | 9.500 | 1.550 |
| R4 | 18.600 | 4.450 | 14.400 | 3.050 | 11.900 | 2.250 | 9.500 | 1.800 | 7.100 | 1.350 |
| R5 | 15.000 | 3.950 | 11.500 | 2.650 | 9.500 | 1.900 | 7.600 | 1.550 | 5.800 | 1.150 |
| R6 | 12.600 | 3.700 | 9.500 | 2.500 | 8.000 | 1.600 | 6.400 | 1.350 | 4.800 | 995 |
| Depth of cut |  | | ap 0,02D / Pf 0,05D | | | | ap 0,01D / Pf 0,05D | | | |



1. Use a rigid and precise machine and holder.
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6. When the machining incline angle (β) is more than 15°, please reduce the speed to 40-60%, the feed 30-50%, and the axial cutting depth to 30-60% of the above shown cutting conditions.
7. If the cutting depth is small, it is possible to further increase the speed and feed.

## AE-LNBD-H

The machining path is on condition of contouring line operation.

| | | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | | | Hardened Steel | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE | LU | ~45HRC | | | | ~ 55HRC | | | | ~ 62HRC | | | | ~ 66HRC | | | | ~ 70HRC | | | |
| | (mm) | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf |
| R0,05 | 0,2 | 50.000 | 80 | 0,003 | 0,003 | 50.000 | 70 | 0,003 | 0,003 | 50.000 | 70 | 0,003 | 0,003 | 50.000 | 60 | 0,003 | 0,003 | 50.000 | 50 | 0,003 | 0,003 |
| R0,05 | 0,3 | 50.000 | 70 | 0,003 | 0,003 | 50.000 | 60 | 0,003 | 0,003 | 50.000 | 60 | 0,003 | 0,003 | 50.000 | 50 | 0,003 | 0,003 | 50.000 | 40 | 0,003 | 0,003 |
| R0,05 | 0,5 | 50.000 | 50 | 0,003 | 0,003 | 50.000 | 40 | 0,003 | 0,003 | 50.000 | 40 | 0,003 | 0,003 | 50.000 | 30 | 0,003 | 0,003 | 50.000 | 20 | 0,003 | 0,003 |
| R0,1 | 0,3 | 50.000 | 400 | 0,005 | 0,005 | 50.000 | 280 | 0,005 | 0,005 | 50.000 | 220 | 0,004 | 0,005 | 50.000 | 190 | 0,004 | 0,005 | 50.000 | 140 | 0,004 | 0,005 |
| R0,1 | 0,5 | 50.000 | 380 | 0,005 | 0,005 | 50.000 | 260 | 0,005 | 0,005 | 50.000 | 200 | 0,004 | 0,005 | 50.000 | 170 | 0,004 | 0,005 | 50.000 | 130 | 0,004 | 0,005 |
| R0,1 | 0,75 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 230 | 0,005 | 0,005 | 50.000 | 180 | 0,004 | 0,005 | 50.000 | 150 | 0,004 | 0,005 | 50.000 | 110 | 0,004 | 0,005 |
| R0,1 | 1 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 230 | 0,005 | 0,005 | 50.000 | 180 | 0,004 | 0,005 | 50.000 | 150 | 0,004 | 0,005 | 45.000 | 110 | 0,004 | 0,005 |
| R0,1 | 1,25 | 50.000 | 300 | 0,005 | 0,005 | 50.000 | 210 | 0,005 | 0,005 | 50.000 | 150 | 0,004 | 0,005 | 46.500 | 130 | 0,004 | 0,005 | 37.200 | 100 | 0,004 | 0,005 |
| R0,1 | 1,5 | 50.000 | 280 | 0,005 | 0,005 | 50.000 | 190 | 0,005 | 0,005 | 49.200 | 130 | 0,004 | 0,005 | 44.300 | 110 | 0,004 | 0,005 | 35.500 | 80 | 0,004 | 0,005 |
| R0,1 | 1,75 | 50.000 | 240 | 0,005 | 0,005 | 50.000 | 170 | 0,005 | 0,005 | 45.600 | 120 | 0,004 | 0,005 | 41.100 | 100 | 0,004 | 0,005 | 32.900 | 80 | 0,004 | 0,005 |
| R0,1 | 2 | 45.600 | 210 | 0,005 | 0,005 | 44.500 | 140 | 0,005 | 0,005 | 39.600 | 100 | 0,004 | 0,005 | 35.700 | 90 | 0,004 | 0,005 | 28.600 | 70 | 0,004 | 0,005 |
| R0,1 | 2,5 | 38.400 | 160 | 0,004 | 0,005 | 37.200 | 100 | 0,004 | 0,005 | 37.200 | 80 | 0,004 | 0,005 | 33.500 | 70 | 0,004 | 0,005 | 26.800 | 50 | 0,004 | 0,005 |
| R0,1 | 3 | 38.400 | 140 | 0,004 | 0,005 | 37.200 | 90 | 0,004 | 0,005 | 37.200 | 70 | 0,004 | 0,005 | 33.500 | 60 | 0,004 | 0,005 | 26.800 | 50 | 0,004 | 0,005 |
| R0,15 | 0,5 | 50.000 | 600 | 0,005 | 0,1 | 50.000 | 400 | 0,005 | 0,01 | 50.000 | 300 | 0,005 | 0,01 | 50.000 | 260 | 0,005 | 0,01 | 50.000 | 200 | 0,01 | 0,01 |
| R0,15 | 0,6 | 50.000 | 570 | 0,005 | 0,1 | 50.000 | 390 | 0,005 | 0,01 | 50.000 | 300 | 0,005 | 0,01 | 50.000 | 260 | 0,005 | 0,01 | 50.000 | 200 | 0,01 | 0,01 |
| R0,15 | 0,75 | 50.000 | 570 | 0,005 | 0,1 | 50.000 | 390 | 0,05 | 0,01 | 50.000 | 300 | 0,005 | 0,01 | 50.000 | 260 | 0,005 | 0,01 | 50.000 | 200 | 0,01 | 0,01 |
| R0,15 | 1 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 390 | 0,005 | 0,01 | 50.000 | 300 | 0,005 | 0,01 | 50.000 | 260 | 0,005 | 0,01 | 50.000 | 200 | 0,01 | 0,01 |
| R0,15 | 1,25 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 380 | 0,005 | 0,01 | 50.000 | 300 | 0,005 | 0,01 | 50.000 | 260 | 0,005 | 0,01 | 50.000 | 200 | 0,01 | 0,01 |
| R0,15 | 1,5 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 370 | 0,005 | 0,01 | 50.000 | 290 | 0,005 | 0,01 | 50.000 | 250 | 0,005 | 0,01 | 46.500 | 190 | 0,01 | 0,01 |
| R0,15 | 1,75 | 50.000 | 480 | 0,005 | 0,01 | 50.000 | 310 | 0,005 | 0,01 | 50.000 | 220 | 0,005 | 0,01 | 46.500 | 190 | 0,005 | 0,01 | 37.200 | 140 | 0,01 | 0,01 |
| R0,15 | 2 | 50.000 | 450 | 0,005 | 0,005 | 50.000 | 290 | 0,005 | 0,005 | 49.200 | 210 | 0,004 | 0,005 | 44.300 | 180 | 0,004 | 0,005 | 35.500 | 140 | 0,004 | 0,005 |
| R0,15 | 2,25 | 50.000 | 380 | 0,005 | 0,005 | 50.000 | 250 | 0,005 | 0,005 | 49.200 | 180 | 0,004 | 0,005 | 44.300 | 150 | 0,004 | 0,005 | 35.500 | 110 | 0,004 | 0,005 |
| R0,15 | 2,5 | 48.000 | 280 | 0,005 | 0,005 | 48.000 | 190 | 0,005 | 0,005 | 43.200 | 130 | 0,004 | 0,005 | 38.900 | 110 | 0,004 | 0,005 | 31.200 | 80 | 0,004 | 0,005 |
| R0,15 | 3 | 45.600 | 230 | 0,005 | 0,005 | 44.400 | 150 | 0,005 | 0,005 | 39.600 | 100 | 0,004 | 0,005 | 35.700 | 90 | 0,004 | 0,005 | 28.600 | 70 | 0,004 | 0,005 |
| R0,15 | 3,5 | 40.800 | 190 | 0,004 | 0,005 | 39.600 | 120 | 0,004 | 0,005 | 39.600 | 95 | 0,004 | 0,005 | 35.700 | 80 | 0,004 | 0,005 | 28.600 | 60 | 0,004 | 0,005 |
| R0,15 | 4 | 38.400 | 140 | 0,004 | 0,005 | 37.200 | 90 | 0,004 | 0,005 | 37.200 | 70 | 0,004 | 0,005 | 33.500 | 60 | 0,004 | 0,005 | 26.800 | 50 | 0,004 | 0,005 |
| R0,15 | 4,5 | 38.400 | 120 | 0,004 | 0,005 | 37.200 | 80 | 0,004 | 0,005 | 37.200 | 60 | 0,004 | 0,005 | 33.500 | 50 | 0,004 | 0,005 | 26.800 | 40 | 0,004 | 0,005 |
| R0,15 | 5 | 34.800 | 95 | 0,004 | 0,005 | 33.600 | 60 | 0,004 | 0,005 | 33.600 | 50 | 0,004 | 0,005 | 30.300 | 40 | 0,004 | 0,005 | 24.200 | 30 | 0,004 | 0,005 |
| R0,2 | 0,5 | 50.000 | 900 | 0,01 | 0,02 | 50.000 | 630 | 0,01 | 0,02 | 50.000 | 500 | 0,008 | 0,015 | 50.000 | 430 | 0,008 | 0,015 | 50.000 | 320 | 0,008 | 0,015 |
| R0,2 | 0,75 | 50.000 | 850 | 0,01 | 0,02 | 50.000 | 590 | 0,01 | 0,02 | 50.000 | 470 | 0,008 | 0,015 | 50.000 | 400 | 0,008 | 0,015 | 50.000 | 300 | 0,008 | 0,015 |
| R0,2 | 0,8 | 50.000 | 850 | 0,01 | 0,02 | 50.000 | 590 | 0,01 | 0,02 | 50.000 | 470 | 0,008 | 0,015 | 50.000 | 400 | 0,008 | 0,015 | 50.000 | 300 | 0,008 | 0,015 |
| R0,2 | 1 | 50.000 | 850 | 0,01 | 0,02 | 50.000 | 550 | 0,01 | 0,02 | 50.000 | 440 | 0,008 | 0,015 | 50.000 | 370 | 0,008 | 0,015 | 50.000 | 280 | 0,008 | 0,015 |
| R0,2 | 1,5 | 50.000 | 760 | 0,01 | 0,02 | 50.000 | 520 | 0,01 | 0,02 | 50.000 | 410 | 0,008 | 0,015 | 50.000 | 350 | 0,008 | 0,015 | 46.500 | 260 | 0,008 | 0,015 |
| R0,2 | 2 | 50.000 | 660 | 0,01 | 0,02 | 50.000 | 460 | 0,01 | 0,02 | 50.000 | 330 | 0,008 | 0,015 | 48.600 | 280 | 0,008 | 0,015 | 38.900 | 210 | 0,008 | 0,015 |
| R0,2 | 2,5 | 50.000 | 520 | 0,008 | 0,015 | 50.000 | 360 | 0,008 | 0,015 | 49.200 | 260 | 0,008 | 0,015 | 44.300 | 220 | 0,008 | 0,015 | 35.500 | 170 | 0,008 | 0,015 |
| R0,2 | 3 | 50.000 | 470 | 0,005 | 0,01 | 50.000 | 320 | 0,005 | 0,01 | 45.600 | 220 | 0,005 | 0,01 | 41.100 | 190 | 0,005 | 0,01 | 32.900 | 140 | 0,005 | 0,01 |
| R0,2 | 3,5 | 48.000 | 400 | 0,005 | 0,01 | 48.000 | 280 | 0,005 | 0,01 | 43.200 | 200 | 0,005 | 0,01 | 38.900 | 170 | 0,005 | 0,01 | 31.200 | 130 | 0,005 | 0,01 |
| R0,2 | 4 | 43.200 | 350 | 0,005 | 0,005 | 42.000 | 230 | 0,005 | 0,005 | 37.200 | 160 | 0,005 | 0,005 | 33.500 | 140 | 0,005 | 0,005 | 26.800 | 110 | 0,005 | 0,005 |
| R0,2 | 4,5 | 38.400 | 270 | 0,004 | 0,005 | 37.200 | 180 | 0,004 | 0,005 | 33.600 | 130 | 0,004 | 0,005 | 30.300 | 110 | 0,004 | 0,005 | 24.200 | 80 | 0,004 | 0,005 |
| R0,2 | 5 | 38.400 | 260 | 0,004 | 0,005 | 37.200 | 170 | 0,004 | 0,005 | 33.600 | 120 | 0,004 | 0,005 | 30.300 | 100 | 0,004 | 0,005 | 24.200 | 80 | 0,004 | 0,005 |
| R0,2 | 5,5 | 36.000 | 210 | 0,004 | 0,005 | 34.800 | 140 | 0,004 | 0,005 | 31.200 | 100 | 0,004 | 0,005 | 28.100 | 90 | 0,004 | 0,005 | 22.500 | 70 | 0,004 | 0,005 |
| R0,2 | 6 | 36.000 | 190 | 0,004 | 0,005 | 34.800 | 120 | 0,004 | 0,005 | 31.200 | 100 | 0,004 | 0,005 | 28.100 | 90 | 0,004 | 0,005 | 22.500 | 70 | 0,004 | 0,005 |
| R0,25 | 0,75 | 50.000 | 1.100 | 0,015 | 0,03 | 50.000 | 750 | 0,015 | 0,03 | 50.000 | 590 | 0,01 | 0,02 | 50.000 | 500 | 0,01 | 0,02 | 50.000 | 380 | 0,01 | 0,02 |
| R0,25 | 1 | 50.000 | 1.050 | 0,015 | 0,03 | 50.000 | 730 | 0,015 | 0,03 | 50.000 | 580 | 0,01 | 0,02 | 50.000 | 490 | 0,01 | 0,02 | 50.000 | 370 | 0,01 | 0,02 |
| R0,25 | 1,5 | 50.000 | 1.050 | 0,015 | 0,03 | 50.000 | 700 | 0,015 | 0,03 | 50.000 | 560 | 0,01 | 0,02 | 50.000 | 480 | 0,01 | 0,02 | 48.000 | 360 | 0,01 | 0,02 |
| R0,25 | 2 | 50.000 | 950 | 0,015 | 0,03 | 50.000 | 650 | 0,015 | 0,03 | 50.000 | 520 | 0,01 | 0,02 | 48.600 | 440 | 0,01 | 0,02 | 38.900 | 330 | 0,01 | 0,02 |
| R0,25 | 2,5 | 50.000 | 950 | 0,015 | 0,03 | 50.000 | 600 | 0,015 | 0,03 | 50.000 | 430 | 0,01 | 0,02 | 46.500 | 370 | 0,01 | 0,02 | 37.200 | 280 | 0,01 | 0,02 |
| R0,25 | 3 | 50.000 | 850 | 0,01 | 0,02 | 50.000 | 550 | 0,01 | 0,02 | 48.000 | 390 | 0,01 | 0,02 | 43.200 | 330 | 0,01 | 0,02 | 34.600 | 250 | 0,01 | 0,02 |
| R0,25 | 3,5 | 50.000 | 650 | ,01 | 0,02 | 50.000 | 450 | 0,01 | 0,02 | 45.600 | 320 | 0,01 | 0,02 | 41.100 | 270 | 0,01 | 0,02 | 32.900 | 200 | 0,01 | 0,02 |
| R0,25 | 4 | 50.000 | 570 | 0,01 | 0,01 | 50.000 | 390 | 0,01 | 0,01 | 40.800 | 270 | 0,01 | 0,01 | 36.800 | 230 | 0,01 | 0,01 | 29.400 | 170 | 0,01 | 0,01 |
| R0,25 | 4,5 | 45.600 | 470 | 0,01 | 0,01 | 45.600 | 320 | 0,01 | 0,01 | 31.200 | 220 | 0,01 | 0,01 | 28.100 | 190 | 0,01 | 0,01 | 22.500 | 140 | 0,01 | 0,01 |
| R0,25 | 5 | 36.000 | 380 | 0,005 | 0,01 | 34.800 | 250 | 0,005 | 0,01 | 28.800 | 170 | 0,005 | 0,01 | 26.000 | 140 | 0,005 | 0,01 | 20.800 | 110 | 0,005 | 0,01 |
| R0,25 | 5,5 | 33.600 | 280 | 0,004 | 0,005 | 32.400 | 180 | 0,004 | 0,005 | 26.400 | 120 | 0,004 | 0,005 | 23.800 | 100 | 0,004 | 0,005 | 19.100 | 80 | 0,004 | 0,005 |
| R0,25 | 6 | 31.200 | 230 | 0,004 | 0,005 | 30.000 | 150 | 0,004 | 0,005 | 24.000 | 100 | 0,004 | 0,005 | 21.600 | 90 | 0,004 | 0,005 | 17.300 | 70 | 0,004 | 0,005 |
| R0,25 | 7 | 28.800 | 190 | 0,004 | 0,005 | 27.600 | 130 | 0,004 | 0,005 | 24.000 | 100 | 0,004 | 0,005 | 21.600 | 90 | 0,004 | 0,005 | 17.300 | 70 | 0,004 | 0,005 |
| R0,25 | 8 | 26.400 | 150 | 0,004 | 0,005 | 25.200 | 110 | 0,004 | 0,005 | 24.000 | 100 | 0,004 | 0,005 | 21.600 | 90 | 0,004 | 0,005 | 17.300 | 70 | 0,004 | 0,005 |
| R0,25 | 9 | 24.000 | 110 | 0,004 | 0,005 | 25.200 | 100 | 0,004 | 0,005 | 24.000 | 90 | 0,004 | 0,005 | 21.600 | 80 | 0,004 | 0,005 | 17.300 | 60 | 0,004 | 0,005 |
| R0,25 | 10 | 24.000 | 95 | 0,004 | 0,005 | 25.200 | 100 | 0,004 | 0,005 | 24.000 | 90 | 0,004 | 0,005 | 21.600 | 80 | 0,004 | 0,005 | 17.300 | 60 | 0,004 | 0,005 |
| R0,3 | 0,75 | 50.000 | 1.250 | 0,03 | 0,05 | 50.000 | 880 | 0,03 | 0,05 | 50.000 | 700 | 0,01 | 0,02 | 50.000 | 600 | 0,01 | 0,02 | 50.000 | 450 | 0,01 | 0,02 |
| R0,3 | 1 | 50.000 | 1.200 | 0,03 | 0,05 | 50.000 | 840 | 0,03 | 0,05 | 50.000 | 670 | 0,01 | 0,02 | 50.000 | 570 | 0,01 | 0,02 | 50.000 | 430 | 0,01 | 0,02 |
| R0,3 | 1,2 | 50.000 | 1.200 | 0,03 | 0,05 | 50.000 | 840 | 0,03 | 0,05 | 50.000 | 670 | 0,01 | 0,02 | 50.000 | 570 | 0,01 | 0,02 | 50.000 | 430 | 0,01 | 0,02 |
| R0,3 | 1,5 | 50.000 | 1.200 | 0,03 | 0,05 | 50.000 | 830 | 0,03 | 0,05 | 50.000 | 660 | 0,01 | 0,02 | 50.000 | 560 | 0,01 | 0,02 | 50.000 | 420 | 0,01 | 0,02 |
| R0,3 | 2 | 50.000 | 1.200 | 0,03 | 0,05 | 50.000 | 820 | 0,03 | 0,05 | 50.000 | 650 | 0,01 | 0,02 | 50.000 | 550 | 0,01 | 0,02 | 50.000 | 410 | 0,01 | 0,02 |
| R0,3 | 2,5 | 50.000 | 1.100 | 0,03 | 0,05 | 50.000 | 770 | 0,03 | 0,05 | 50.000 | 610 | 0,01 | 0,02 | 50.000 | 520 | 0,01 | 0,02 | 48.000 | 390 | 0,01 | 0,02 |
| R0,3 | 3 | 50.000 | 1.100 | 0,02 | 0,03 | 50.000 | 750 | 0,02 | 0,03 | 50.000 | 540 | 0,01 | 0,02 | 48.600 | 460 | 0,01 | 0,02 | 38.900 | 350 | 0,01 | 0,02 |
| R0,3 | 3,5 | 50.000 | 950 | 0,02 | 0,03 | 50.000 | 660 | 0,02 | 0,03 | 49.200 | 480 | 0,01 | 0,02 | 44.300 | 410 | 0,01 | 0,02 | 35.500 | 310 | 0,01 | 0,02 |
| R0,3 | 4 | 48.000 | 850 | 0,01 | 0,02 | 48.000 | 590 | 0,01 | 0,02 | 43.200 | 420 | 0,01 | 0,02 | 38.900 | 360 | 0,01 | 0,02 | 31.200 | 270 | 0,01 | 0,02 |
| R0,3 | 4,5 | 40.800 | 740 | 0,01 | 0,02 | 40.800 | 510 | 0,01 | 0,02 | 37.200 | 370 | 0,01 | 0,02 | 33.500 | 310 | 0,01 | 0,02 | 26.800 | 230 | 0,01 | 0,02 |
| R0,3 | 5 | 36.000 | 640 | 0,01 | 0,02 | 36.000 | 440 | 0,01 | 0,02 | 32.400 | 310 | 0,01 | 0,02 | 29.200 | 260 | 0,01 | 0,02 | 23.400 | 200 | 0,01 | 0,02 |
| R0,3 | 5,5 | 33.600 | 610 | 0,01 | 0,02 | 33.600 | 420 | 0,01 | 0,02 | 30.000 | 300 | 0,01 | 0,02 | 27.000 | 260 | 0,01 | 0,02 | 21.600 | 200 | 0,01 | 0,02 |
| R0,3 | 6 | 31.200 | 570 | 0,01 | 0,02 | 30.000 | 380 | 0,01 | 0,02 | 26.400 | 260 | 0,01 | 0,02 | 23.800 | 220 | 0,01 | 0,02 | 19.100 | 170 | 0,01 | 0,02 |
| R0,3 | 6,5 | 28.800 | 520 | 0,01 | 0,01 | 27.600 | 340 | 0,01 | 0,01 | 24.000 | 230 | 0,01 | 0,01 | 21.600 | 200 | 0,01 | 0,01 | 17.300 | 150 | 0,01 | 0,01 |
| R0,3 | 7 | 27.600 | 420 | 0,01 | 0,01 | 26.400 | 280 | 0,01 | 0,01 | 22.800 | 190 | 0,01 | 0,01 | 20.600 | 160 | 0,01 | 0,01 | 16.500 | 120 | 0,01 | 0,01 |
| R0,3 | 7,5 | 27.600 | 380 | 0,01 | 0,01 | 26.400 | 250 | 0,01 | 0,01 | 22.800 | 170 | 0,01 | 0,01 | 20.600 | 140 | 0,01 | 0,01 | 16.500 | 110 | 0,01 | 0,01 |
| R0,3 | 8 | 24.000 | 300 | 0,005 | 0,01 | 22.800 | 200 | 0,005 | 0,01 | 20.400 | 140 | 0,005 | 0,01 | 18.400 | 120 | 0,005 | 0,01 | 14.700 | 90 | 0,005 | 0,01 |
| R0,3 | 8,5 | 24.000 | 280 | 0,005 | 0,01 | 22.800 | 180 | 0,005 | 0,01 | 20.400 | 130 | 0,005 | 0,01 | 18.400 | 110 | 0,005 | 0,01 | 14.700 | 80 | 0,005 | 0,01 |

## AE-LNBD-H

The machining path is on condition of contouring line operation.

| | | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | | | Hardened Steel | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE | LU | ~45HRC | | | | ~ 55HRC | | | | ~ 62HRC | | | | ~ 66HRC | | | | ~ 70HRC | | | |
| | (mm) | S (min⁻¹) | F (mm/min) | ap | Pf | S (min⁻¹) | F (mm/min) | ap | Pf | S (min⁻¹) | F (mm/min) | ap | Pf | S (min⁻¹) | F (mm/min) | ap | Pf | S (min⁻¹) | F (mm/min) | ap | Pf |
| R0,3 | 9 | 24.000 | 260 | 0,005 | 0,01 | 22.800 | 170 | 0,005 | 0,01 | 20.400 | 120 | 0,005 | 0,01 | 18.400 | 100 | 0,005 | 0,01 | 14.700 | 80 | 0,005 | 0,01 |
| R0,3 | 9,5 | 24.000 | 220 | 0,005 | 0,008 | 22.800 | 140 | 0,005 | 0,008 | 20.400 | 110 | 0,005 | 0,008 | 18.400 | 90 | 0,005 | 0,008 | 14.700 | 70 | 0,005 | 0,008 |
| R0,3 | 10 | 24.000 | 190 | 0,005 | 0,008 | 22.800 | 120 | 0,005 | 0,008 | 20.400 | 100 | 0,005 | 0,008 | 18.400 | 90 | 0,005 | 0,008 | 14.700 | 70 | 0,005 | 0,008 |
| R0,3 | 11 | 21.600 | 140 | 0,005 | 0,008 | 20.400 | 90 | 0,005 | 0,008 | 20.400 | 80 | 0,005 | 0,008 | 18.400 | 70 | 0,005 | 0,008 | 14.700 | 50 | 0,005 | 0,008 |
| R0,3 | 12 | 21.600 | 110 | 0,005 | 0,005 | 20.400 | 80 | 0,005 | 0,005 | 20.400 | 70 | 0,004 | 0,005 | 18.400 | 60 | 0,004 | 0,005 | 14.700 | 50 | 0,004 | 0,005 |
| R0,4 | 1 | 50.000 | 2.200 | 0,04 | 0,08 | 50.000 | 1.800 | 0,04 | 0,08 | 50.000 | 1.400 | 0,04 | 0,08 | 50.000 | 1.190 | 0,04 | 0,08 | 50.000 | 890 | 0,04 | 0,08 |
| R0,4 | 1,5 | 50.000 | 2.000 | 0,04 | 0,08 | 50.000 | 1.700 | 0,04 | 0,08 | 50.000 | 1.300 | 0,04 | 0,08 | 50.000 | 1.110 | 0,04 | 0,08 | 50.000 | 830 | 0,04 | 0,08 |
| R0,4 | 2 | 50.000 | 1.900 | 0,04 | 0,08 | 50.000 | 1.600 | 0,04 | 0,08 | 50.000 | 1.200 | 0,015 | 0,03 | 50.000 | 1.020 | 0,015 | 0,03 | 50.000 | 770 | 0,015 | 0,03 |
| R0,4 | 2,5 | 50.000 | 1.700 | 0,04 | 0,08 | 50.000 | 1.400 | 0,04 | 0,08 | 50.000 | 1.000 | 0,015 | 0,03 | 50.000 | 850 | 0,015 | 0,03 | 41.500 | 640 | 0,015 | 0,03 |
| R0,4 | 3 | 50.000 | 1.500 | 0,04 | 0,08 | 50.000 | 1.100 | 0,04 | 0,08 | 50.000 | 820 | 0,015 | 0,03 | 48.600 | 700 | 0,015 | 0,03 | 38.900 | 530 | 0,015 | 0,03 |
| R0,4 | 4 | 48.000 | 1.100 | 0,04 | 0,08 | 48.000 | 1.000 | 0,04 | 0,08 | 45.600 | 760 | 0,015 | 0,03 | 41.100 | 650 | 0,015 | 0,03 | 32.900 | 490 | 0,015 | 0,03 |
| R0,4 | 5 | 40.800 | 900 | 0,03 | 0,05 | 40.800 | 800 | 0,03 | 0,05 | 37.200 | 580 | 0,015 | 0,03 | 33.500 | 490 | 0,015 | 0,03 | 26.800 | 370 | 0,015 | 0,03 |
| R0,4 | 6 | 36.000 | 760 | 0,03 | 0,05 | 36.000 | 650 | 0,03 | 0,05 | 32.400 | 460 | 0,015 | 0,03 | 29.200 | 390 | 0,015 | 0,03 | 23.400 | 290 | 0,015 | 0,03 |
| R0,4 | 7 | 30.000 | 570 | 0,01 | 0,02 | 30.000 | 450 | 0,01 | 0,02 | 26.400 | 310 | 0,01 | 0,02 | 23.800 | 260 | 0,01 | 0,02 | 19.100 | 200 | 0,01 | 0,02 |
| R0,4 | 8 | 27.600 | 420 | 0,005 | 0,01 | 27.600 | 300 | 0,005 | 0,01 | 24.000 | 200 | 0,005 | 0,01 | 21.600 | 170 | 0,005 | 0,01 | 17.300 | 130 | 0,005 | 0,01 |
| R0,4 | 9 | 25.200 | 360 | 0,005 | 0,009 | 24.000 | 250 | 0,005 | 0,009 | 22.200 | 190 | 0,005 | 0,009 | 20.000 | 160 | 0,005 | 0,009 | 16.000 | 120 | 0,005 | 0,009 |
| R0,4 | 10 | 21.600 | 300 | 0,005 | 0,008 | 20.400 | 200 | 0,005 | 0,008 | 20.400 | 170 | 0,005 | 0,008 | 18.400 | 140 | 0,005 | 0,008 | 14.700 | 110 | 0,005 | 0,008 |
| R0,4 | 12 | 20.400 | 230 | 0,005 | 0,005 | 19.200 | 160 | 0,005 | 0,005 | 19.200 | 110 | 0,005 | 0,005 | 17.300 | 90 | 0,005 | 0,005 | 13.900 | 70 | 0,005 | 0,005 |
| R0,5 | 1,5 | 50.000 | 3.900 | 0,05 | 0,1 | 50.000 | 3.900 | 0,05 | 0,1 | 50.000 | 3.100 | 0,02 | 0,05 | 50.000 | 2.640 | 0,02 | 0,05 | 50.000 | 1.980 | 0,02 | 0,05 |
| R0,5 | 2 | 50.000 | 3.700 | 0,05 | 0,1 | 50.000 | 3.700 | 0,05 | 0,1 | 50.000 | 3.000 | 0,02 | 0,05 | 50.000 | 2.550 | 0,02 | 0,05 | 50.000 | 1.910 | 0,02 | 0,05 |
| R0,5 | 2,5 | 50.000 | 3.350 | 0,05 | 0,1 | 50.000 | 3.100 | 0,05 | 0,1 | 50.000 | 2.500 | 0,02 | 0,05 | 50.000 | 2.130 | 0,02 | 0,05 | 48.000 | 1.600 | 0,02 | 0,05 |
| R0,5 | 3 | 50.000 | 3.000 | 0,05 | 0,1 | 50.000 | 2.400 | 0,05 | 0,1 | 50.000 | 1.900 | 0,02 | 0,05 | 48.600 | 1.620 | 0,02 | 0,05 | 38.900 | 1.220 | 0,02 | 0,05 |
| R0,5 | 4 | 48.000 | 2.850 | 0,05 | 0,1 | 48.000 | 2.200 | 0,05 | 0,1 | 48.000 | 1.700 | 0,02 | 0,05 | 43.200 | 1.450 | 0,02 | 0,05 | 34.600 | 1.090 | 0,02 | 0,05 |
| R0,5 | 5 | 43.200 | 2.100 | 0,05 | 0,1 | 43.200 | 1.600 | 0,05 | 0,1 | 43.200 | 1.200 | 0,02 | 0,05 | 38.900 | 1.020 | 0,02 | 0,05 | 31.200 | 770 | 0,02 | 0,05 |
| R0,5 | 6 | 36.000 | 1.900 | 0,05 | 0,1 | 36.000 | 1.500 | 0,05 | 0,1 | 36.000 | 1.200 | 0,02 | 0,05 | 32.400 | 1.020 | 0,02 | 0,05 | 26.000 | 770 | 0,02 | 0,05 |
| R0,5 | 7 | 32.400 | 1.600 | 0,05 | 0,1 | 32.400 | 1.300 | 0,05 | 0,1 | 32.400 | 1.000 | 0,02 | 0,05 | 29.200 | 850 | 0,02 | 0,05 | 23.400 | 640 | 0,02 | 0,05 |
| R0,5 | 8 | 31.200 | 1.500 | 0,05 | 0,1 | 31.200 | 1.200 | 0,05 | 0,1 | 31.200 | 960 | 0,02 | 0,05 | 28.100 | 820 | 0,02 | 0,05 | 22.500 | 620 | 0,02 | 0,05 |
| R0,5 | 9 | 28.800 | 1.100 | 0,03 | 0,05 | 28.800 | 880 | 0,03 | 0,05 | 28.800 | 700 | 0,02 | 0,05 | 26.000 | 600 | 0,02 | 0,05 | 20.800 | 450 | 0,02 | 0,05 |
| R0,5 | 10 | 26.400 | 1.000 | 0,01 | 0,02 | 25.200 | 760 | 0,01 | 0,02 | 21.600 | 520 | 0,01 | 0,02 | 19.500 | 440 | 0,01 | 0,02 | 15.600 | 330 | 0,01 | 0,02 |
| R0,5 | 12 | 24.000 | 760 | 0,01 | 0,01 | 22.800 | 570 | 0,01 | 0,01 | 20.400 | 400 | 0,01 | 0,01 | 18.400 | 340 | 0,01 | 0,01 | 14.700 | 260 | 0,01 | 0,01 |
| R0,5 | 13 | 22.800 | 670 | 0,005 | 0,01 | 21.600 | 500 | 0,005 | 0,01 | 19.200 | 350 | 0,005 | 0,01 | 17.300 | 300 | 0,005 | 0,01 | 13.900 | 230 | 0,005 | 0,01 |
| R0,5 | 14 | 21.600 | 570 | 0,005 | 0,01 | 20.400 | 430 | 0,005 | 0,01 | 18.000 | 300 | 0,005 | 0,01 | 16.200 | 260 | 0,005 | 0,01 | 13.000 | 200 | 0,005 | 0,01 |
| R0,5 | 16 | 19.200 | 400 | 0,005 | 0,01 | 18.000 | 300 | 0,005 | 0,01 | 15.600 | 200 | 0,005 | 0,01 | 14.100 | 170 | 0,005 | 0,01 | 11.300 | 130 | 0,005 | 0,01 |
| R0,5 | 18 | 16.800 | 300 | 0,005 | 0,005 | 15.600 | 220 | 0,005 | 0,005 | 14.400 | 160 | 0,004 | 0,005 | 13.000 | 140 | 0,004 | 0,005 | 10.400 | 110 | 0,004 | 0,005 |
| R0,5 | 20 | 15.600 | 285 | 0,005 | 0,005 | 14.400 | 180 | 0,005 | 0,005 | 14.400 | 140 | 0,004 | 0,005 | 13.000 | 120 | 0,004 | 0,005 | 10.400 | 90 | 0,004 | 0,005 |
| R0,5 | 22 | 14.400 | 190 | 0,005 | 0,005 | 14.400 | 110 | 0,005 | 0,005 | 14.400 | 100 | 0,004 | 0,005 | 13.000 | 90 | 0,004 | 0,005 | 10.400 | 70 | 0,004 | 0,005 |
| R0,6 | 2 | 50.000 | 3.800 | 0,06 | 0,12 | 50.000 | 3.800 | 0,06 | 0,12 | 50.000 | 3.200 | 0,02 | 0,05 | 50.000 | 2.720 | 0,02 | 0,05 | 50.000 | 2.040 | 0,02 | 0,05 |
| R0,6 | 2,4 | 50.000 | 3.600 | 0,06 | 0,12 | 50.000 | 3.600 | 0,06 | 0,12 | 50.000 | 3.000 | 0,02 | 0,05 | 50.000 | 2.550 | 0,02 | 0,05 | 50.000 | 1.910 | 0,02 | 0,05 |
| R0,6 | 2,5 | 50.000 | 3.600 | 0,06 | 0,12 | 50.000 | 3.600 | 0,06 | 0,12 | 50.000 | 3.000 | 0,02 | 0,05 | 50.000 | 2.550 | 0,02 | 0,05 | 48.000 | 1.910 | 0,02 | 0,05 |
| R0,6 | 3 | 50.000 | 3.200 | 0,06 | 0,12 | 50.000 | 3.200 | 0,06 | 0,12 | 50.000 | 2.600 | 0,02 | 0,05 | 46.500 | 2.210 | 0,02 | 0,05 | 37.200 | 1.660 | 0,02 | 0,05 |
| R0,6 | 4 | 48.000 | 2.850 | 0,06 | 0,12 | 48.000 | 2.300 | 0,06 | 0,12 | 45.600 | 1.750 | 0,02 | 0,05 | 41.100 | 1.490 | 0,02 | 0,05 | 32.900 | 1.120 | 0,02 | 0,05 |
| R0,6 | 6 | 38.400 | 2.000 | 0,06 | 0,12 | 38.400 | 1.600 | 0,06 | 0,12 | 36.000 | 1.200 | 0,02 | 0,05 | 32.400 | 1.020 | 0,02 | 0,05 | 26.000 | 770 | 0,02 | 0,05 |
| R0,6 | 8 | 30.000 | 1.600 | 0,06 | 0,12 | 30.000 | 1.200 | 0,06 | 0,12 | 30.000 | 960 | 0,02 | 0,05 | 27.000 | 820 | 0,02 | 0,05 | 21.600 | 620 | 0,02 | 0,05 |
| R0,6 | 10 | 24.000 | 1.100 | 0,05 | 0,1 | 21.600 | 800 | 0,05 | 0,1 | 19.200 | 560 | 0,02 | 0,05 | 17.300 | 480 | 0,02 | 0,05 | 13.900 | 360 | 0,02 | 0,05 |
| R0,6 | 12 | 20.400 | 850 | 0,03 | 0,05 | 19.200 | 640 | 0,03 | 0,05 | 16.800 | 440 | 0,02 | 0,05 | 15.200 | 370 | 0,02 | 0,05 | 12.100 | 280 | 0,02 | 0,05 |
| R0,6 | 14 | 19.200 | 610 | 0,03 | 0,05 | 18.000 | 450 | 0,03 | 0,05 | 15.600 | 310 | 0,02 | 0,05 | 14.100 | 260 | 0,02 | 0,05 | 11.300 | 200 | 0,02 | 0,05 |
| R0,6 | 16 | 18.000 | 420 | 0,02 | 0,05 | 16.800 | 300 | 0,02 | 0,05 | 14.400 | 200 | 0,02 | 0,05 | 13.000 | 170 | 0,02 | 0,05 | 10.400 | 130 | 0,02 | 0,05 |
| R0,6 | 18 | 18.000 | 330 | 0,005 | 0,005 | 16.800 | 200 | 0,005 | 0,005 | 14.400 | 130 | 0,004 | 0,005 | 13.000 | 110 | 0,004 | 0,005 | 10.400 | 80 | 0,004 | 0,005 |
| R0,6 | 20 | 15.600 | 300 | 0,005 | 0,005 | 14.400 | 180 | 0,005 | 0,005 | 12.000 | 120 | 0,004 | 0,005 | 10.800 | 100 | 0,004 | 0,005 | 8.700 | 80 | 0,004 | 0,005 |
| R0,75 | 2 | 50.000 | 5.200 | 0,075 | 0,15 | 50.000 | 5.200 | 0,075 | 0,15 | 50.000 | 4.200 | 0,03 | 0,06 | 50.000 | 3.570 | 0,03 | 0,06 | 50.000 | 2.680 | 0,03 | 0,06 |
| R0,75 | 2,5 | 50.000 | 5.000 | 0,075 | 0,15 | 50.000 | 5.000 | 0,075 | 0,15 | 50.000 | 4.000 | 0,03 | 0,06 | 50.000 | 3.400 | 0,03 | 0,06 | 50.000 | 2.550 | 0,03 | 0,06 |
| R0,75 | 3 | 50.000 | 4.800 | 0,075 | 0,15 | 50.000 | 4.800 | 0,075 | 0,15 | 50.000 | 3.900 | 0,03 | 0,06 | 50.000 | 3.320 | 0,03 | 0,06 | 48.000 | 2.490 | 0,03 | 0,06 |
| R0,75 | 4 | 48.000 | 3.700 | 0,075 | 0,15 | 48.000 | 2.900 | 0,075 | 0,15 | 45.600 | 2.200 | 0,03 | 0,06 | 41.100 | 1.870 | 0,03 | 0,06 | 32.900 | 1.400 | 0,03 | 0,06 |
| R0,75 | 5 | 42.000 | 3.200 | 0,075 | 0,15 | 42.000 | 2.600 | 0,075 | 0,15 | 39.600 | 1.900 | 0,03 | 0,06 | 35.700 | 1.620 | 0,03 | 0,06 | 28.600 | 1.220 | 0,03 | 0,06 |
| R0,75 | 6 | 36.000 | 2.700 | 0,075 | 0,15 | 36.000 | 2.200 | 0,075 | 0,15 | 32.400 | 1.500 | 0,03 | 0,06 | 29.200 | 1.280 | 0,03 | 0,06 | 23.400 | 960 | 0,03 | 0,06 |
| R0,75 | 8 | 28.800 | 2.100 | 0,075 | 0,15 | 28.800 | 1.700 | 0,075 | 0,15 | 25.200 | 1.100 | 0,03 | 0,06 | 22.700 | 940 | 0,03 | 0,06 | 18.200 | 710 | 0,03 | 0,06 |
| R0,75 | 10 | 28.800 | 1.900 | 0,075 | 0,15 | 28.800 | 1.500 | 0,075 | 0,15 | 25.200 | 1.000 | 0,03 | 0,06 | 22.700 | 850 | 0,03 | 0,06 | 18.200 | 640 | 0,03 | 0,06 |
| R0,75 | 12 | 25.200 | 1.300 | 0,075 | 0,1 | 25.200 | 1.000 | 0,075 | 0,1 | 21.600 | 680 | 0,03 | 0,06 | 19.500 | 580 | 0,03 | 0,06 | 15.600 | 440 | 0,03 | 0,06 |
| R0,75 | 14 | 20.400 | 1.100 | 0,05 | 0,1 | 20.400 | 900 | 0,05 | 0,1 | 18.000 | 630 | 0,03 | 0,06 | 16.200 | 540 | 0,03 | 0,06 | 13.000 | 410 | 0,03 | 0,06 |
| R0,75 | 16 | 16.800 | 760 | 0,05 | 0,1 | 15.600 | 560 | 0,05 | 0,1 | 12.000 | 340 | 0,03 | 0,05 | 10.800 | 290 | 0,03 | 0,05 | 8.700 | 220 | 0,03 | 0,05 |
| R0,75 | 18 | 15.600 | 470 | 0,03 | 0,05 | 14.400 | 350 | 0,03 | 0,05 | 12.000 | 230 | 0,03 | 0,05 | 10.800 | 200 | 0,03 | 0,05 | 8.700 | 150 | 0,03 | 0,05 |
| R0,75 | 20 | 14.400 | 340 | 0,02 | 0,05 | 13.200 | 240 | 0,02 | 0,05 | 10.800 | 150 | 0,02 | 0,05 | 9.800 | 130 | 0,02 | 0,05 | 7.800 | 100 | 0,02 | 0,05 |
| R0,75 | 22 | 14.400 | 300 | 0,02 | 0,05 | 13.200 | 220 | 0,02 | 0,05 | 10.800 | 140 | 0,02 | 0,05 | 9.800 | 120 | 0,02 | 0,05 | 7.800 | 90 | 0,02 | 0,05 |
| R0,75 | 25 | 13.800 | 250 | 0,02 | 0,05 | 12.600 | 180 | 0,02 | 0,05 | 10.800 | 120 | 0,02 | 0,05 | 9.800 | 100 | 0,02 | 0,05 | 7.800 | 80 | 0,02 | 0,05 |
| R0,75 | 30 | 13.200 | 190 | 0,005 | 0,01 | 12.000 | 120 | 0,005 | 0,01 | 10.800 | 90 | 0,005 | 0,01 | 9.800 | 80 | 0,005 | 0,01 | 7.800 | 60 | 0,01 | 0,01 |
| R0,8 | 4 | 36.000 | 3.500 | 0,08 | 0,16 | 34.800 | 2.700 | 0,08 | 0,16 | 31.200 | 2.000 | 0,03 | 0,08 | 28.100 | 1.700 | 0,03 | 0,08 | 22.500 | 1.280 | 0,03 | 0,08 |
| R0,8 | 8 | 28.800 | 2.800 | 0,08 | 0,16 | 27.600 | 2.100 | 0,08 | 0,16 | 24.000 | 1.400 | 0,03 | 0,08 | 21.600 | 1.190 | 0,03 | 0,08 | 17.300 | 890 | 0,03 | 0,08 |
| R0,8 | 12 | 25.200 | 1.700 | 0,05 | 0,1 | 24.000 | 1.380 | 0,05 | 0,1 | 21.600 | 990 | 0,03 | 0,08 | 19.500 | 840 | 0,03 | 0,08 | 15.600 | 630 | 0,03 | 0,08 |
| R0,8 | 16 | 16.800 | 760 | 0,05 | 0,1 | 15.600 | 600 | 0,05 | 0,1 | 13.200 | 400 | 0,03 | 0,08 | 11.900 | 340 | 0,03 | 0,08 | 9.600 | 260 | 0,03 | 0,08 |
| R0,8 | 20 | 14.400 | 360 | 0,03 | 0,05 | 13.200 | 280 | 0,03 | 0,05 | 12.000 | 200 | 0,03 | 0,05 | 10.800 | 170 | 0,03 | 0,05 | 8.700 | 130 | 0,03 | 0,05 |
| R1 | 2,5 | 50.000 | 6.400 | 0,1 | 0,2 | 50.000 | 6.000 | 0,1 | 0,2 | 50.000 | 4.400 | 0,05 | 0,1 | 50.000 | 3.740 | 0,05 | 0,1 | 43.200 | 2.810 | 0,05 | 0,1 |
| R1 | 3 | 50.000 | 6.000 | 0,1 | 0,2 | 50.000 | 5.700 | 0,1 | 0,2 | 50.000 | 4.000 | 0,05 | 0,1 | 48.600 | 3.400 | 0,05 | 0,1 | 38.900 | 2.550 | 0,05 | 0,1 |
| R1 | 4 | 50.000 | 5.600 | 0,1 | 0,2 | 50.000 | 5.300 | 0,1 | 0,2 | 48.000 | 3.600 | 0,05 | 0,1 | 43.200 | 3.060 | 0,05 | 0,1 | 34.600 | 2.300 | 0,05 | 0,1 |
| R1 | 5 | 48.000 | 4.500 | 0,1 | 0,2 | 46.800 | 4.300 | 0,1 | 0,2 | 40.800 | 2.700 | 0,05 | 0,1 | 36.800 | 2.300 | 0,05 | 0,1 | 29.400 | 1.730 | 0,05 | 0,1 |
| R1 | 6 | 43.200 | 2.800 | 0,1 | 0,2 | 42.000 | 2.700 | 0,1 | 0,2 | 36.000 | 1.800 | 0,05 | 0,1 | 32.400 | 1.530 | 0,05 | 0,1 | 26.000 | 1.150 | 0,05 | 0,1 |
| R1 | 8 | 30.000 | 2.400 | 0,1 | 0,2 | 28.800 | 2.300 | 0,1 | 0,2 | 24.000 | 1.500 | 0,05 | 0,1 | 21.600 | 1.280 | 0,05 | 0,1 | 17.300 | 960 | 0,05 | 0,1 |

# CUTTING CONDITIONS



## AE-LNBD-H

The machining path is on condition of contouring line operation.

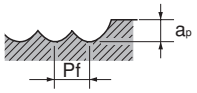
| | | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | | | Hardened Steel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE | LU | ~45HRC | | | | ~ 55HRC | | | | ~ 62HRC | | | | ~ 66HRC | | | | ~ 70HRC | | | |
| | (mm) | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf |
| R1 | 10 | 24.000 | 2.200 | 0,1 | 0,2 | 22.800 | 2.000 | 0,1 | 0,2 | 20.400 | 1.400 | 0,05 | 0,1 | 18.400 | 1.190 | 0,05 | 0,1 | 14.700 | 890 | 0,05 | 0,1 |
| R1 | 12 | 19.200 | 1.900 | 0,1 | 0,2 | 18.000 | 1.700 | 0,1 | 0,2 | 15.600 | 1.100 | 0,05 | 0,1 | 14.100 | 940 | 0,05 | 0,1 | 11.300 | 710 | 0,05 | 0,1 |
| R1 | 13 | 19.200 | 1.800 | 0,1 | 0,2 | 18.000 | 1.600 | 0,1 | 0,2 | 15.600 | 1.050 | 0,05 | 0,1 | 14.100 | 890 | 0,05 | 0,1 | 11.300 | 670 | 0,05 | 0,1 |
| R1 | 14 | 18.000 | 1.700 | 0,1 | 0,2 | 16.800 | 1.500 | 0,1 | 0,2 | 14.400 | 1.000 | 0,05 | 0,1 | 13.000 | 850 | 0,05 | 0,1 | 10.400 | 640 | 0,05 | 0,1 |
| R1 | 16 | 16.800 | 1.600 | 0,1 | 0,1 | 15.600 | 1.400 | 0,1 | 0,1 | 13.200 | 950 | 0,05 | 0,1 | 11.900 | 810 | 0,05 | 0,1 | 9.600 | 610 | 0,05 | 0,1 |
| R1 | 18 | 15.600 | 1.500 | 0,1 | 0,1 | 14.400 | 1.200 | 0,1 | 0,1 | 12.000 | 800 | 0,05 | 0,1 | 10.800 | 680 | 0,05 | 0,1 | 8.700 | 510 | 0,05 | 0,1 |
| R1 | 20 | 13.200 | 1.100 | 0,05 | 0,1 | 12.000 | 890 | 0,05 | 0,1 | 10.800 | 640 | 0,05 | 0,1 | 9.800 | 540 | 0,05 | 0,1 | 7.800 | 410 | 0,05 | 0,1 |
| R1 | 22 | 10.800 | 950 | 0,05 | 0,1 | 10.800 | 860 | 0,05 | 0,1 | 9.000 | 570 | 0,05 | 0,1 | 8.100 | 480 | 0,05 | 0,1 | 6.500 | 360 | 0,05 | 0,1 |
| R1 | 25 | 10.800 | 760 | 0,03 | 0,05 | 10.800 | 680 | 0,03 | 0,05 | 9.000 | 450 | 0,03 | 0,05 | 8.100 | 380 | 0,03 | 0,05 | 6.500 | 290 | 0,03 | 0,05 |
| R1 | 30 | 10.800 | 470 | 0,02 | 0,05 | 10.800 | 360 | 0,02 | 0,05 | 9.000 | 240 | 0,02 | 0,05 | 8.100 | 200 | 0,02 | 0,05 | 6.500 | 150 | 0,02 | 0,05 |
| R1 | 35 | 9.000 | 230 | 0,02 | 0,03 | 8.400 | 130 | 0,02 | 0,03 | 7.200 | 100 | 0,02 | 0,03 | 6.500 | 90 | 0,02 | 0,03 | 5.200 | 70 | 0,02 | 0,03 |
| R1 | 40 | 7.200 | 140 | 0,02 | 0,03 | 7.200 | 100 | 0,02 | 0,03 | 7.200 | 90 | 0,02 | 0,03 | 6.500 | 80 | 0,02 | 0,03 | 5.200 | 60 | 0,02 | 0,03 |
| R1,25 | 6 | 28.800 | 3.600 | 0,1 | 0,2 | 27.600 | 3.400 | 0,1 | 0,2 | 24.000 | 2.400 | 0,05 | 0,1 | 21.600 | 2.040 | 0,05 | 0,1 | 17.300 | 1.530 | 0,05 | 0,1 |
| R1,25 | 8 | 26.400 | 3.350 | 0,1 | 0,2 | 25.200 | 3.150 | 0,1 | 0,2 | 21.600 | 2.150 | 0,05 | 0,1 | 19.500 | 1.830 | 0,05 | 0,1 | 15.600 | 1.370 | 0,05 | 0,1 |
| R1,25 | 10 | 24.000 | 3.100 | 0,1 | 0,2 | 22.800 | 2.900 | 0,1 | 0,2 | 19.200 | 1.900 | 0,05 | 0,1 | 17.300 | 1.620 | 0,05 | 0,1 | 13.900 | 1.220 | 0,05 | 0,1 |
| R1,25 | 15 | 20.400 | 2.600 | 0,1 | 0,2 | 19.200 | 2.400 | 0,1 | 0,2 | 16.800 | 1.600 | 0,05 | 0,1 | 15.200 | 1.360 | 0,05 | 0,1 | 12.100 | 1.020 | 0,05 | 0,1 |
| R1,25 | 20 | 18.000 | 1.700 | 0,1 | 0,2 | 16.800 | 1.600 | 0,1 | 0,2 | 14.400 | 1.000 | 0,05 | 0,1 | 13.000 | 850 | 0,05 | 0,1 | 10.400 | 640 | 0,05 | 0,1 |
| R1,25 | 25 | 13.200 | 950 | 0,03 | 0,05 | 12.000 | 830 | 0,03 | 0,05 | 10.800 | 590 | 0,03 | 0,05 | 9.800 | 500 | 0,03 | 0,05 | 7.800 | 380 | 0,03 | 0,05 |
| R1,25 | 30 | 10.800 | 760 | 0,03 | 0,05 | 9.600 | 650 | 0,03 | 0,05 | 8.400 | 450 | 0,03 | 0,05 | 7.600 | 380 | 0,03 | 0,05 | 6.100 | 290 | 0,03 | 0,05 |
| R1,25 | 35 | 9.000 | 470 | 0,02 | 0,03 | 8.400 | 430 | 0,02 | 0,03 | 7.200 | 290 | 0,02 | 0,03 | 6.500 | 250 | 0,02 | 0,03 | 5.200 | 190 | 0,02 | 0,03 |
| R1,5 | 6 | 49.800 | 6.200 | 0,15 | 0,3 | 38.400 | 4.800 | 0,15 | 0,3 | 31.800 | 3.300 | 0,06 | 0,15 | 28.700 | 2.810 | 0,06 | 0,15 | 22.900 | 2.110 | 0,06 | 0,15 |
| R1,5 | 8 | 36.000 | 4.200 | 0,15 | 0,3 | 30.000 | 3.500 | 0,15 | 0,3 | 26.400 | 2.400 | 0,06 | 0,15 | 23.800 | 2.040 | 0,06 | 0,15 | 19.100 | 1.530 | 0,06 | 0,15 |
| R1,5 | 10 | 30.000 | 3.600 | 0,15 | 0,3 | 24.000 | 2.800 | 0,15 | 0,3 | 21.600 | 2.000 | 0,06 | 0,15 | 19.500 | 1.700 | 0,06 | 0,15 | 15.600 | 1.280 | 0,06 | 0,15 |
| R1,5 | 12 | 24.000 | 2.800 | 0,15 | 0,3 | 21.600 | 2.500 | 0,15 | 0,3 | 19.200 | 1.700 | 0,06 | 0,15 | 17.300 | 1.450 | 0,06 | 0,15 | 13.900 | 1.090 | 0,06 | 0,15 |
| R1,5 | 13 | 22.800 | 2.650 | 0,15 | 0,3 | 19.800 | 2.250 | 0,15 | 0,3 | 17.400 | 1.500 | 0,06 | 0,15 | 15.700 | 1.280 | 0,06 | 0,15 | 12.600 | 960 | 0,06 | 0,15 |
| R1,5 | 14 | 21.600 | 2.500 | 0,15 | 0,3 | 18.000 | 2.000 | 0,15 | 0,3 | 15.600 | 1.300 | 0,06 | 0,15 | 14.100 | 1.110 | 0,06 | 0,15 | 11.300 | 830 | 0,06 | 0,15 |
| R1,5 | 15 | 19.200 | 2.200 | 0,1 | 0,3 | 15.600 | 1.800 | 0,1 | 0,3 | 13.200 | 1.200 | 0,06 | 0,15 | 11.900 | 1.020 | 0,06 | 0,15 | 9.600 | 770 | 0,06 | 0,15 |
| R1,5 | 16 | 19.200 | 1.900 | 0,1 | 0,2 | 15.600 | 1.500 | 0,1 | 0,2 | 13.200 | 1.100 | 0,06 | 0,15 | 11.900 | 940 | 0,06 | 0,15 | 9.600 | 710 | 0,06 | 0,15 |
| R1,5 | 20 | 16.800 | 1.700 | 0,1 | 0,2 | 13.200 | 1.600 | 0,1 | 0,2 | 12.000 | 1.000 | 0,06 | 0,15 | 10.800 | 850 | 0,06 | 0,15 | 8.700 | 640 | 0,06 | 0,15 |
| R1,5 | 25 | 14.400 | 1.100 | 0,05 | 0,1 | 10.800 | 820 | 0,05 | 0,1 | 9.600 | 580 | 0,05 | 0,1 | 8.700 | 490 | 0,05 | 0,1 | 7.000 | 370 | 0,05 | 0,1 |
| R1,5 | 30 | 10.800 | 760 | 0,03 | 0,05 | 8.400 | 590 | 0,03 | 0,05 | 7.200 | 400 | 0,03 | 0,05 | 6.500 | 340 | 0,03 | 0,05 | 5.200 | 260 | 0,03 | 0,05 |
| R1,5 | 35 | 9.000 | 570 | 0,02 | 0,05 | 7.200 | 460 | 0,02 | 0,05 | 6.000 | 300 | 0,02 | 0,05 | 5.400 | 260 | 0,02 | 0,05 | 4.400 | 200 | 0,02 | 0,05 |
| R1,5 | 40 | 7.800 | 470 | 0,02 | 0,03 | 6.000 | 360 | 0,02 | 0,03 | 4.800 | 230 | 0,02 | 0,03 | 4.400 | 200 | 0,02 | 0,03 | 3.500 | 150 | 0,02 | 0,03 |
| R1,75 | 10 | 24.000 | 3.100 | 0,1 | 0,3 | 19.200 | 2.200 | 0,1 | 0,3 | 16.800 | 1.500 | 0,07 | 0,15 | 15.200 | 1.280 | 0,07 | 0,15 | 12.100 | 960 | 0,07 | 0,15 |
| R1,75 | 15 | 21.600 | 2.800 | 0,1 | 0,3 | 16.800 | 2.000 | 0,1 | 0,3 | 14.400 | 1.300 | 0,07 | 0,15 | 13.000 | 1.110 | 0,07 | 0,15 | 10.400 | 830 | 0,07 | 0,15 |
| R1,75 | 16 | 20.400 | 2.700 | 0,1 | 0,3 | 15.600 | 1.900 | 0,1 | 0,2 | 13.200 | 1.250 | 0,07 | 0,15 | 11.900 | 1.060 | 0,07 | 0,15 | 9.600 | 800 | 0,07 | 0,15 |
| R1,75 | 20 | 19.200 | 2.500 | 0,1 | 0,2 | 14.400 | 1.800 | 0,1 | 0,2 | 12.000 | 1.200 | 0,07 | 0,15 | 10.800 | 1.020 | 0,07 | 0,15 | 8.700 | 770 | 0,07 | 0,15 |
| R1,75 | 25 | 14.400 | 1.900 | 0,1 | 0,1 | 10.800 | 1.300 | 0,1 | 0,1 | 9.600 | 920 | 0,07 | 0,15 | 8.700 | 780 | 0,07 | 0,15 | 7.000 | 590 | 0,07 | 0,15 |
| R1,75 | 30 | 12.000 | 1.500 | 0,05 | 0,1 | 9.600 | 1.100 | 0,05 | 0,1 | 8.400 | 770 | 0,05 | 0,1 | 7.600 | 650 | 0,05 | 0,1 | 6.100 | 490 | 0,05 | 0,1 |
| R1,75 | 35 | 10.800 | 950 | 0,05 | 0,05 | 8.400 | 700 | 0,05 | 0,05 | 6.000 | 400 | 0,05 | 0,05 | 5.400 | 340 | 0,05 | 0,05 | 4.400 | 260 | 0,05 | 0,05 |
| R1,75 | 40 | 9.000 | 760 | 0,05 | 0,05 | 7.200 | 580 | 0,05 | 0,05 | 4.800 | 300 | 0,05 | 0,05 | 4.400 | 260 | 0,05 | 0,05 | 3.500 | 200 | 0,05 | 0,05 |
| R1,75 | 45 | 7.800 | 570 | 0,03 | 0,03 | 6.000 | 420 | 0,03 | 0,03 | 4.800 | 260 | 0,03 | 0,03 | 4.400 | 220 | 0,03 | 0,03 | 3.500 | 170 | 0,03 | 0,03 |
| R2 | 8 | 37.200 | 5.700 | 0,2 | 0,5 | 28.800 | 4.400 | 0,2 | 0,5 | 24.000 | 3.200 | 0,08 | 0,2 | 21.600 | 2.720 | 0,08 | 0,2 | 17.300 | 2.040 | 0,08 | 0,20 |
| R2 | 10 | 30.000 | 4.200 | 0,2 | 0,5 | 24.000 | 3.300 | 0,2 | 0,5 | 21.600 | 2.300 | 0,08 | 0,2 | 19.500 | 1.960 | 0,08 | 0,2 | 15.600 | 1.470 | 0,08 | 0,20 |
| R2 | 12 | 24.000 | 3.400 | 0,2 | 0,5 | 20.400 | 2.900 | 0,2 | 0,5 | 16.800 | 1.900 | 0,08 | 0,2 | 15.200 | 1.620 | 0,08 | 0,2 | 12.100 | 1.220 | 0,08 | 0,20 |
| R2 | 13 | 24.000 | 3.400 | 0,2 | 0,5 | 19.800 | 2.800 | 0,2 | 0,5 | 15.600 | 1.750 | 0,08 | 0,2 | 14.100 | 1.490 | 0,08 | 0,2 | 11.300 | 1.120 | 0,08 | 0,20 |
| R2 | 14 | 24.000 | 3.400 | 0,2 | 0,5 | 19.800 | 2.800 | 0,2 | 0,5 | 15.600 | 1.750 | 0,08 | 0,2 | 14.100 | 1.490 | 0,08 | 0,2 | 11.300 | 1.120 | 0,08 | 0,20 |
| R2 | 15 | 24.000 | 3.400 | 0,2 | 0,5 | 19.200 | 2.700 | 0,2 | 0,5 | 14.400 | 1.600 | 0,08 | 0,2 | 13.000 | 1.360 | 0,08 | 0,2 | 10.400 | 1.020 | 0,08 | 0,20 |
| R2 | 16 | 21.600 | 3.000 | 0,2 | 0,5 | 18.000 | 2.500 | 0,2 | 0,5 | 12.000 | 1.300 | 0,08 | 0,2 | 10.800 | 1.110 | 0,08 | 0,2 | 8.700 | 830 | 0,08 | 0,20 |
| R2 | 20 | 19.200 | 2.600 | 0,2 | 0,4 | 16.800 | 2.300 | 0,2 | 0,4 | 9.600 | 1.000 | 0,08 | 0,2 | 8.700 | 850 | 0,08 | 0,2 | 7.000 | 640 | 0,08 | 0,20 |
| R2 | 25 | 19.200 | 2.600 | 0,1 | 0,3 | 15.600 | 2.200 | 0,1 | 0,3 | 7.200 | 810 | 0,08 | 0,2 | 6.500 | 690 | 0,08 | 0,2 | 5.200 | 520 | 0,08 | 0,20 |
| R2 | 30 | 16.800 | 2.200 | 0,1 | 0,2 | 14.400 | 1.900 | 0,1 | 0,2 | 6.000 | 630 | 0,08 | 0,2 | 5.400 | 540 | 0,08 | 0,2 | 4.400 | 410 | 0,08 | 0,20 |
| R2 | 35 | 14.400 | 1.700 | 0,1 | 0,2 | 10.800 | 1.200 | 0,1 | 0,2 | 4.800 | 420 | 0,08 | 0,2 | 4.400 | 360 | 0,08 | 0,2 | 3.500 | 270 | 0,08 | 0,20 |
| R2 | 40 | 10.800 | 1.200 | 0,05 | 0,1 | 9.600 | 1.000 | 0,05 | 0,1 | 4.800 | 400 | 0,05 | 0,1 | 4.400 | 340 | 0,05 | 0,1 | 3.500 | 260 | 0,05 | 0,1 |
| R2 | 45 | 9.000 | 950 | 0,05 | 0,05 | 8.400 | 890 | 0,05 | 0,05 | 4.400 | 360 | 0,05 | 0,05 | 3.900 | 310 | 0,05 | 0,05 | 3.200 | 230 | 0,05 | 0,05 |
| R2 | 50 | 7.800 | 660 | 0,02 | 0,05 | 7.200 | 600 | 0,02 | 0,05 | 4.400 | 280 | 0,02 | 0,05 | 3.900 | 240 | 0,02 | 0,05 | 3.200 | 180 | 0,02 | 0,05 |
| R2,5 | 10 | 30.000 | 5.400 | 0,25 | 0,5 | 22.800 | 4.000 | 0,25 | 0,5 | 19.200 | 2.800 | 0,1 | 0,25 | 17.300 | 2.380 | 0,1 | 0,25 | 13.900 | 1.790 | 0,1 | 0,25 |
| R2,5 | 15 | 24.000 | 3.900 | 0,25 | 0,5 | 20.400 | 3.300 | 0,25 | 0,5 | 15.600 | 2.000 | 0,1 | 0,25 | 14.100 | 1.700 | 0,1 | 0,25 | 11.300 | 1.280 | 0,1 | 0,25 |
| R2,5 | 20 | 19.200 | 3.300 | 0,25 | 0,5 | 15.600 | 2.700 | 0,25 | 0,5 | 9.600 | 1.300 | 0,1 | 0,25 | 8.700 | 1.110 | 0,1 | 0,25 | 7.000 | 830 | 0,1 | 0,25 |
| R2,5 | 25 | 18.000 | 3.000 | 0,2 | 0,3 | 14.400 | 2.400 | 0,2 | 0,3 | 7.200 | 960 | 0,1 | 0,25 | 6.500 | 820 | 0,1 | 0,25 | 5.200 | 620 | 0,1 | 0,25 |
| R2,5 | 30 | 16.800 | 2.300 | 0,1 | 0,3 | 13.200 | 1.800 | 0,1 | 0,3 | 4.800 | 520 | 0,1 | 0,25 | 4.400 | 440 | 0,1 | 0,25 | 3.500 | 330 | 0,1 | 0,25 |
| R2,5 | 35 | 14.400 | 1.500 | 0,1 | 0,3 | 12.000 | 1.100 | 0,1 | 0,3 | 3.900 | 280 | 0,1 | 0,25 | 3.500 | 240 | 0,1 | 0,25 | 2.800 | 180 | 0,1 | 0,25 |
| R2,5 | 40 | 12.000 | 1.100 | 0,1 | 0,2 | 10.800 | 990 | 0,1 | 0,2 | 3.600 | 260 | 0,1 | 0,2 | 3.300 | 220 | 0,1 | 0,2 | 2.600 | 170 | 0,1 | 0,20 |
| R2,5 | 45 | 10.800 | 850 | 0,1 | 0,1 | 9.600 | 660 | 0,1 | 0,1 | 3.600 | 200 | 0,1 | 0,1 | 3.300 | 170 | 0,1 | 0,1 | 2.600 | 130 | 0,1 | 0,1 |
| R2,5 | 50 | 9.000 | 760 | 0,1 | 0,1 | 8.400 | 610 | 0,1 | 0,1 | 3.400 | 190 | 0,1 | 0,1 | 3.100 | 160 | 0,1 | 0,1 | 2.500 | 120 | 0,1 | 0,1 |

## AE-LNBD-H

The machining path is on condition of contouring line operation.

| | | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | | | Hardened Steel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE | LU | ~45HRC | | | | ~ 55HRC | | | | ~ 62HRC | | | | ~ 66HRC | | | | ~ 70HRC | | | |
| | (mm) | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf | S (min-1) | F (mm/min) | ap | Pf |
| R3 | 10 | 26.400 | 5.600 | 0,3 | 0,5 | 21.600 | 3.800 | 0,3 | 0,5 | 18.600 | 2.800 | 0,1 | 0,2 | 16.800 | 2.380 | 0,1 | 0,2 | 13.400 | 1.790 | 0,1 | 0,20 |
| R3 | 12 | 24.000 | 5.200 | 0,3 | 0,5 | 19.200 | 3.400 | 0,3 | 0,5 | 16.200 | 2.500 | 0,1 | 0,2 | 14.600 | 2.130 | 0,1 | 0,2 | 11.700 | 1.600 | 0,1 | 0,20 |
| R3 | 15 | 22.200 | 4.800 | 0,3 | 0,5 | 17.400 | 3.250 | 0,3 | 0,5 | 14.400 | 1.850 | 0,1 | 0,2 | 13.000 | 1.570 | 0,1 | 0,2 | 10.400 | 1.180 | 0,1 | 0,20 |
| R3 | 20 | 19.200 | 3.900 | 0,3 | 0,5 | 14.400 | 3.000 | 0,3 | 0,5 | 9.600 | 1.600 | 0,1 | 0,2 | 8.700 | 1.360 | 0,1 | 0,2 | 7.000 | 1.020 | 0,1 | 0,20 |
| R3 | 25 | 14.400 | 3.000 | 0,3 | 0,5 | 12.000 | 2.500 | 0,3 | 0,5 | 7.200 | 1.200 | 0,1 | 0,2 | 6.500 | 1.020 | 0,1 | 0,2 | 5.200 | 770 | 0,1 | 0,20 |
| R3 | 30 | 12.000 | 2.400 | 0,3 | 0,5 | 10.800 | 2.100 | 0,3 | 0,5 | 4.800 | 740 | 0,1 | 0,2 | 4.400 | 630 | 0,1 | 0,2 | 3.500 | 470 | 0,1 | 0,20 |
| R3 | 35 | 10.800 | 2.100 | 0,2 | 0,4 | 10.800 | 2.000 | 0,2 | 0,4 | 4.200 | 620 | 0,1 | 0,2 | 3.800 | 530 | 0,1 | 0,2 | 3.100 | 400 | 0,1 | 0,20 |
| R3 | 40 | 10.800 | 1.900 | 0,2 | 0,3 | 10.800 | 1.800 | 0,2 | 0,3 | 3.600 | 480 | 0,1 | 0,2 | 3.300 | 410 | 0,1 | 0,2 | 2.600 | 310 | 0,1 | 0,20 |
| R3 | 45 | 9.600 | 1.700 | 0,2 | 0,3 | 9.600 | 1.600 | 0,2 | 0,3 | 3.400 | 440 | 0,1 | 0,2 | 3.100 | 370 | 0,1 | 0,2 | 2.500 | 280 | 0,1 | 0,20 |
| R3 | 50 | 8.400 | 1.500 | 0,2 | 0,3 | 8.400 | 1.400 | 0,2 | 0,3 | 3.000 | 400 | 0,1 | 0,2 | 2.700 | 340 | 0,1 | 0,2 | 2.200 | 260 | 0,1 | 0,20 |
| R3 | 60 | 7.200 | 1.250 | 0,2 | 0,3 | 7.200 | 1.150 | 0,2 | 0,3 | 2.800 | 350 | 0,1 | 0,2 | 2.500 | 300 | 0,1 | 0,2 | 2.000 | 230 | 0,1 | 0,20 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / oil mist coolant) or air blow is recommended.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a diameter of θ 0.5 (R0.25) or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.



# AE-CRE-H/AE-H-CRE-H

## Frontal Milling

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| (m/min) | 140~160 | | 140~160 | | 90~110 | | 70~90 | | 50~70 | |
| DC x RE | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 1 ×R0,2 | 48.000 | 7.250 | 48.000 | 6.800 | 32.000 | 2.900 | 25.500 | 1.650 | 19.500 | 950 |
| 2 ×R0,5 | 24.000 | 7.250 | 24.000 | 6.800 | 16.000 | 2.900 | 13.000 | 1.700 | 9.550 | 950 |
| 3 ×R0,75 | 16.000 | 8.600 | 16.000 | 8.050 | 10.700 | 3.450 | 8.450 | 1.950 | 6.350 | 1.100 |
| 4 ×R1 | 12.000 | 9.550 | 12.000 | 8.950 | 7.950 | 3.800 | 6.350 | 2.200 | 4.750 | 1.200 |
| 5 ×R1,2 | 9.550 | 9.500 | 9.550 | 8.950 | 6.350 | 3.800 | 5.050 | 2.200 | 3.800 | 1.200 |
| 6 ×R1,5 | 7.950 | 9.500 | 7.950 | 8.900 | 5.300 | 3.800 | 4.200 | 2.200 | 3.150 | 1.200 |
| 7 ×R1,5 | 6.800 | 8.550 | 6.800 | 8.000 | 4.500 | 3.400 | 3.600 | 1.950 | 2.700 | 1.100 |
| 8 ×R2 | 5.950 | 9.500 | 5.950 | 8.900 | 3.950 | 3.750 | 3.150 | 2.200 | 2.350 | 1.200 |
| 9 ×R2 | 5.300 | 8.550 | 5.300 | 8.000 | 3.500 | 3.400 | 2.800 | 1.950 | 2.100 | 1.100 |
| 10 ×R2 | 4.750 | 9.450 | 4.750 | 8.900 | 3.150 | 3.750 | 2.500 | 2.150 | 1.900 | 1.200 |
| 11 ×R2 | 4.300 | 8.500 | 4.300 | 7.950 | 2.850 | 3.350 | 2.300 | 1.950 | 1.700 | 1.100 |
| 12 ×R3 | 3.950 | 9.450 | 3.950 | 8.850 | 2.650 | 3.800 | 2.100 | 2.200 | 1.550 | 1.200 |
| 13 ×R3 | 3.650 | 8.500 | 3.650 | 8.000 | 2.400 | 3.350 | 1.950 | 1.950 | 1.450 | 1.100 |
| Depth of cut | ap 0,1RE / ae 0,3D<br>ap Max = 0,2mm | | ap 0,1RE / ae 0,3D<br>ap Max = 0,2mm | | ap 0,05RE / ae 0,3D<br>ap Max = 0,1mm | | | | | |

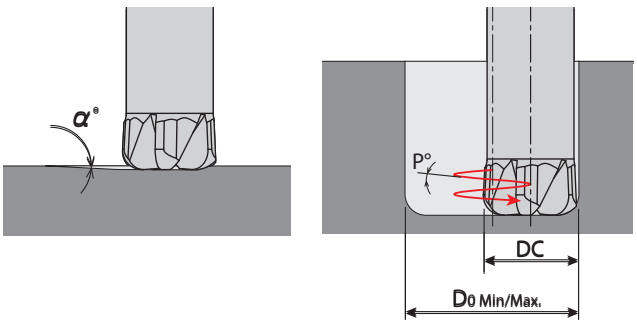
1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners. For milling without circular interpolation (such as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. These milling conditions are for overhang length of less than 4 × D. For longer overhang length, reduce the speed, feed rate, and the cutting depth in accordance to the respective coefficients to prevent chattering. It can also be used by lowering the cutting speed and adjusting the ae.

## Cutting Condition Guide for Changes in Overhang Length

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | | Hardened Steel | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L/D | ~45HRC | | | ~ 55HRC | | | ~ 62HRC | | | ~ 66HRC | | | ~ 70HRC | | |
| | S (min$^{-1}$) | F (mm/min) | ap (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) |
| L/D≤4 | 100% | | | 100% | | | 100% | | | 100% | | | 100% | | |
| 4<L/D<6 | 70% | | | 70% | | | 70% | | | 60% | | | 60% | | |
| L/D=6 | 50% | | | 50% | | | 50% | | | 40% | | | 40% | | |

## Maximum Ramping Angle (E°)

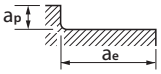
| DC X RE | Ramping Angle E° | Helical Milling (mm) | | Helical Angle P° |
|---|---|---|---|---|
| | | D0 Min. | D0 Max. | |
| 1 ×R0,2 | 3° | 1,25 | 1,75 | 1,5° |
| 2 ×R0,5 | | 2,5 | 3,5 | |
| 3 ×R0,75 | | 4,5 | 5,5 | |
| 4 ×R1 | | 6 | 7 | |
| 5 ×R1,2 | | 7,5 | 9 | |
| 6 ×R1,5 | | 9 | 11 | |
| 7 ×R1,5 | | 10,5 | 13 | |
| 8 ×R2 | | 12 | 15 | |
| 9 ×R2 | | 13,5 | 17 | |
| 10 ×R2 | | 15 | 19 | |
| 11 ×R2 | | 16,5 | 21 | |
| 12 ×R3 | | 18 | 23 | |
| 13 ×R3 | | 19,5 | 25 | |




When ramping or helical milling, after adjusting the cutting condition by changing the overhang length, set the feed rate to 50% or less.

# AE-HFE-H

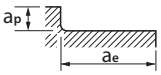
## Frontal Milling L/D≤4

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| (m/min) | 120~140 | | 100~120 | | 80~100 | | 70~90 | | 60~80 | |
| DC X rt | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 ×R0,1 | 41.000 | 7.400 | 35.000 | 5.300 | 28.500 | 3.200 | 25.000 | 1.650 | 22.000 | 1.250 |
| 2 ×R0,2 | 20.500 | 7.400 | 17.500 | 5.300 | 14.000 | 3.150 | 12.500 | 1.650 | 11.000 | 1.250 |
| 3 ×R0,3 | 13.500 | 9.100 | 11.500 | 6.550 | 9.550 | 4.050 | 8.450 | 2.100 | 7.400 | 1.550 |
| 4 ×R0,35 | 10.000 | 9.450 | 8.750 | 6.950 | 7.150 | 4.250 | 6.350 | 2.200 | 5.550 | 1.650 |
| 5 ×R0,4 | 8.250 | 9.750 | 7.000 | 6.950 | 5.700 | 4.250 | 5.050 | 2.200 | 4.450 | 1.650 |
| 6 ×R0,45 | 6.900 | 9.800 | 5.800 | 6.950 | 4.750 | 4.250 | 4.200 | 2.200 | 3.700 | 1.650 |
| 8 ×R0,65 | 5.150 | 9.750 | 4.350 | 6.950 | 3.550 | 4.250 | 3.150 | 2.200 | 2.750 | 1.600 |
| 10 ×R0,7 | 4.100 | 9.700 | 3.500 | 6.950 | 2.850 | 4.250 | 2.500 | 2.150 | 2.200 | 1.600 |
| 12 ×R0,8 | 3.450 | 9.800 | 2.900 | 6.950 | 2.350 | 4.200 | 2.100 | 2.200 | 1.850 | 1.650 |
| Depth of cut |  | | | | | | | | | |



| ap | ae |
|---|---|
| 0,04D | 0,6D |

## Frontal Milling 4<L/D≤6

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| (m/min) | 110~130 | | 90~110 | | 70~90 | | 60~80 | | 40~60 | |
| DC X rt | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 ×R0,1 | 38.000 | 5.750 | 31.500 | 3.550 | 25.000 | 2.800 | 22.000 | 1.450 | 15.500 | 850 |
| 2 ×R0,2 | 19.000 | 5.750 | 15.500 | 3.500 | 12.500 | 2.800 | 11.000 | 1.450 | 7.950 | 900 |
| 3 ×R0,3 | 12.500 | 7.100 | 10.500 | 4.450 | 8.450 | 3.600 | 7.400 | 1.800 | 5.300 | 1.100 |
| 4 ×R0,35 | 9.550 | 7.600 | 7.950 | 4.750 | 6.350 | 3.800 | 5.550 | 1.900 | 3.950 | 1.150 |
| 5 ×R0,4 | 7.600 | 7.550 | 6.350 | 4.750 | 5.050 | 3.750 | 4.450 | 1.900 | 3.150 | 1.150 |
| 6 ×R0,45 | 6.350 | 7.600 | 5.300 | 4.750 | 4.200 | 3.750 | 3.700 | 1.900 | 2.650 | 1.150 |
| 8 ×R0,65 | 4.750 | 7.550 | 3.950 | 4.700 | 3.150 | 3.750 | 2.750 | 1.900 | 1.950 | 1.150 |
| 10 ×R0,7 | 3.800 | 7.550 | 3.150 | 4.700 | 2.500 | 3.700 | 2.200 | 1.900 | 1.550 | 1.150 |
| 12 ×R0,8 | 3.150 | 7.550 | 2.650 | 4.750 | 2.100 | 3.750 | 1.850 | 1.900 | 1.300 | 1.150 |
| Depth of cut |  | | | | | | | | | |

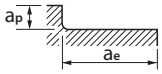


| ap | ae |
|---|---|
| 0,03D | 0,5D |

1. Use a rigid and precise machine and holder.
2. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
3. When the depth of cut ap exceeds the table above, set it so that it does not exceed the maximum depth of cut ap Max. Please adjust the cutting condition according to the actual machining environment.
4. Please reduce the feed rate when the depth of cut is greater than specified.
5. We suggest using air blow or MQL (mist).
6. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
7. If the pick amount is DCF or more, cusp may occur on the machined surface.

## AE-HFE-H

### Frontal Milling 6<L/D≤7

| | ToolSteel • Hardened Steel • Prehardened Steel SKD11 • SKD61 • NAK80 | | Hardened Steel | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ~45HRC | | ~ 55HRC | | ~ 62HRC | | ~ 66HRC | | ~ 70HRC | |
| (m/min) | 90~110 | | 65~85 | | 50~70 | | 45~65 | | 30~50 | |
| DC X rt | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 ×R0,1 | 31.500 | 4.150 | 23.500 | 2.650 | 19.000 | 1.400 | 17.500 | 950 | 12.500 | 550 |
| 2 ×R0,2 | 15.500 | 4.100 | 11.500 | 2.600 | 9.550 | 1.450 | 8.750 | 950 | 6.000 | 550 |
| 3 ×R0,3 | 10.500 | 5.200 | 7.950 | 3.350 | 6.350 | 1.800 | 5.800 | 1.200 | 4.200 | 700 |
| 4 ×R0,35 | 7.950 | 5.550 | 5.950 | 3.550 | 4.750 | 1.850 | 4.350 | 1.300 | 3.150 | 750 |
| 5 ×R0,4 | 6.350 | 5.550 | 4.750 | 3.550 | 3.800 | 1.850 | 3.500 | 1.300 | 2.500 | 750 |
| 6 ×R0,45 | 5.300 | 5.550 | 3.950 | 3.550 | 3.150 | 1.850 | 2.900 | 1.300 | 2.100 | 750 |
| 8 ×R0,65 | 3.950 | 5.500 | 2.950 | 3.500 | 2.350 | 1.850 | 2.150 | 1.250 | 1.550 | 750 |
| 10 ×R0,7 | 3.150 | 5.500 | 2.350 | 3.500 | 1.900 | 1.850 | 1.750 | 1.300 | 1.250 | 750 |
| 12 ×R0,8 | 2.650 | 5.550 | 1.950 | 3.500 | 1.550 | 1.850 | 1.450 | 1.300 | 1.050 | 750 |
| Depth of cut |  | | | | | | | | | |



| ap | ae |
|---|---|
| 0,02D | 0,4D |

### Maximum Ramping Angle (E°)

| DC X rt | Ramping Angle E° | Helical Milling (mm) | | Helical Angle P° |
|---|---|---|---|---|
| | | D0 Min. | D0 Max. | |
| 1 ×R0,1 | 3° | 1,25 | 1,75 | 1,5° |
| 2 ×R0,2 | | 2,5 | 3,5 | |
| 3 ×R0,3 | | 4,5 | 5,5 | |
| 4 ×R0,35 | | 6 | 7 | |
| 5 ×R0,4 | | 7,5 | 9 | |
| 6 ×R0,45 | | 9 | 11 | |
| 8 ×R0,65 | | 12 | 15 | |
| 10 ×R0,7 | | 15 | 19 | |
| 12 ×R0,8 | | 18 | 23 | |

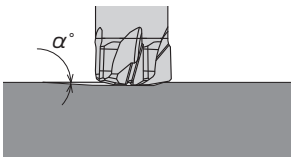
* For ramping and helical milling, set the feed rate to 50%.

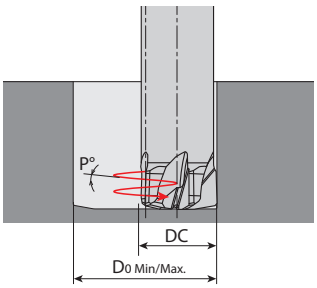
### Edge shape definitions for the purpose of creating a program

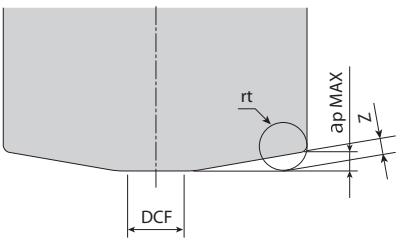
| DC | rt | Remainder Z |
|---|---|---|
| 1 | R0,1 | 0,04 |
| 2 | R0,2 | 0,073 |
| 3 | R0,3 | 0,11 |
| 4 | R0,35 | 0,143 |
| 5 | R0,4 | 0,185 |
| 6 | R0,45 | 0,227 |
| 8 | R0,65 | 0,294 |
| 10 | R0,7 | 0,351 |
| 12 | R0,8 | 0,428 |

### Maximum depth of cut

| DC | APMX |
|---|---|
| 1 | 0,04 |
| 2 | 0,08 |
| 3 | 0,12 |
| 4 | 0,16 |
| 5 | 0,2 |
| 6 | 0,24 |
| 8 | 0,32 |
| 10 | 0,4 |
| 12 | 0,48 |



# CUTTING CONDITIONS



# AE-CPR4-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min-1) | F (mm/min) | ap (mm) | ae (mm) | S (min-1) | F (mm/min) | ap (mm) | ae (mm) | S (min-1) | F (mm/min) | ap (mm) | ae (mm) | S (min-1) | F (mm/min) | ap (mm) | ae (mm) |
| 0,2 | 0,02 | 0,5 | 40.000 | 560 | 0,006 | 0,072 | 36.000 | 470 | 0,005 | 0,060 | 31.500 | 380 | 0,003 | 0,048 | 15.750 | 380 | 0,003 | 0,048 |
| 0,2 | 0,02 | 1 | 38.000 | 530 | 0,005 | 0,072 | 34.000 | 440 | 0,004 | 0,060 | 30.000 | 360 | 0,002 | 0,048 | 15.000 | 360 | 0,002 | 0,048 |
| 0,2 | 0,02 | 1,5 | 36.000 | 430 | 0,004 | 0,054 | 32.000 | 350 | 0,003 | 0,045 | 28.500 | 290 | 0,002 | 0,036 | 14.250 | 290 | 0,002 | 0,036 |
| 0,2 | 0,02 | 2 | 34.000 | 250 | 0,002 | 0,054 | 30.000 | 200 | 0,002 | 0,045 | 27.000 | 160 | 0,001 | 0,036 | 13.500 | 160 | 0,001 | 0,036 |
| 0,2 | 0,05 | 0,5 | 40.000 | 560 | 0,006 | 0,072 | 36.000 | 470 | 0,005 | 0,060 | 31.500 | 380 | 0,003 | 0,048 | 15.750 | 380 | 0,003 | 0,048 |
| 0,2 | 0,05 | 1 | 38.000 | 530 | 0,005 | 0,072 | 34.000 | 440 | 0,004 | 0,060 | 30.000 | 360 | 0,002 | 0,048 | 15.000 | 360 | 0,002 | 0,048 |
| 0,2 | 0,05 | 1,5 | 36.000 | 430 | 0,004 | 0,054 | 32.000 | 350 | 0,003 | 0,045 | 28.500 | 290 | 0,002 | 0,036 | 14.250 | 290 | 0,002 | 0,036 |
| 0,2 | 0,05 | 2 | 34.000 | 250 | 0,002 | 0,054 | 30.000 | 200 | 0,002 | 0,045 | 27.000 | 160 | 0,001 | 0,036 | 13.500 | 160 | 0,001 | 0,036 |
| 0,3 | 0,02 | 1 | 36.500 | 730 | 0,006 | 0,108 | 32.500 | 560 | 0,005 | 0,090 | 30.500 | 480 | 0,003 | 0,072 | 15.250 | 480 | 0,003 | 0,072 |
| 0,3 | 0,02 | 1,5 | 33.000 | 600 | 0,004 | 0,090 | 30.000 | 470 | 0,003 | 0,075 | 28.000 | 410 | 0,002 | 0,060 | 14.000 | 410 | 0,002 | 0,060 |
| 0,3 | 0,02 | 2 | 30.000 | 510 | 0,002 | 0,073 | 27.000 | 390 | 0,002 | 0,061 | 25.500 | 340 | 0,001 | 0,049 | 12.750 | 340 | 0,001 | 0,049 |
| 0,3 | 0,02 | 2,5 | 26.500 | 400 | 0,002 | 0,073 | 24.000 | 320 | 0,002 | 0,061 | 22.500 | 280 | 0,001 | 0,049 | 11.250 | 280 | 0,001 | 0,049 |
| 0,3 | 0,02 | 3 | 23.000 | 190 | 0,001 | 0,066 | 21.000 | 150 | 0,001 | 0,055 | 19.500 | 130 | 0,001 | 0,044 | 9.750 | 130 | 0,001 | 0,044 |
| 0,3 | 0,05 | 1 | 36.500 | 730 | 0,006 | 0,108 | 32.500 | 560 | 0,005 | 0,090 | 30.500 | 480 | 0,003 | 0,072 | 15.250 | 480 | 0,003 | 0,072 |
| 0,3 | 0,05 | 1,5 | 33.000 | 600 | 0,004 | 0,090 | 30.000 | 470 | 0,003 | 0,075 | 28.000 | 410 | 0,002 | 0,060 | 14.000 | 410 | 0,002 | 0,060 |
| 0,3 | 0,05 | 2 | 30.000 | 510 | 0,002 | 0,073 | 27.000 | 390 | 0,002 | 0,061 | 25.500 | 340 | 0,001 | 0,049 | 12.750 | 340 | 0,001 | 0,049 |
| 0,3 | 0,05 | 2,5 | 26.500 | 400 | 0,002 | 0,073 | 24.000 | 320 | 0,002 | 0,061 | 22.500 | 280 | 0,001 | 0,049 | 11.250 | 280 | 0,001 | 0,049 |
| 0,3 | 0,05 | 3 | 23.000 | 190 | 0,001 | 0,066 | 21.000 | 150 | 0,001 | 0,055 | 19.500 | 130 | 0,001 | 0,044 | 9.750 | 130 | 0,001 | 0,044 |
| 0,4 | 0,02 | 1 | 29.500 | 1.130 | 0,008 | 0,144 | 26.000 | 870 | 0,007 | 0,120 | 24.500 | 710 | 0,004 | 0,096 | 12.250 | 710 | 0,004 | 0,096 |
| 0,4 | 0,02 | 1,5 | 29.500 | 1.130 | 0,008 | 0,144 | 26.000 | 870 | 0,007 | 0,120 | 24.500 | 710 | 0,004 | 0,096 | 12.250 | 710 | 0,004 | 0,096 |
| 0,4 | 0,02 | 2 | 27.500 | 1.020 | 0,006 | 0,122 | 24.500 | 780 | 0,005 | 0,102 | 23.000 | 630 | 0,003 | 0,082 | 11.500 | 630 | 0,003 | 0,082 |
| 0,4 | 0,02 | 2,5 | 25.000 | 860 | 0,004 | 0,106 | 22.500 | 660 | 0,003 | 0,088 | 21.000 | 530 | 0,002 | 0,070 | 10.500 | 530 | 0,002 | 0,070 |
| 0,4 | 0,02 | 3 | 23.000 | 710 | 0,002 | 0,090 | 20.000 | 540 | 0,002 | 0,075 | 19.000 | 440 | 0,001 | 0,060 | 9.500 | 440 | 0,001 | 0,060 |
| 0,4 | 0,02 | 4 | 21.000 | 570 | 0,001 | 0,043 | 18.500 | 440 | 0,001 | 0,036 | 17.500 | 360 | 0,001 | 0,029 | 8.750 | 360 | 0,001 | 0,029 |
| 0,4 | 0,05 | 1 | 29.500 | 1.130 | 0,008 | 0,144 | 26.000 | 870 | 0,007 | 0,120 | 24.500 | 710 | 0,004 | 0,096 | 12.250 | 710 | 0,004 | 0,096 |
| 0,4 | 0,05 | 1,5 | 29.500 | 1.130 | 0,008 | 0,144 | 26.000 | 870 | 0,007 | 0,120 | 24.500 | 710 | 0,004 | 0,096 | 12.250 | 710 | 0,004 | 0,096 |
| 0,4 | 0,05 | 2 | 27.500 | 1.020 | 0,006 | 0,122 | 24.500 | 780 | 0,005 | 0,102 | 23.000 | 630 | 0,003 | 0,082 | 11.500 | 630 | 0,003 | 0,082 |
| 0,4 | 0,05 | 2,5 | 25.000 | 860 | 0,004 | 0,106 | 22.500 | 660 | 0,003 | 0,088 | 21.000 | 530 | 0,002 | 0,070 | 10.500 | 530 | 0,002 | 0,070 |
| 0,4 | 0,05 | 3 | 23.000 | 710 | 0,002 | 0,090 | 20.000 | 540 | 0,002 | 0,075 | 19.000 | 440 | 0,001 | 0,060 | 9.500 | 440 | 0,001 | 0,060 |
| 0,4 | 0,05 | 4 | 21.000 | 570 | 0,001 | 0,043 | 18.500 | 440 | 0,001 | 0,036 | 17.500 | 360 | 0,001 | 0,029 | 8.750 | 360 | 0,001 | 0,029 |
| 0,4 | 0,1 | 1 | 29.500 | 1.130 | 0,012 | 0,144 | 26.000 | 870 | 0,010 | 0,120 | 24.500 | 710 | 0,006 | 0,096 | 12.250 | 710 | 0,006 | 0,096 |
| 0,4 | 0,1 | 2 | 27.500 | 1.020 | 0,010 | 0,122 | 24.500 | 780 | 0,008 | 0,102 | 23.000 | 630 | 0,005 | 0,082 | 11.500 | 630 | 0,005 | 0,082 |
| 0,4 | 0,1 | 3 | 23.000 | 710 | 0,004 | 0,090 | 20.000 | 540 | 0,003 | 0,075 | 19.000 | 440 | 0,002 | 0,060 | 9.500 | 440 | 0,002 | 0,060 |
| 0,4 | 0,1 | 4 | 21.000 | 570 | 0,002 | 0,043 | 18.500 | 440 | 0,002 | 0,036 | 17.500 | 360 | 0,001 | 0,029 | 8.750 | 360 | 0,001 | 0,029 |
| 0,5 | 0,02 | 1 | 29.000 | 1.230 | 0,008 | 0,180 | 26.000 | 1.010 | 0,007 | 0,150 | 26.000 | 930 | 0,004 | 0,120 | 13.000 | 930 | 0,004 | 0,120 |
| 0,5 | 0,02 | 2 | 29.000 | 1.230 | 0,008 | 0,180 | 26.000 | 1.010 | 0,007 | 0,150 | 26.000 | 930 | 0,004 | 0,120 | 13.000 | 930 | 0,004 | 0,120 |
| 0,5 | 0,02 | 3 | 27.500 | 1.050 | 0,004 | 0,126 | 24.500 | 860 | 0,003 | 0,105 | 24.500 | 800 | 0,002 | 0,084 | 12.250 | 800 | 0,002 | 0,084 |
| 0,5 | 0,02 | 4 | 22.500 | 770 | 0,002 | 0,108 | 20.000 | 630 | 0,002 | 0,090 | 20.000 | 590 | 0,001 | 0,072 | 10.000 | 590 | 0,001 | 0,072 |
| 0,5 | 0,02 | 5 | 21.000 | 630 | 0,001 | 0,054 | 18.500 | 510 | 0,001 | 0,045 | 18.500 | 480 | 0,001 | 0,036 | 9.250 | 480 | 0,001 | 0,036 |
| 0,5 | 0,02 | 6 | 19.500 | 540 | 0,001 | 0,036 | 17.000 | 450 | 0,001 | 0,030 | 17.000 | 410 | 0,001 | 0,024 | 8.500 | 410 | 0,001 | 0,024 |
| 0,5 | 0,05 | 1 | 29.000 | 1.230 | 0,008 | 0,180 | 26.000 | 1.010 | 0,007 | 0,150 | 26.000 | 930 | 0,004 | 0,120 | 13.000 | 930 | 0,004 | 0,120 |
| 0,5 | 0,05 | 2 | 29.000 | 1.230 | 0,008 | 0,180 | 26.000 | 1.010 | 0,007 | 0,150 | 26.000 | 930 | 0,004 | 0,120 | 13.000 | 930 | 0,004 | 0,120 |
| 0,5 | 0,05 | 3 | 27.500 | 1.050 | 0,004 | 0,126 | 24.500 | 860 | 0,003 | 0,105 | 24.500 | 800 | 0,002 | 0,084 | 12.250 | 800 | 0,002 | 0,084 |
| 0,5 | 0,05 | 4 | 22.500 | 770 | 0,002 | 0,108 | 20.000 | 630 | 0,002 | 0,090 | 20.000 | 590 | 0,001 | 0,072 | 10.000 | 590 | 0,001 | 0,072 |
| 0,5 | 0,05 | 5 | 21.000 | 630 | 0,001 | 0,054 | 18.500 | 510 | 0,001 | 0,045 | 18.500 | 480 | 0,001 | 0,036 | 9.250 | 480 | 0,001 | 0,036 |
| 0,5 | 0,05 | 6 | 19.500 | 540 | 0,001 | 0,036 | 17.000 | 450 | 0,001 | 0,030 | 17.000 | 410 | 0,001 | 0,024 | 8.500 | 410 | 0,001 | 0,024 |
| 0,5 | 0,1 | 1 | 29.000 | 1.230 | 0,012 | 0,180 | 26.000 | 1.010 | 0,010 | 0,150 | 26.000 | 930 | 0,006 | 0,120 | 13.000 | 930 | 0,006 | 0,120 |
| 0,5 | 0,1 | 2 | 29.000 | 1.230 | 0,012 | 0,180 | 26.000 | 1.010 | 0,010 | 0,150 | 26.000 | 930 | 0,006 | 0,120 | 13.000 | 930 | 0,006 | 0,120 |
| 0,5 | 0,1 | 3 | 27.500 | 1.050 | 0,006 | 0,126 | 24.500 | 860 | 0,005 | 0,105 | 24.500 | 800 | 0,003 | 0,084 | 12.250 | 800 | 0,003 | 0,084 |
| 0,5 | 0,1 | 4 | 22.500 | 770 | 0,004 | 0,108 | 20.000 | 630 | 0,003 | 0,090 | 20.000 | 590 | 0,002 | 0,072 | 10.000 | 590 | 0,002 | 0,072 |
| 0,5 | 0,1 | 5 | 21.000 | 630 | 0,002 | 0,054 | 18.500 | 510 | 0,002 | 0,045 | 18.500 | 480 | 0,001 | 0,036 | 9.250 | 480 | 0,001 | 0,036 |
| 0,5 | 0,1 | 6 | 19.500 | 540 | 0,001 | 0,036 | 17.000 | 450 | 0,001 | 0,030 | 17.000 | 410 | 0,001 | 0,024 | 8.500 | 410 | 0,001 | 0,024 |
| 0,6 | 0,05 | 1 | 29.000 | 1.470 | 0,007 | 0,216 | 26.000 | 1.220 | 0,006 | 0,180 | 21.500 | 930 | 0,004 | 0,144 | 10.750 | 930 | 0,004 | 0,144 |
| 0,6 | 0,05 | 2 | 29.000 | 1.470 | 0,007 | 0,216 | 26.000 | 1.220 | 0,006 | 0,180 | 21.500 | 930 | 0,004 | 0,144 | 10.750 | 930 | 0,004 | 0,144 |
| 0,6 | 0,05 | 4 | 24.500 | 1.050 | 0,003 | 0,146 | 21.500 | 860 | 0,003 | 0,122 | 18.000 | 660 | 0,002 | 0,098 | 9.000 | 660 | 0,002 | 0,098 |
| 0,6 | 0,05 | 6 | 21.000 | 750 | 0,001 | 0,065 | 18.500 | 620 | 0,001 | 0,054 | 15.500 | 480 | 0,001 | 0,043 | 7.750 | 480 | 0,001 | 0,043 |
| 0,6 | 0,1 | 1 | 29.000 | 1.470 | 0,014 | 0,216 | 26.000 | 1.220 | 0,012 | 0,180 | 21.500 | 930 | 0,007 | 0,144 | 10.750 | 930 | 0,007 | 0,144 |
| 0,6 | 0,1 | 2 | 29.000 | 1.470 | 0,014 | 0,216 | 26.000 | 1.220 | 0,012 | 0,180 | 21.500 | 930 | 0,007 | 0,144 | 10.750 | 930 | 0,007 | 0,144 |
| 0,6 | 0,1 | 4 | 24.500 | 1.050 | 0,006 | 0,146 | 21.500 | 860 | 0,005 | 0,122 | 18.000 | 660 | 0,003 | 0,098 | 9.000 | 660 | 0,003 | 0,098 |
| 0,6 | 0,1 | 6 | 21.000 | 750 | 0,002 | 0,065 | 18.500 | 620 | 0,002 | 0,054 | 15.500 | 480 | 0,001 | 0,043 | 7.750 | 480 | 0,001 | 0,043 |
| 0,7 | 0,02 | 1,5 | 27.000 | 1.580 | 0,008 | 0,264 | 23.500 | 1.280 | 0,007 | 0,220 | 19.500 | 970 | 0,004 | 0,176 | 9.750 | 970 | 0,004 | 0,176 |
| 0,7 | 0,02 | 2 | 27.000 | 1.580 | 0,008 | 0,264 | 23.500 | 1.280 | 0,007 | 0,220 | 19.500 | 970 | 0,004 | 0,176 | 9.750 | 970 | 0,004 | 0,176 |
| 0,7 | 0,02 | 4 | 24.000 | 1.300 | 0,004 | 0,192 | 21.000 | 1.040 | 0,003 | 0,160 | 17.500 | 790 | 0,002 | 0,128 | 8.750 | 790 | 0,002 | 0,128 |
| 0,7 | 0,02 | 6 | 20.000 | 900 | 0,002 | 0,096 | 17.500 | 740 | 0,002 | 0,080 | 14.500 | 550 | 0,001 | 0,064 | 7.250 | 550 | 0,001 | 0,064 |
| 0,7 | 0,05 | 1,5 | 27.000 | 1.580 | 0,012 | 0,264 | 23.500 | 1.280 | 0,010 | 0,220 | 19.500 | 970 | 0,006 | 0,176 | 9.750 | 970 | 0,006 | 0,176 |
| 0,7 | 0,05 | 2 | 27.000 | 1.580 | 0,012 | 0,264 | 23.500 | 1.280 | 0,010 | 0,220 | 19.500 | 970 | 0,006 | 0,176 | 9.750 | 970 | 0,006 | 0,176 |
| 0,7 | 0,05 | 4 | 24.000 | 1.300 | 0,006 | 0,192 | 21.000 | 1.040 | 0,005 | 0,160 | 17.500 | 790 | 0,003 | 0,128 | 8.750 | 790 | 0,003 | 0,128 |
| 0,7 | 0,05 | 6 | 20.000 | 900 | 0,004 | 0,096 | 17.500 | 740 | 0,003 | 0,080 | 14.500 | 550 | 0,002 | 0,064 | 7.250 | 550 | 0,002 | 0,064 |
| 0,7 | 0,1 | 2 | 27.000 | 1.580 | 0,022 | 0,264 | 23.500 | 1.280 | 0,018 | 0,220 | 19.500 | 970 | 0,011 | 0,176 | 9.750 | 970 | 0,011 | 0,176 |
| 0,7 | 0,1 | 4 | 24.000 | 1.300 | 0,012 | 0,192 | 21.000 | 1.040 | 0,010 | 0,160 | 17.500 | 790 | 0,006 | 0,128 | 8.750 | 790 | 0,006 | 0,128 |
| 0,7 | 0,1 | 6 | 20.000 | 900 | 0,006 | 0,096 | 17.500 | 740 | 0,005 | 0,080 | 14.500 | 550 | 0,003 | 0,064 | 7.250 | 550 | 0,003 | 0,064 |
| 0,8 | 0,05 | 2 | 25.000 | 1.700 | 0,012 | 0,288 | 22.500 | 1.400 | 0,010 | 0,240 | 19.000 | 1.050 | 0,006 | 0,192 | 9.500 | 1.050 | 0,006 | 0,192 |
| 0,8 | 0,05 | 4 | 23.500 | 1.500 | 0,096 | 0,288 | 20.500 | 1.200 | 0,080 | 0,240 | 17.000 | 860 | 0,048 | 0,192 | 8.500 | 860 | 0,048 | 0,192 |
| 0,8 | 0,05 | 6 | 19.500 | 1.050 | 0,042 | 0,288 | 16.500 | 840 | 0,035 | 0,240 | 14.000 | 590 | 0,021 | 0,192 | 7.000 | 590 | 0,021 | 0,192 |
| 0,8 | 0,1 | 2 | 25.000 | 1.700 | 0,024 | 0,288 | 22.500 | 1.400 | 0,020 | 0,240 | 19.000 | 1.050 | 0,012 | 0,192 | 9.500 | 1.050 | 0,012 | 0,192 |
| 0,8 | 0,1 | 4 | 23.500 | 1.500 | 0,019 | 0,288 | 20.500 | 1.200 | 0,016 | 0,240 | 17.000 | 860 | 0,010 | 0,192 | 8.500 | 860 | 0,010 | 0,192 |

# AE-CPR4-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 0,8 | 0,1 | 6 | 19.500 | 1.050 | 0,008 | 0,288 | 16.500 | 840 | 0,007 | 0,240 | 14.000 | 590 | 0,004 | 0,192 | 7.000 | 590 | 0,004 | 0,192 |
| 0,8 | 0,2 | 2 | 25.000 | 1.700 | 0,048 | 0,288 | 22.500 | 1.400 | 0,040 | 0,240 | 19.000 | 1.050 | 0,024 | 0,192 | 9.500 | 1.050 | 0,024 | 0,192 |
| 0,8 | 0,2 | 4 | 23.500 | 1.500 | 0,038 | 0,288 | 20.500 | 1.200 | 0,032 | 0,240 | 17.000 | 860 | 0,019 | 0,192 | 8.500 | 860 | 0,019 | 0,192 |
| 0,8 | 0,2 | 6 | 19.500 | 1.050 | 0,017 | 0,288 | 16.500 | 840 | 0,014 | 0,240 | 14.000 | 590 | 0,008 | 0,192 | 7.000 | 590 | 0,008 | 0,192 |
| 0,8 | 0,2 | 8 | 18.000 | 860 | 0,010 | 0,259 | 15.500 | 680 | 0,008 | 0,216 | 13.000 | 480 | 0,005 | 0,173 | 6.500 | 480 | 0,005 | 0,173 |
| 0,9 | 0,1 | 4 | 23.000 | 1.730 | 0,022 | 0,324 | 20.000 | 1.380 | 0,018 | 0,270 | 17.000 | 1.000 | 0,011 | 0,216 | 8.500 | 1.000 | 0,011 | 0,216 |
| 0,9 | 0,1 | 8 | 18.000 | 1.190 | 0,006 | 0,276 | 15.500 | 930 | 0,005 | 0,230 | 13.000 | 660 | 0,003 | 0,184 | 6.500 | 660 | 0,003 | 0,184 |
| 1 | 0,02 | 2 | 25.500 | 2.250 | 0,007 | 0,360 | 22.500 | 1.850 | 0,006 | 0,300 | 18.500 | 1.320 | 0,004 | 0,240 | 9.250 | 1.320 | 0,004 | 0,240 |
| 1 | 0,02 | 3 | 23.000 | 1.950 | 0,007 | 0,360 | 20.000 | 1.580 | 0,006 | 0,300 | 17.000 | 1.140 | 0,004 | 0,240 | 8.500 | 1.140 | 0,004 | 0,240 |
| 1 | 0,02 | 4 | 23.000 | 1.950 | 0,005 | 0,360 | 20.000 | 1.580 | 0,004 | 0,300 | 17.000 | 1.140 | 0,002 | 0,240 | 8.500 | 1.140 | 0,002 | 0,240 |
| 1 | 0,02 | 6 | 20.500 | 1.580 | 0,002 | 0,252 | 18.000 | 1.260 | 0,002 | 0,210 | 15.500 | 920 | 0,001 | 0,168 | 7.750 | 920 | 0,001 | 0,168 |
| 1 | 0,02 | 8 | 18.000 | 1.200 | 0,001 | 0,216 | 15.500 | 980 | 0,001 | 0,180 | 13.500 | 710 | 0,001 | 0,144 | 6.750 | 710 | 0,001 | 0,144 |
| 1 | 0,02 | 10 | 16.500 | 980 | 0,001 | 0,108 | 14.500 | 800 | 0,001 | 0,090 | 12.500 | 570 | 0,001 | 0,072 | 6.250 | 570 | 0,001 | 0,072 |
| 1 | 0,05 | 2 | 25.500 | 2.250 | 0,018 | 0,360 | 22.500 | 1.850 | 0,015 | 0,300 | 18.500 | 1.320 | 0,009 | 0,240 | 9.250 | 1.320 | 0,009 | 0,240 |
| 1 | 0,05 | 3 | 23.000 | 1.950 | 0,018 | 0,360 | 20.000 | 1.580 | 0,015 | 0,300 | 17.000 | 1.140 | 0,009 | 0,240 | 8.500 | 1.140 | 0,009 | 0,240 |
| 1 | 0,05 | 4 | 23.000 | 1.950 | 0,012 | 0,360 | 20.000 | 1.580 | 0,010 | 0,300 | 17.000 | 1.140 | 0,006 | 0,240 | 8.500 | 1.140 | 0,006 | 0,240 |
| 1 | 0,05 | 6 | 20.500 | 1.580 | 0,006 | 0,252 | 18.000 | 1.260 | 0,005 | 0,210 | 15.500 | 920 | 0,003 | 0,168 | 7.750 | 920 | 0,003 | 0,168 |
| 1 | 0,05 | 8 | 18.000 | 1.200 | 0,004 | 0,216 | 15.500 | 980 | 0,003 | 0,180 | 13.500 | 710 | 0,002 | 0,144 | 6.750 | 710 | 0,002 | 0,144 |
| 1 | 0,05 | 10 | 16.500 | 980 | 0,002 | 0,108 | 14.500 | 800 | 0,002 | 0,090 | 12.500 | 570 | 0,001 | 0,072 | 6.250 | 570 | 0,001 | 0,072 |
| 1 | 0,05 | 12 | 15.500 | 860 | 0,001 | 0,072 | 13.500 | 690 | 0,001 | 0,060 | 11.500 | 510 | 0,001 | 0,048 | 5.750 | 510 | 0,001 | 0,048 |
| 1 | 0,1 | 2 | 25.500 | 2.250 | 0,036 | 0,360 | 22.500 | 1.850 | 0,030 | 0,300 | 18.500 | 1.320 | 0,018 | 0,240 | 9.250 | 1.320 | 0,018 | 0,240 |
| 1 | 0,1 | 3 | 23.000 | 1.950 | 0,036 | 0,360 | 20.000 | 1.580 | 0,030 | 0,300 | 17.000 | 1.140 | 0,018 | 0,240 | 8.500 | 1.140 | 0,018 | 0,240 |
| 1 | 0,1 | 4 | 23.000 | 1.950 | 0,024 | 0,360 | 20.000 | 1.580 | 0,020 | 0,300 | 17.000 | 1.140 | 0,012 | 0,240 | 8.500 | 1.140 | 0,012 | 0,240 |
| 1 | 0,1 | 6 | 20.500 | 1.580 | 0,012 | 0,252 | 18.000 | 1.260 | 0,010 | 0,210 | 15.500 | 920 | 0,006 | 0,168 | 7.750 | 920 | 0,006 | 0,168 |
| 1 | 0,1 | 8 | 18.000 | 1.200 | 0,007 | 0,216 | 15.500 | 980 | 0,006 | 0,180 | 13.500 | 710 | 0,004 | 0,144 | 6.750 | 710 | 0,004 | 0,144 |
| 1 | 0,1 | 10 | 16.500 | 980 | 0,005 | 0,108 | 14.500 | 800 | 0,004 | 0,090 | 12.500 | 570 | 0,002 | 0,072 | 6.250 | 570 | 0,002 | 0,072 |
| 1 | 0,1 | 12 | 15.500 | 860 | 0,004 | 0,072 | 13.500 | 690 | 0,003 | 0,060 | 11.500 | 510 | 0,002 | 0,048 | 5.750 | 510 | 0,002 | 0,048 |
| 1 | 0,1 | 16 | 12.000 | 600 | 0,002 | 0,036 | 10.500 | 500 | 0,002 | 0,030 | 9.150 | 360 | 0,001 | 0,024 | 4.575 | 360 | 0,001 | 0,024 |
| 1 | 0,1 | 20 | 10.000 | 440 | 0,002 | 0,029 | 8.900 | 350 | 0,002 | 0,024 | 7.650 | 260 | 0,001 | 0,019 | 3.825 | 260 | 0,001 | 0,019 |
| 1 | 0,2 | 2 | 25.500 | 2.250 | 0,072 | 0,360 | 22.500 | 1.850 | 0,060 | 0,300 | 18.500 | 1.320 | 0,036 | 0,240 | 9.250 | 1.320 | 0,036 | 0,240 |
| 1 | 0,2 | 3 | 23.000 | 1.950 | 0,072 | 0,360 | 20.000 | 1.580 | 0,060 | 0,300 | 17.000 | 1.140 | 0,036 | 0,240 | 8.500 | 1.140 | 0,036 | 0,240 |
| 1 | 0,2 | 4 | 23.000 | 1.950 | 0,048 | 0,360 | 20.000 | 1.580 | 0,040 | 0,300 | 17.000 | 1.140 | 0,024 | 0,240 | 8.500 | 1.140 | 0,024 | 0,240 |
| 1 | 0,2 | 6 | 20.500 | 1.580 | 0,024 | 0,252 | 18.000 | 1.260 | 0,020 | 0,210 | 15.500 | 920 | 0,012 | 0,168 | 7.750 | 920 | 0,012 | 0,168 |
| 1 | 0,2 | 8 | 18.000 | 1.200 | 0,014 | 0,216 | 15.500 | 980 | 0,012 | 0,180 | 13.500 | 710 | 0,007 | 0,144 | 6.750 | 710 | 0,007 | 0,144 |
| 1 | 0,2 | 10 | 16.500 | 980 | 0,010 | 0,108 | 14.500 | 800 | 0,008 | 0,090 | 12.500 | 570 | 0,005 | 0,072 | 6.250 | 570 | 0,005 | 0,072 |
| 1 | 0,2 | 12 | 15.500 | 860 | 0,007 | 0,072 | 13.500 | 690 | 0,006 | 0,060 | 11.500 | 510 | 0,004 | 0,048 | 5.750 | 510 | 0,004 | 0,048 |
| 1 | 0,2 | 16 | 12.000 | 600 | 0,005 | 0,036 | 10.500 | 500 | 0,004 | 0,030 | 9.150 | 360 | 0,002 | 0,024 | 4.575 | 360 | 0,002 | 0,024 |
| 1 | 0,2 | 20 | 10.000 | 440 | 0,004 | 0,029 | 8.900 | 350 | 0,003 | 0,024 | 7.650 | 260 | 0,002 | 0,019 | 3.825 | 260 | 0,002 | 0,019 |
| 1 | 0,3 | 2 | 25.500 | 2.250 | 0,090 | 0,360 | 22.500 | 1.850 | 0,075 | 0,300 | 18.500 | 1.320 | 0,045 | 0,240 | 9.250 | 1.320 | 0,045 | 0,240 |
| 1 | 0,3 | 3 | 23.000 | 1.950 | 0,090 | 0,360 | 20.000 | 1.580 | 0,075 | 0,300 | 17.000 | 1.140 | 0,045 | 0,240 | 8.500 | 1.140 | 0,045 | 0,240 |
| 1 | 0,3 | 4 | 23.000 | 1.950 | 0,060 | 0,360 | 20.000 | 1.580 | 0,050 | 0,300 | 17.000 | 1.140 | 0,030 | 0,240 | 8.500 | 1.140 | 0,030 | 0,240 |
| 1 | 0,3 | 6 | 20.500 | 1.580 | 0,030 | 0,252 | 18.000 | 1.260 | 0,025 | 0,210 | 15.500 | 920 | 0,015 | 0,168 | 7.750 | 920 | 0,015 | 0,168 |
| 1 | 0,3 | 8 | 18.000 | 1.200 | 0,018 | 0,216 | 15.500 | 980 | 0,015 | 0,180 | 13.500 | 710 | 0,009 | 0,144 | 6.750 | 710 | 0,009 | 0,144 |
| 1 | 0,3 | 10 | 16.500 | 980 | 0,012 | 0,108 | 14.500 | 800 | 0,010 | 0,090 | 12.500 | 570 | 0,006 | 0,072 | 6.250 | 570 | 0,006 | 0,072 |
| 1 | 0,3 | 12 | 15.500 | 860 | 0,008 | 0,072 | 13.500 | 690 | 0,007 | 0,060 | 11.500 | 510 | 0,004 | 0,048 | 5.750 | 510 | 0,004 | 0,048 |
| 1 | 0,3 | 16 | 12.000 | 600 | 0,006 | 0,036 | 10.500 | 500 | 0,005 | 0,030 | 9.150 | 360 | 0,003 | 0,024 | 4.575 | 360 | 0,003 | 0,024 |
| 1 | 0,3 | 20 | 10.000 | 440 | 0,005 | 0,029 | 8.900 | 350 | 0,004 | 0,024 | 7.650 | 260 | 0,002 | 0,019 | 3.825 | 260 | 0,002 | 0,019 |
| 1,2 | 0,2 | 6 | 19.000 | 1.800 | 0,038 | 0,432 | 18.000 | 1.580 | 0,032 | 0,360 | 14.500 | 1.110 | 0,019 | 0,288 | 7.250 | 1.110 | 0,019 | 0,288 |
| 1,2 | 0,2 | 8 | 17.000 | 1.460 | 0,022 | 0,302 | 16.000 | 1.280 | 0,018 | 0,252 | 13.000 | 870 | 0,011 | 0,202 | 6.500 | 870 | 0,011 | 0,202 |
| 1,2 | 0,2 | 10 | 16.000 | 1.280 | 0,013 | 0,259 | 15.000 | 1.110 | 0,011 | 0,216 | 12.000 | 770 | 0,007 | 0,173 | 6.000 | 770 | 0,007 | 0,173 |
| 1,2 | 0,3 | 6 | 19.000 | 1.800 | 0,048 | 0,432 | 18.000 | 1.580 | 0,040 | 0,360 | 14.500 | 1.110 | 0,024 | 0,288 | 7.250 | 1.110 | 0,024 | 0,288 |
| 1,2 | 0,3 | 8 | 17.000 | 1.460 | 0,026 | 0,302 | 16.000 | 1.280 | 0,022 | 0,252 | 13.000 | 870 | 0,013 | 0,202 | 6.500 | 870 | 0,013 | 0,202 |
| 1,2 | 0,3 | 10 | 16.000 | 1.280 | 0,017 | 0,259 | 15.000 | 1.110 | 0,014 | 0,216 | 12.000 | 770 | 0,008 | 0,173 | 6.000 | 770 | 0,008 | 0,173 |
| 1,5 | 0,05 | 3 | 18.000 | 2.450 | 0,018 | 0,540 | 17.000 | 2.100 | 0,015 | 0,450 | 14.500 | 1.450 | 0,009 | 0,360 | 7.250 | 1.450 | 0,009 | 0,360 |
| 1,5 | 0,05 | 4 | 18.000 | 2.450 | 0,015 | 0,540 | 17.000 | 2.100 | 0,013 | 0,450 | 14.500 | 1.450 | 0,008 | 0,360 | 7.250 | 1.450 | 0,008 | 0,360 |
| 1,5 | 0,05 | 6 | 17.000 | 2.180 | 0,012 | 0,540 | 16.000 | 1.880 | 0,010 | 0,450 | 13.500 | 1.320 | 0,006 | 0,360 | 6.750 | 1.320 | 0,006 | 0,360 |
| 1,5 | 0,05 | 8 | 16.000 | 1.880 | 0,008 | 0,458 | 15.500 | 1.650 | 0,007 | 0,382 | 12.500 | 1.130 | 0,004 | 0,306 | 6.250 | 1.130 | 0,004 | 0,306 |
| 1,5 | 0,05 | 10 | 14.500 | 1.500 | 0,005 | 0,350 | 13.500 | 1.350 | 0,005 | 0,292 | 11.000 | 950 | 0,003 | 0,234 | 5.500 | 950 | 0,003 | 0,234 |
| 1,5 | 0,05 | 12 | 13.500 | 1.350 | 0,004 | 0,324 | 12.500 | 1.190 | 0,003 | 0,270 | 10.500 | 830 | 0,002 | 0,216 | 5.250 | 830 | 0,002 | 0,216 |
| 1,5 | 0,05 | 16 | 9.150 | 800 | 0,002 | 0,134 | 8.650 | 690 | 0,002 | 0,112 | 7.150 | 480 | 0,001 | 0,090 | 3.575 | 480 | 0,001 | 0,090 |
| 1,5 | 0,1 | 3 | 18.000 | 2.450 | 0,036 | 0,540 | 17.000 | 2.100 | 0,030 | 0,450 | 14.500 | 1.450 | 0,018 | 0,360 | 7.250 | 1.450 | 0,018 | 0,360 |
| 1,5 | 0,1 | 4 | 18.000 | 2.450 | 0,030 | 0,540 | 17.000 | 2.100 | 0,025 | 0,450 | 14.500 | 1.450 | 0,015 | 0,360 | 7.250 | 1.450 | 0,015 | 0,360 |
| 1,5 | 0,1 | 6 | 17.000 | 2.180 | 0,024 | 0,540 | 16.000 | 1.880 | 0,020 | 0,450 | 13.500 | 1.320 | 0,012 | 0,360 | 6.750 | 1.320 | 0,012 | 0,360 |
| 1,5 | 0,1 | 8 | 16.000 | 1.880 | 0,016 | 0,458 | 15.500 | 1.650 | 0,013 | 0,382 | 12.500 | 1.130 | 0,008 | 0,306 | 6.250 | 1.130 | 0,008 | 0,306 |
| 1,5 | 0,1 | 10 | 14.500 | 1.500 | 0,011 | 0,350 | 13.500 | 1.350 | 0,009 | 0,292 | 11.000 | 950 | 0,005 | 0,234 | 5.500 | 950 | 0,005 | 0,234 |
| 1,5 | 0,1 | 12 | 13.500 | 1.350 | 0,007 | 0,324 | 12.500 | 1.190 | 0,006 | 0,270 | 10.500 | 830 | 0,004 | 0,216 | 5.250 | 830 | 0,004 | 0,216 |
| 1,5 | 0,1 | 16 | 9.150 | 800 | 0,004 | 0,134 | 8.650 | 690 | 0,004 | 0,112 | 7.150 | 480 | 0,002 | 0,090 | 3.575 | 480 | 0,002 | 0,090 |
| 1,5 | 0,2 | 3 | 18.000 | 2.450 | 0,072 | 0,540 | 17.000 | 2.100 | 0,060 | 0,450 | 14.500 | 1.450 | 0,036 | 0,360 | 7.250 | 1.450 | 0,036 | 0,360 |
| 1,5 | 0,2 | 4 | 18.000 | 2.450 | 0,060 | 0,540 | 17.000 | 2.100 | 0,050 | 0,450 | 14.500 | 1.450 | 0,030 | 0,360 | 7.250 | 1.450 | 0,030 | 0,360 |
| 1,5 | 0,2 | 6 | 17.000 | 2.180 | 0,048 | 0,540 | 16.000 | 1.880 | 0,040 | 0,450 | 13.500 | 1.320 | 0,024 | 0,360 | 6.750 | 1.320 | 0,024 | 0,360 |
| 1,5 | 0,2 | 8 | 16.000 | 1.880 | 0,031 | 0,458 | 15.500 | 1.650 | 0,026 | 0,382 | 12.500 | 1.130 | 0,016 | 0,306 | 6.250 | 1.130 | 0,016 | 0,306 |
| 1,5 | 0,2 | 10 | 14.500 | 1.500 | 0,022 | 0,350 | 13.500 | 1.350 | 0,018 | 0,292 | 11.000 | 950 | 0,011 | 0,234 | 5.500 | 950 | 0,011 | 0,234 |
| 1,5 | 0,2 | 12 | 13.500 | 1.350 | 0,014 | 0,324 | 12.500 | 1.190 | 0,012 | 0,270 | 10.500 | 830 | 0,007 | 0,216 | 5.250 | 830 | 0,007 | 0,216 |
| 1,5 | 0,2 | 16 | 9.150 | 800 | 0,008 | 0,134 | 8.650 | 690 | 0,007 | 0,112 | 7.150 | 480 | 0,004 | 0,090 | 3.575 | 480 | 0,004 | 0,090 |
| 1,5 | 0,3 | 3 | 18.000 | 2.450 | 0,108 | 0,540 | 17.000 | 2.100 | 0,090 | 0,450 | 14.500 | 1.450 | 0,054 | 0,360 | 7.250 | 1.450 | 0,054 | 0,360 |
| 1,5 | 0,3 | 4 | 18.000 | 2.450 | 0,090 | 0,540 | 17.000 | 2.100 | 0,075 | 0,450 | 14.500 | 1.450 | 0,045 | 0,360 | 7.250 | 1.450 | 0,045 | 0,360 |

# AE-CPR4-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 1,5 | 0,3 | 6 | 17.000 | 2.180 | 0,072 | 0,540 | 16.000 | 1.880 | 0,060 | 0,450 | 13.500 | 1.320 | 0,036 | 0,360 | 6.750 | 1.320 | 0,036 | 0,360 |
| 1,5 | 0,3 | 8 | 16.000 | 1.880 | 0,047 | 0,458 | 15.500 | 1.650 | 0,039 | 0,382 | 12.500 | 1.130 | 0,023 | 0,306 | 6.250 | 1.130 | 0,023 | 0,306 |
| 1,5 | 0,3 | 10 | 14.500 | 1.500 | 0,032 | 0,350 | 13.500 | 1.350 | 0,027 | 0,292 | 11.000 | 950 | 0,016 | 0,234 | 5.500 | 950 | 0,016 | 0,234 |
| 1,5 | 0,3 | 12 | 13.500 | 1.350 | 0,022 | 0,324 | 12.500 | 1.190 | 0,018 | 0,270 | 10.500 | 830 | 0,011 | 0,216 | 5.250 | 830 | 0,011 | 0,216 |
| 1,5 | 0,3 | 16 | 9.150 | 800 | 0,012 | 0,134 | 8.650 | 690 | 0,010 | 0,112 | 7.150 | 480 | 0,006 | 0,090 | 3.575 | 480 | 0,006 | 0,090 |
| 1,5 | 0,5 | 3 | 18.000 | 2.450 | 0,180 | 0,540 | 17.000 | 2.100 | 0,150 | 0,450 | 14.500 | 1.450 | 0,090 | 0,360 | 7.250 | 1.450 | 0,090 | 0,360 |
| 1,5 | 0,5 | 4 | 18.000 | 2.450 | 0,150 | 0,540 | 17.000 | 2.100 | 0,125 | 0,450 | 14.500 | 1.450 | 0,075 | 0,360 | 7.250 | 1.450 | 0,075 | 0,360 |
| 1,5 | 0,5 | 6 | 17.000 | 2.180 | 0,120 | 0,540 | 16.000 | 1.880 | 0,100 | 0,450 | 13.500 | 1.320 | 0,060 | 0,360 | 6.750 | 1.320 | 0,060 | 0,360 |
| 1,5 | 0,5 | 8 | 16.000 | 1.880 | 0,078 | 0,458 | 15.500 | 1.650 | 0,065 | 0,382 | 12.500 | 1.130 | 0,039 | 0,306 | 6.250 | 1.130 | 0,039 | 0,306 |
| 1,5 | 0,5 | 10 | 14.500 | 1.500 | 0,054 | 0,350 | 13.500 | 1.350 | 0,045 | 0,292 | 11.000 | 950 | 0,027 | 0,234 | 5.500 | 950 | 0,027 | 0,234 |
| 1,5 | 0,5 | 12 | 13.500 | 1.350 | 0,036 | 0,324 | 12.500 | 1.190 | 0,030 | 0,270 | 10.500 | 830 | 0,018 | 0,216 | 5.250 | 830 | 0,018 | 0,216 |
| 1,5 | 0,5 | 16 | 9.150 | 800 | 0,020 | 0,134 | 8.650 | 690 | 0,017 | 0,112 | 7.150 | 480 | 0,010 | 0,090 | 3.575 | 480 | 0,010 | 0,090 |
| 2 | 0,05 | 4 | 15.000 | 2.600 | 0,018 | 0,720 | 15.000 | 2.350 | 0,015 | 0,600 | 13.000 | 1.650 | 0,009 | 0,480 | 6.500 | 1.650 | 0,009 | 0,480 |
| 2 | 0,05 | 6 | 14.000 | 2.500 | 0,015 | 0,720 | 14.000 | 2.180 | 0,013 | 0,600 | 12.000 | 1.600 | 0,008 | 0,480 | 6.000 | 1.600 | 0,008 | 0,480 |
| 2 | 0,05 | 8 | 13.000 | 2.180 | 0,012 | 0,720 | 13.000 | 1.950 | 0,010 | 0,600 | 11.500 | 1.500 | 0,006 | 0,480 | 5.750 | 1.500 | 0,006 | 0,480 |
| 2 | 0,05 | 10 | 12.000 | 1.950 | 0,010 | 0,612 | 12.000 | 1.730 | 0,008 | 0,510 | 11.000 | 1.370 | 0,005 | 0,408 | 5.500 | 1.370 | 0,005 | 0,408 |
| 2 | 0,05 | 12 | 11.500 | 1.730 | 0,006 | 0,504 | 11.500 | 1.580 | 0,005 | 0,420 | 10.000 | 1.220 | 0,003 | 0,336 | 5.000 | 1.220 | 0,003 | 0,336 |
| 2 | 0,05 | 16 | 10.000 | 1.350 | 0,004 | 0,432 | 10.000 | 1.200 | 0,003 | 0,360 | 8.900 | 950 | 0,002 | 0,288 | 4.450 | 950 | 0,002 | 0,288 |
| 2 | 0,05 | 20 | 9.300 | 1.100 | 0,002 | 0,216 | 9.300 | 980 | 0,002 | 0,180 | 8.250 | 770 | 0,001 | 0,144 | 4.125 | 770 | 0,001 | 0,144 |
| 2 | 0,1 | 4 | 15.000 | 2.600 | 0,036 | 0,720 | 15.000 | 2.350 | 0,030 | 0,600 | 13.000 | 1.650 | 0,018 | 0,480 | 6.500 | 1.650 | 0,018 | 0,480 |
| 2 | 0,1 | 6 | 14.000 | 2.500 | 0,030 | 0,720 | 14.000 | 2.180 | 0,025 | 0,600 | 12.000 | 1.600 | 0,015 | 0,480 | 6.000 | 1.600 | 0,015 | 0,480 |
| 2 | 0,1 | 8 | 13.000 | 2.180 | 0,024 | 0,720 | 13.000 | 1.950 | 0,020 | 0,600 | 11.500 | 1.500 | 0,012 | 0,480 | 5.750 | 1.500 | 0,012 | 0,480 |
| 2 | 0,1 | 10 | 12.000 | 1.950 | 0,019 | 0,612 | 12.000 | 1.730 | 0,016 | 0,510 | 11.000 | 1.370 | 0,010 | 0,408 | 5.500 | 1.370 | 0,010 | 0,408 |
| 2 | 0,1 | 12 | 11.500 | 1.730 | 0,012 | 0,504 | 11.500 | 1.580 | 0,010 | 0,420 | 10.000 | 1.220 | 0,006 | 0,336 | 5.000 | 1.220 | 0,006 | 0,336 |
| 2 | 0,1 | 16 | 10.000 | 1.350 | 0,007 | 0,432 | 10.000 | 1.200 | 0,006 | 0,360 | 8.900 | 950 | 0,004 | 0,288 | 4.450 | 950 | 0,004 | 0,288 |
| 2 | 0,1 | 20 | 9.300 | 1.100 | 0,005 | 0,216 | 9.300 | 980 | 0,004 | 0,180 | 8.250 | 770 | 0,002 | 0,144 | 4.125 | 770 | 0,002 | 0,144 |
| 2 | 0,1 | 25 | 8.600 | 950 | 0,002 | 0,144 | 8.600 | 840 | 0,002 | 0,120 | 7.650 | 660 | 0,001 | 0,096 | 3.825 | 660 | 0,001 | 0,096 |
| 2 | 0,2 | 4 | 15.000 | 2.600 | 0,072 | 0,720 | 15.000 | 2.350 | 0,060 | 0,600 | 13.000 | 1.650 | 0,036 | 0,480 | 6.500 | 1.650 | 0,036 | 0,480 |
| 2 | 0,2 | 6 | 14.000 | 2.500 | 0,066 | 0,720 | 14.000 | 2.180 | 0,055 | 0,600 | 12.000 | 1.600 | 0,033 | 0,480 | 6.000 | 1.600 | 0,033 | 0,480 |
| 2 | 0,2 | 8 | 13.000 | 2.180 | 0,048 | 0,720 | 13.000 | 1.950 | 0,040 | 0,600 | 11.500 | 1.500 | 0,024 | 0,480 | 5.750 | 1.500 | 0,024 | 0,480 |
| 2 | 0,2 | 10 | 12.000 | 1.950 | 0,038 | 0,612 | 12.000 | 1.730 | 0,032 | 0,510 | 11.000 | 1.370 | 0,019 | 0,408 | 5.500 | 1.370 | 0,019 | 0,408 |
| 2 | 0,2 | 12 | 11.500 | 1.730 | 0,024 | 0,504 | 11.500 | 1.580 | 0,020 | 0,420 | 10.000 | 1.220 | 0,012 | 0,336 | 5.000 | 1.220 | 0,012 | 0,336 |
| 2 | 0,2 | 16 | 10.000 | 1.350 | 0,014 | 0,432 | 10.000 | 1.200 | 0,012 | 0,360 | 8.900 | 950 | 0,007 | 0,288 | 4.450 | 950 | 0,007 | 0,288 |
| 2 | 0,2 | 20 | 9.300 | 1.100 | 0,010 | 0,216 | 9.300 | 980 | 0,008 | 0,180 | 8.250 | 770 | 0,005 | 0,144 | 4.125 | 770 | 0,005 | 0,144 |
| 2 | 0,2 | 25 | 8.600 | 950 | 0,005 | 0,144 | 8.600 | 840 | 0,004 | 0,120 | 7.650 | 660 | 0,002 | 0,096 | 3.825 | 660 | 0,002 | 0,096 |
| 2 | 0,3 | 4 | 15.000 | 2.600 | 0,108 | 0,720 | 15.000 | 2.350 | 0,090 | 0,600 | 13.000 | 1.650 | 0,054 | 0,480 | 6.500 | 1.650 | 0,054 | 0,480 |
| 2 | 0,3 | 6 | 14.000 | 2.500 | 0,090 | 0,720 | 14.000 | 2.180 | 0,075 | 0,600 | 12.000 | 1.600 | 0,045 | 0,480 | 6.000 | 1.600 | 0,045 | 0,480 |
| 2 | 0,3 | 8 | 13.000 | 2.180 | 0,072 | 0,720 | 13.000 | 1.950 | 0,060 | 0,600 | 11.500 | 1.500 | 0,036 | 0,480 | 5.750 | 1.500 | 0,036 | 0,480 |
| 2 | 0,3 | 10 | 12.000 | 1.950 | 0,058 | 0,612 | 12.000 | 1.730 | 0,048 | 0,510 | 11.000 | 1.370 | 0,029 | 0,408 | 5.500 | 1.370 | 0,029 | 0,408 |
| 2 | 0,3 | 12 | 11.500 | 1.730 | 0,036 | 0,504 | 11.500 | 1.580 | 0,030 | 0,420 | 10.000 | 1.220 | 0,018 | 0,336 | 5.000 | 1.220 | 0,018 | 0,336 |
| 2 | 0,3 | 16 | 10.000 | 1.350 | 0,022 | 0,432 | 10.000 | 1.200 | 0,018 | 0,360 | 8.900 | 950 | 0,011 | 0,288 | 4.450 | 950 | 0,011 | 0,288 |
| 2 | 0,3 | 20 | 9.300 | 1.100 | 0,014 | 0,216 | 9.300 | 980 | 0,012 | 0,180 | 8.250 | 770 | 0,007 | 0,144 | 4.125 | 770 | 0,007 | 0,144 |
| 2 | 0,5 | 4 | 15.000 | 2.600 | 0,150 | 0,720 | 15.000 | 2.350 | 0,125 | 0,600 | 13.000 | 1.650 | 0,075 | 0,480 | 6.500 | 1.650 | 0,075 | 0,480 |
| 2 | 0,5 | 6 | 14.000 | 2.500 | 0,120 | 0,720 | 14.000 | 2.180 | 0,100 | 0,600 | 12.000 | 1.600 | 0,060 | 0,480 | 6.000 | 1.600 | 0,060 | 0,480 |
| 2 | 0,5 | 8 | 13.000 | 2.180 | 0,090 | 0,720 | 13.000 | 1.950 | 0,075 | 0,600 | 11.500 | 1.500 | 0,045 | 0,480 | 5.750 | 1.500 | 0,045 | 0,480 |
| 2 | 0,5 | 10 | 12.000 | 1.950 | 0,072 | 0,612 | 12.000 | 1.730 | 0,060 | 0,510 | 11.000 | 1.370 | 0,036 | 0,408 | 5.500 | 1.370 | 0,036 | 0,408 |
| 2 | 0,5 | 12 | 11.500 | 1.730 | 0,044 | 0,504 | 11.500 | 1.580 | 0,037 | 0,420 | 10.000 | 1.220 | 0,022 | 0,336 | 5.000 | 1.220 | 0,022 | 0,336 |
| 2 | 0,5 | 16 | 10.000 | 1.350 | 0,026 | 0,432 | 10.000 | 1.200 | 0,022 | 0,360 | 8.900 | 950 | 0,013 | 0,288 | 4.450 | 950 | 0,013 | 0,288 |
| 2 | 0,5 | 20 | 9.300 | 1.100 | 0,018 | 0,216 | 9.300 | 980 | 0,015 | 0,180 | 8.250 | 770 | 0,009 | 0,144 | 4.125 | 770 | 0,009 | 0,144 |
| 2 | 0,5 | 25 | 8.600 | 950 | 0,011 | 0,144 | 8.600 | 840 | 0,009 | 0,120 | 7.650 | 660 | 0,005 | 0,096 | 3.825 | 660 | 0,005 | 0,096 |
| 2,5 | 0,1 | 10 | 11.500 | 2.400 | 0,024 | 0,900 | 10.500 | 1.800 | 0,020 | 0,750 | 10.500 | 1.800 | 0,012 | 0,600 | 5.250 | 1.800 | 0,012 | 0,600 |
| 2,5 | 0,1 | 20 | 8.900 | 1.500 | 0,012 | 0,540 | 8.000 | 1.110 | 0,010 | 0,450 | 8.000 | 1.110 | 0,006 | 0,360 | 4.000 | 1.110 | 0,006 | 0,360 |
| 2,5 | 0,1 | 30 | 7.650 | 1.050 | 0,006 | 0,180 | 6.850 | 780 | 0,005 | 0,150 | 6.850 | 780 | 0,003 | 0,120 | 3.425 | 780 | 0,003 | 0,120 |
| 2,5 | 0,2 | 10 | 11.500 | 2.400 | 0,048 | 0,900 | 10.500 | 1.800 | 0,040 | 0,750 | 10.500 | 1.800 | 0,024 | 0,600 | 5.250 | 1.800 | 0,024 | 0,600 |
| 2,5 | 0,2 | 20 | 8.900 | 1.500 | 0,024 | 0,540 | 8.000 | 1.110 | 0,020 | 0,450 | 8.000 | 1.110 | 0,012 | 0,360 | 4.000 | 1.110 | 0,012 | 0,360 |
| 2,5 | 0,2 | 30 | 7.650 | 1.050 | 0,012 | 0,180 | 6.850 | 780 | 0,010 | 0,150 | 6.850 | 780 | 0,006 | 0,120 | 3.425 | 780 | 0,006 | 0,120 |
| 2,5 | 0,3 | 10 | 11.500 | 2.400 | 0,072 | 0,900 | 10.500 | 1.800 | 0,060 | 0,750 | 10.500 | 1.800 | 0,036 | 0,600 | 5.250 | 1.800 | 0,036 | 0,600 |
| 2,5 | 0,3 | 20 | 8.900 | 1.500 | 0,036 | 0,540 | 8.000 | 1.110 | 0,030 | 0,450 | 8.000 | 1.110 | 0,018 | 0,360 | 4.000 | 1.110 | 0,018 | 0,360 |
| 2,5 | 0,3 | 30 | 7.650 | 1.050 | 0,018 | 0,180 | 6.850 | 780 | 0,015 | 0,150 | 6.850 | 780 | 0,009 | 0,120 | 3.425 | 780 | 0,009 | 0,120 |
| 2,5 | 0,5 | 10 | 11.500 | 2.400 | 0,090 | 0,900 | 10.500 | 1.800 | 0,075 | 0,750 | 10.500 | 1.800 | 0,045 | 0,600 | 5.250 | 1.800 | 0,045 | 0,600 |
| 2,5 | 0,5 | 20 | 8.900 | 1.500 | 0,044 | 0,540 | 8.000 | 1.110 | 0,037 | 0,450 | 8.000 | 1.110 | 0,022 | 0,360 | 4.000 | 1.110 | 0,022 | 0,360 |
| 2,5 | 0,5 | 30 | 7.650 | 1.050 | 0,013 | 0,180 | 6.850 | 780 | 0,011 | 0,150 | 6.850 | 780 | 0,007 | 0,120 | 3.425 | 780 | 0,007 | 0,120 |
| 3 | 0,1 | 4 | 10.500 | 2.600 | 0,036 | 1,080 | 9.300 | 2.350 | 0,030 | 0,900 | 8.600 | 1.650 | 0,018 | 0,720 | 4.300 | 1.650 | 0,018 | 0,720 |
| 3 | 0,1 | 6 | 10.500 | 2.600 | 0,030 | 1,080 | 9.300 | 2.350 | 0,025 | 0,900 | 8.600 | 1.650 | 0,015 | 0,720 | 4.300 | 1.650 | 0,015 | 0,720 |
| 3 | 0,1 | 8 | 9.550 | 2.250 | 0,024 | 1,080 | 8.600 | 1.730 | 0,020 | 0,900 | 7.650 | 1.250 | 0,012 | 0,720 | 3.825 | 1.250 | 0,012 | 0,720 |
| 3 | 0,1 | 10 | 9.550 | 2.250 | 0,024 | 1,080 | 8.600 | 1.730 | 0,020 | 0,900 | 7.650 | 1.250 | 0,012 | 0,720 | 3.825 | 1.250 | 0,012 | 0,720 |
| 3 | 0,1 | 12 | 9.550 | 2.250 | 0,024 | 1,080 | 8.600 | 1.730 | 0,020 | 0,900 | 7.650 | 1.250 | 0,012 | 0,720 | 3.825 | 1.250 | 0,012 | 0,720 |
| 3 | 0,1 | 16 | 8.500 | 1.800 | 0,017 | 0,864 | 7.650 | 1.370 | 0,014 | 0,720 | 6.800 | 990 | 0,008 | 0,576 | 3.400 | 990 | 0,008 | 0,576 |
| 3 | 0,1 | 20 | 7.400 | 1.490 | 0,011 | 0,734 | 6.700 | 1.130 | 0,009 | 0,612 | 5.950 | 830 | 0,005 | 0,490 | 2.975 | 830 | 0,005 | 0,490 |
| 3 | 0,1 | 25 | 7.100 | 1.250 | 0,007 | 0,648 | 6.400 | 960 | 0,006 | 0,540 | 5.700 | 690 | 0,004 | 0,432 | 2.850 | 690 | 0,004 | 0,432 |
| 3 | 0,2 | 4 | 10.500 | 2.600 | 0,072 | 1,080 | 9.300 | 2.350 | 0,060 | 0,900 | 8.600 | 1.650 | 0,036 | 0,720 | 4.300 | 1.650 | 0,036 | 0,720 |
| 3 | 0,2 | 6 | 10.500 | 2.600 | 0,060 | 1,080 | 9.300 | 2.350 | 0,050 | 0,900 | 8.600 | 1.650 | 0,030 | 0,720 | 4.300 | 1.650 | 0,030 | 0,720 |
| 3 | 0,2 | 8 | 9.550 | 2.250 | 0,048 | 1,080 | 8.600 | 1.730 | 0,040 | 0,900 | 7.650 | 1.250 | 0,024 | 0,720 | 3.825 | 1.250 | 0,024 | 0,720 |
| 3 | 0,2 | 10 | 9.550 | 2.250 | 0,048 | 1,080 | 8.600 | 1.730 | 0,040 | 0,900 | 7.650 | 1.250 | 0,024 | 0,720 | 3.825 | 1.250 | 0,024 | 0,720 |
| 3 | 0,2 | 12 | 9.550 | 2.250 | 0,048 | 1,080 | 8.600 | 1.730 | 0,040 | 0,900 | 7.650 | 1.250 | 0,024 | 0,720 | 3.825 | 1.250 | 0,024 | 0,720 |
| 3 | 0,2 | 16 | 8.500 | 1.800 | 0,034 | 0,864 | 7.650 | 1.370 | 0,028 | 0,720 | 6.800 | 990 | 0,017 | 0,576 | 3.400 | 990 | 0,017 | 0,576 |

# CUTTING CONDITIONS



# AE-CPR4-H

## Regular Milling

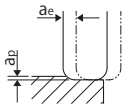
| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 3 | 0,2 | 20 | 7.400 | 1.490 | 0,022 | 0,734 | 6.700 | 1.130 | 0,018 | 0,612 | 5.950 | 830 | 0,011 | 0,490 | 2.975 | 830 | 0,011 | 0,490 |
| 3 | 0,2 | 25 | 7.100 | 1.250 | 0,014 | 0,648 | 6.400 | 960 | 0,012 | 0,540 | 5.700 | 690 | 0,007 | 0,432 | 2.850 | 690 | 0,007 | 0,432 |
| 3 | 0,2 | 30 | 6.900 | 1.140 | 0,010 | 0,324 | 6.200 | 870 | 0,008 | 0,270 | 5.500 | 630 | 0,005 | 0,216 | 2.750 | 630 | 0,005 | 0,216 |
| 3 | 0,2 | 35 | 6.350 | 990 | 0,007 | 0,216 | 5.700 | 750 | 0,006 | 0,180 | 5.100 | 560 | 0,004 | 0,144 | 2.550 | 560 | 0,004 | 0,144 |
| 3 | 0,3 | 4 | 10.500 | 2.600 | 0,108 | 1,080 | 9.300 | 2.350 | 0,090 | 0,900 | 8.600 | 1.650 | 0,054 | 0,720 | 4.300 | 1.650 | 0,054 | 0,720 |
| 3 | 0,3 | 6 | 10.500 | 2.600 | 0,090 | 1,080 | 9.300 | 2.350 | 0,075 | 0,900 | 8.600 | 1.650 | 0,045 | 0,720 | 4.300 | 1.650 | 0,045 | 0,720 |
| 3 | 0,3 | 8 | 9.550 | 2.250 | 0,072 | 1,080 | 8.600 | 1.730 | 0,060 | 0,900 | 7.650 | 1.250 | 0,036 | 0,720 | 3.825 | 1.250 | 0,036 | 0,720 |
| 3 | 0,3 | 10 | 9.550 | 2.250 | 0,072 | 1,080 | 8.600 | 1.730 | 0,060 | 0,900 | 7.650 | 1.250 | 0,036 | 0,720 | 3.825 | 1.250 | 0,036 | 0,720 |
| 3 | 0,3 | 12 | 9.550 | 2.250 | 0,072 | 1,080 | 8.600 | 1.730 | 0,060 | 0,900 | 7.650 | 1.250 | 0,036 | 0,720 | 3.825 | 1.250 | 0,036 | 0,720 |
| 3 | 0,3 | 16 | 8.500 | 1.800 | 0,050 | 0,864 | 7.650 | 1.370 | 0,042 | 0,720 | 6.800 | 990 | 0,025 | 0,576 | 3.400 | 990 | 0,025 | 0,576 |
| 3 | 0,3 | 20 | 7.400 | 1.490 | 0,032 | 0,734 | 6.700 | 1.130 | 0,027 | 0,612 | 5.950 | 830 | 0,016 | 0,490 | 2.975 | 830 | 0,016 | 0,490 |
| 3 | 0,3 | 25 | 7.100 | 1.250 | 0,022 | 0,648 | 6.400 | 960 | 0,018 | 0,540 | 5.700 | 690 | 0,011 | 0,432 | 2.850 | 690 | 0,011 | 0,432 |
| 3 | 0,3 | 30 | 6.900 | 1.140 | 0,014 | 0,324 | 6.200 | 870 | 0,012 | 0,270 | 5.500 | 630 | 0,007 | 0,216 | 2.750 | 630 | 0,007 | 0,216 |
| 3 | 0,3 | 35 | 6.350 | 990 | 0,011 | 0,216 | 5.700 | 750 | 0,009 | 0,180 | 5.100 | 560 | 0,005 | 0,144 | 2.550 | 560 | 0,005 | 0,144 |
| 3 | 0,5 | 4 | 10.500 | 2.600 | 0,180 | 1,080 | 9.300 | 2.350 | 0,150 | 0,900 | 8.600 | 1.650 | 0,090 | 0,720 | 4.300 | 1.650 | 0,090 | 0,720 |
| 3 | 0,5 | 6 | 10.500 | 2.600 | 0,150 | 1,080 | 9.300 | 2.350 | 0,125 | 0,900 | 8.600 | 1.650 | 0,075 | 0,720 | 4.300 | 1.650 | 0,075 | 0,720 |
| 3 | 0,5 | 8 | 9.550 | 2.250 | 0,120 | 1,080 | 8.600 | 1.730 | 0,100 | 0,900 | 7.650 | 1.250 | 0,060 | 0,720 | 3.825 | 1.250 | 0,060 | 0,720 |
| 3 | 0,5 | 10 | 9.550 | 2.250 | 0,120 | 1,080 | 8.600 | 1.730 | 0,100 | 0,900 | 7.650 | 1.250 | 0,060 | 0,720 | 3.825 | 1.250 | 0,060 | 0,720 |
| 3 | 0,5 | 12 | 9.550 | 2.250 | 0,090 | 1,080 | 8.600 | 1.730 | 0,075 | 0,900 | 7.650 | 1.250 | 0,045 | 0,720 | 3.825 | 1.250 | 0,045 | 0,720 |
| 3 | 0,5 | 16 | 8.500 | 1.800 | 0,062 | 0,864 | 7.650 | 1.370 | 0,052 | 0,720 | 6.800 | 990 | 0,031 | 0,576 | 3.400 | 990 | 0,031 | 0,576 |
| 3 | 0,5 | 20 | 7.400 | 1.490 | 0,040 | 0,734 | 6.700 | 1.130 | 0,033 | 0,612 | 5.950 | 830 | 0,020 | 0,490 | 2.975 | 830 | 0,020 | 0,490 |
| 3 | 0,5 | 25 | 7.100 | 1.250 | 0,026 | 0,648 | 6.400 | 960 | 0,022 | 0,540 | 5.700 | 690 | 0,013 | 0,432 | 2.850 | 690 | 0,013 | 0,432 |
| 3 | 0,5 | 30 | 6.900 | 1.140 | 0,018 | 0,324 | 6.200 | 870 | 0,015 | 0,270 | 5.500 | 630 | 0,009 | 0,216 | 2.750 | 630 | 0,009 | 0,216 |
| 3 | 0,5 | 35 | 6.350 | 990 | 0,013 | 0,216 | 5.700 | 750 | 0,011 | 0,180 | 5.100 | 560 | 0,007 | 0,144 | 2.550 | 560 | 0,007 | 0,144 |
| 4 | 0,1 | 8 | 8.650 | 2.550 | 0,030 | 1,440 | 7.800 | 1.920 | 0,025 | 1,200 | 6.100 | 1.200 | 0,015 | 0,960 | 3.050 | 1.200 | 0,015 | 0,960 |
| 4 | 0,1 | 12 | 8.650 | 2.550 | 0,027 | 1,440 | 7.800 | 1.920 | 0,023 | 1,200 | 6.100 | 1.200 | 0,014 | 0,960 | 3.050 | 1.200 | 0,014 | 0,960 |
| 4 | 0,1 | 16 | 7.150 | 2.050 | 0,024 | 1,440 | 6.450 | 1.550 | 0,020 | 1,200 | 5.000 | 970 | 0,012 | 0,960 | 2.500 | 970 | 0,012 | 0,960 |
| 4 | 0,1 | 20 | 6.750 | 1.950 | 0,019 | 1,224 | 6.100 | 1.450 | 0,016 | 1,020 | 4.750 | 910 | 0,010 | 0,816 | 2.375 | 910 | 0,010 | 0,816 |
| 4 | 0,1 | 25 | 5.950 | 1.700 | 0,012 | 0,979 | 5.350 | 1.300 | 0,010 | 0,816 | 4.150 | 800 | 0,006 | 0,653 | 2.075 | 800 | 0,006 | 0,653 |
| 4 | 0,1 | 30 | 5.550 | 1.600 | 0,008 | 0,893 | 5.000 | 1.200 | 0,007 | 0,744 | 3.900 | 750 | 0,004 | 0,595 | 1.950 | 750 | 0,004 | 0,595 |
| 4 | 0,2 | 8 | 8.650 | 2.550 | 0,060 | 1,440 | 7.800 | 1.920 | 0,050 | 1,200 | 6.100 | 1.200 | 0,030 | 0,960 | 3.050 | 1.200 | 0,030 | 0,960 |
| 4 | 0,2 | 12 | 8.650 | 2.550 | 0,054 | 1,440 | 7.800 | 1.920 | 0,045 | 1,200 | 6.100 | 1.200 | 0,027 | 0,960 | 3.050 | 1.200 | 0,027 | 0,960 |
| 4 | 0,2 | 16 | 7.150 | 2.050 | 0,048 | 1,440 | 6.450 | 1.550 | 0,040 | 1,200 | 5.000 | 970 | 0,024 | 0,960 | 2.500 | 970 | 0,024 | 0,960 |
| 4 | 0,2 | 20 | 6.750 | 1.950 | 0,038 | 1,224 | 6.100 | 1.450 | 0,032 | 1,020 | 4.750 | 910 | 0,019 | 0,816 | 2.375 | 910 | 0,019 | 0,816 |
| 4 | 0,2 | 25 | 5.950 | 1.700 | 0,024 | 0,979 | 5.350 | 1.300 | 0,020 | 0,816 | 4.150 | 800 | 0,012 | 0,653 | 2.075 | 800 | 0,012 | 0,653 |
| 4 | 0,2 | 30 | 5.550 | 1.600 | 0,017 | 0,893 | 5.000 | 1.200 | 0,014 | 0,744 | 3.900 | 750 | 0,008 | 0,595 | 1.950 | 750 | 0,008 | 0,595 |
| 4 | 0,2 | 40 | 5.150 | 1.500 | 0,010 | 0,432 | 4.650 | 1.100 | 0,008 | 0,360 | 3.600 | 700 | 0,005 | 0,288 | 1.800 | 700 | 0,005 | 0,288 |
| 4 | 0,3 | 8 | 8.650 | 2.550 | 0,090 | 1,440 | 7.800 | 1.920 | 0,075 | 1,200 | 6.100 | 1.200 | 0,045 | 0,960 | 3.050 | 1.200 | 0,045 | 0,960 |
| 4 | 0,3 | 12 | 8.650 | 2.550 | 0,080 | 1,440 | 7.800 | 1.920 | 0,067 | 1,200 | 6.100 | 1.200 | 0,040 | 0,960 | 3.050 | 1.200 | 0,040 | 0,960 |
| 4 | 0,3 | 16 | 7.150 | 2.050 | 0,072 | 1,440 | 6.450 | 1.550 | 0,060 | 1,200 | 5.000 | 970 | 0,036 | 0,960 | 2.500 | 970 | 0,036 | 0,960 |
| 4 | 0,3 | 20 | 6.750 | 1.950 | 0,058 | 1,224 | 6.100 | 1.450 | 0,048 | 1,020 | 4.750 | 910 | 0,029 | 0,816 | 2.375 | 910 | 0,029 | 0,816 |
| 4 | 0,3 | 25 | 5.950 | 1.700 | 0,036 | 0,979 | 5.350 | 1.300 | 0,030 | 0,816 | 4.150 | 800 | 0,018 | 0,653 | 2.075 | 800 | 0,018 | 0,653 |
| 4 | 0,3 | 30 | 5.550 | 1.600 | 0,025 | 0,893 | 5.000 | 1.200 | 0,021 | 0,744 | 3.900 | 750 | 0,013 | 0,595 | 1.950 | 750 | 0,013 | 0,595 |
| 4 | 0,3 | 40 | 5.150 | 1.500 | 0,014 | 0,432 | 4.650 | 1.100 | 0,012 | 0,360 | 3.600 | 700 | 0,007 | 0,288 | 1.800 | 700 | 0,007 | 0,288 |
| 4 | 0,5 | 8 | 8.650 | 2.550 | 0,120 | 1,440 | 7.800 | 1.920 | 0,100 | 1,200 | 6.100 | 1.200 | 0,060 | 0,960 | 3.050 | 1.200 | 0,060 | 0,960 |
| 4 | 0,5 | 12 | 8.650 | 2.550 | 0,106 | 1,440 | 7.800 | 1.920 | 0,088 | 1,200 | 6.100 | 1.200 | 0,053 | 0,960 | 3.050 | 1.200 | 0,053 | 0,960 |
| 4 | 0,5 | 16 | 7.150 | 2.050 | 0,090 | 1,440 | 6.450 | 1.550 | 0,075 | 1,200 | 5.000 | 970 | 0,045 | 0,960 | 2.500 | 970 | 0,045 | 0,960 |
| 4 | 0,5 | 20 | 6.750 | 1.950 | 0,072 | 1,224 | 6.100 | 1.450 | 0,060 | 1,020 | 4.750 | 910 | 0,036 | 0,816 | 2.375 | 910 | 0,036 | 0,816 |
| 4 | 0,5 | 25 | 5.950 | 1.700 | 0,044 | 0,979 | 5.350 | 1.300 | 0,037 | 0,816 | 4.150 | 800 | 0,022 | 0,653 | 2.075 | 800 | 0,022 | 0,653 |
| 4 | 0,5 | 30 | 5.550 | 1.600 | 0,031 | 0,893 | 5.000 | 1.200 | 0,026 | 0,744 | 3.900 | 750 | 0,016 | 0,595 | 1.950 | 750 | 0,016 | 0,595 |
| 4 | 0,5 | 40 | 5.150 | 1.500 | 0,018 | 0,432 | 4.650 | 1.100 | 0,015 | 0,360 | 3.600 | 700 | 0,009 | 0,288 | 1.800 | 700 | 0,009 | 0,288 |
| 4 | 0,5 | 50 | 4.550 | 1.300 | 0,011 | 0,259 | 4.100 | 980 | 0,009 | 0,216 | 3.150 | 610 | 0,005 | 0,173 | 1.575 | 610 | 0,005 | 0,173 |
| 4 | 1 | 8 | 8.650 | 2.550 | 0,240 | 1,440 | 7.800 | 1.920 | 0,200 | 1,200 | 6.100 | 1.200 | 0,120 | 0,960 | 3.050 | 1.200 | 0,120 | 0,960 |
| 4 | 1 | 12 | 8.650 | 2.550 | 0,210 | 1,440 | 7.800 | 1.920 | 0,175 | 1,200 | 6.100 | 1.200 | 0,105 | 0,960 | 3.050 | 1.200 | 0,105 | 0,960 |
| 4 | 1 | 16 | 7.150 | 2.050 | 0,144 | 1,440 | 6.450 | 1.550 | 0,120 | 1,200 | 5.000 | 970 | 0,072 | 0,960 | 2.500 | 970 | 0,072 | 0,960 |
| 4 | 1 | 20 | 6.750 | 1.950 | 0,120 | 1,224 | 6.100 | 1.450 | 0,100 | 1,020 | 4.750 | 910 | 0,060 | 0,816 | 2.375 | 910 | 0,060 | 0,816 |
| 4 | 1 | 25 | 5.950 | 1.700 | 0,072 | 0,979 | 5.350 | 1.300 | 0,060 | 0,816 | 4.150 | 800 | 0,036 | 0,653 | 2.075 | 800 | 0,036 | 0,653 |
| 4 | 1 | 30 | 5.550 | 1.600 | 0,048 | 0,893 | 5.000 | 1.200 | 0,040 | 0,744 | 3.900 | 750 | 0,024 | 0,595 | 1.950 | 750 | 0,024 | 0,595 |
| 4 | 1 | 40 | 5.150 | 1.500 | 0,029 | 0,432 | 4.650 | 1.100 | 0,024 | 0,360 | 3.600 | 700 | 0,014 | 0,288 | 1.800 | 700 | 0,014 | 0,288 |
| 6 | 0,1 | 12 | 7.200 | 2.900 | 0,024 | 2,160 | 6.500 | 2.150 | 0,020 | 1,800 | 5.050 | 1.400 | 0,012 | 1,440 | 2.525 | 1.400 | 0,012 | 1,440 |
| 6 | 0,1 | 18 | 6.100 | 2.400 | 0,019 | 1,800 | 5.500 | 1.800 | 0,016 | 1,500 | 4.250 | 1.150 | 0,010 | 1,200 | 2.125 | 1.150 | 0,010 | 1,200 |
| 6 | 0,1 | 24 | 5.550 | 2.000 | 0,010 | 1,620 | 5.000 | 1.500 | 0,008 | 1,350 | 3.850 | 950 | 0,005 | 1,080 | 1.925 | 950 | 0,005 | 1,080 |
| 6 | 0,1 | 30 | 4.800 | 1.750 | 0,007 | 1,440 | 4.300 | 1.300 | 0,006 | 1,200 | 3.350 | 850 | 0,004 | 0,960 | 1.675 | 850 | 0,004 | 0,960 |
| 6 | 0,1 | 48 | 2.800 | 1.000 | 0,005 | 0,600 | 2.500 | 750 | 0,004 | 0,500 | 1.950 | 500 | 0,002 | 0,400 | 975 | 500 | 0,002 | 0,400 |
| 6 | 0,2 | 12 | 7.200 | 2.900 | 0,048 | 2,160 | 6.500 | 2.150 | 0,040 | 1,800 | 5.050 | 1.400 | 0,024 | 1,440 | 2.525 | 1.400 | 0,024 | 1,440 |
| 6 | 0,2 | 18 | 6.100 | 2.400 | 0,038 | 1,800 | 5.500 | 1.800 | 0,032 | 1,500 | 4.250 | 1.150 | 0,019 | 1,200 | 2.125 | 1.150 | 0,019 | 1,200 |
| 6 | 0,2 | 24 | 5.550 | 2.000 | 0,019 | 1,620 | 5.000 | 1.500 | 0,016 | 1,350 | 3.850 | 950 | 0,010 | 1,080 | 1.925 | 950 | 0,010 | 1,080 |
| 6 | 0,2 | 30 | 4.800 | 1.750 | 0,014 | 1,440 | 4.300 | 1.300 | 0,012 | 1,200 | 3.350 | 850 | 0,007 | 0,960 | 1.675 | 850 | 0,007 | 0,960 |
| 6 | 0,2 | 48 | 2.800 | 1.000 | 0,010 | 0,600 | 2.500 | 750 | 0,008 | 0,500 | 1.950 | 500 | 0,005 | 0,400 | 975 | 500 | 0,005 | 0,400 |
| 6 | 0,3 | 12 | 7.200 | 2.900 | 0,072 | 2,160 | 6.500 | 2.150 | 0,060 | 1,800 | 5.050 | 1.400 | 0,036 | 1,440 | 2.525 | 1.400 | 0,036 | 1,440 |
| 6 | 0,3 | 18 | 6.100 | 2.400 | 0,058 | 1,800 | 5.500 | 1.800 | 0,048 | 1,500 | 4.250 | 1.150 | 0,029 | 1,200 | 2.125 | 1.150 | 0,029 | 1,200 |
| 6 | 0,3 | 24 | 5.550 | 2.000 | 0,029 | 1,620 | 5.000 | 1.500 | 0,024 | 1,350 | 3.850 | 950 | 0,014 | 1,080 | 1.925 | 950 | 0,014 | 1,080 |
| 6 | 0,3 | 30 | 4.800 | 1.750 | 0,022 | 1,440 | 4.300 | 1.300 | 0,018 | 1,200 | 3.350 | 850 | 0,011 | 0,960 | 1.675 | 850 | 0,011 | 0,960 |
| 6 | 0,3 | 48 | 2.800 | 1.000 | 0,014 | 0,600 | 2.500 | 750 | 0,012 | 0,500 | 1.950 | 500 | 0,007 | 0,400 | 975 | 500 | 0,007 | 0,400 |
| 6 | 0,5 | 12 | 7.200 | 2.900 | 0,120 | 2,160 | 6.500 | 2.150 | 0,100 | 1,800 | 5.050 | 1.400 | 0,060 | 1,440 | 2.525 | 1.400 | 0,060 | 1,440 |
| 6 | 0,5 | 18 | 6.100 | 2.400 | 0,096 | 1,800 | 5.500 | 1.800 | 0,080 | 1,500 | 4.250 | 1.150 | 0,048 | 1,200 | 2.125 | 1.150 | 0,048 | 1,200 |

# AE-CPR4-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 6 | 0,5 | 24 | 5.550 | 2.000 | 0,048 | 1,620 | 5.000 | 1.500 | 0,040 | 1,350 | 3.850 | 950 | 0,024 | 1,080 | 1.925 | 950 | 0,024 | 1,080 |
| 6 | 0,5 | 30 | 4.800 | 1.750 | 0,036 | 1,440 | 4.300 | 1.300 | 0,030 | 1,200 | 3.350 | 850 | 0,018 | 0,960 | 1.675 | 850 | 0,018 | 0,960 |
| 6 | 0,5 | 48 | 2.800 | 1.000 | 0,240 | 0,600 | 2.500 | 750 | 0,200 | 0,500 | 1.950 | 500 | 0,120 | 0,400 | 975 | 500 | 0,120 | 0,400 |
| 6 | 1 | 12 | 7.200 | 2.900 | 0,240 | 2,160 | 6.500 | 2.150 | 0,200 | 1,800 | 5.050 | 1.400 | 0,120 | 1,440 | 2.525 | 1.400 | 0,120 | 1,440 |
| 6 | 1 | 18 | 6.100 | 2.400 | 0,192 | 1,800 | 5.500 | 1.800 | 0,160 | 1,500 | 4.250 | 1.150 | 0,096 | 1,200 | 2.125 | 1.150 | 0,096 | 1,200 |
| 6 | 1 | 24 | 5.550 | 2.000 | 0,096 | 1,620 | 5.000 | 1.500 | 0,080 | 1,350 | 3.850 | 950 | 0,048 | 1,080 | 1.925 | 950 | 0,048 | 1,080 |
| 6 | 1 | 30 | 4.800 | 1.750 | 0,072 | 1,440 | 4.300 | 1.300 | 0,060 | 1,200 | 3.350 | 850 | 0,036 | 0,960 | 1.675 | 850 | 0,036 | 0,960 |
| 6 | 1 | 48 | 2.800 | 1.000 | 0,480 | 0,600 | 2.500 | 750 | 0,400 | 0,500 | 1.950 | 500 | 0,240 | 0,400 | 975 | 500 | 0,240 | 0,400 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation(side milling) with a low machining load.
   If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. When using a tool with a diameter of θ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.



# AE-CPR4-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 0,2 | 0,02 | 0,5 | 50.000 | 700 | 0,006 | 0,007 | 43.000 | 550 | 0,005 | 0,006 | 43.000 | 520 | 0,003 | 0,005 | 21.500 | 520 | 0,003 | 0,005 |
| 0,2 | 0,02 | 1 | 47.500 | 680 | 0,006 | 0,007 | 40.500 | 520 | 0,005 | 0,006 | 40.500 | 490 | 0,003 | 0,005 | 20.250 | 490 | 0,003 | 0,005 |
| 0,2 | 0,02 | 1,5 | 45.000 | 540 | 0,005 | 0,006 | 38.000 | 420 | 0,004 | 0,005 | 38.000 | 400 | 0,002 | 0,004 | 19.000 | 400 | 0,002 | 0,004 |
| 0,2 | 0,02 | 2 | 42.000 | 300 | 0,004 | 0,006 | 35.500 | 230 | 0,003 | 0,005 | 35.500 | 220 | 0,002 | 0,004 | 17.750 | 220 | 0,002 | 0,004 |
| 0,2 | 0,05 | 0,5 | 50.000 | 700 | 0,006 | 0,007 | 43.000 | 550 | 0,005 | 0,006 | 43.000 | 520 | 0,003 | 0,005 | 21.500 | 520 | 0,003 | 0,005 |
| 0,2 | 0,05 | 1 | 47.500 | 680 | 0,006 | 0,007 | 40.500 | 520 | 0,005 | 0,006 | 40.500 | 490 | 0,003 | 0,005 | 20.250 | 490 | 0,003 | 0,005 |
| 0,2 | 0,05 | 1,5 | 45.000 | 540 | 0,005 | 0,006 | 38.000 | 420 | 0,004 | 0,005 | 38.000 | 400 | 0,002 | 0,004 | 19.000 | 400 | 0,002 | 0,004 |
| 0,2 | 0,05 | 2 | 42.000 | 300 | 0,004 | 0,006 | 35.500 | 230 | 0,003 | 0,005 | 35.500 | 220 | 0,002 | 0,004 | 17.750 | 220 | 0,002 | 0,004 |
| 0,3 | 0,02 | 1 | 43.000 | 850 | 0,006 | 0,011 | 38.000 | 690 | 0,005 | 0,009 | 33.500 | 530 | 0,003 | 0,007 | 16.750 | 530 | 0,003 | 0,007 |
| 0,3 | 0,02 | 1,5 | 40.000 | 740 | 0,006 | 0,011 | 35.000 | 590 | 0,005 | 0,009 | 30.500 | 440 | 0,003 | 0,007 | 15.250 | 440 | 0,003 | 0,007 |
| 0,3 | 0,02 | 2 | 36.000 | 610 | 0,005 | 0,010 | 32.000 | 500 | 0,004 | 0,008 | 28.000 | 370 | 0,002 | 0,006 | 14.000 | 370 | 0,002 | 0,006 |
| 0,3 | 0,02 | 2,5 | 32.000 | 480 | 0,004 | 0,010 | 28.000 | 380 | 0,003 | 0,008 | 24.500 | 290 | 0,002 | 0,006 | 12.250 | 290 | 0,002 | 0,006 |
| 0,3 | 0,02 | 3 | 28.000 | 220 | 0,002 | 0,008 | 24.500 | 180 | 0,002 | 0,007 | 21.500 | 130 | 0,001 | 0,006 | 10.750 | 130 | 0,001 | 0,006 |
| 0,3 | 0,05 | 1 | 43.000 | 850 | 0,006 | 0,011 | 38.000 | 690 | 0,005 | 0,009 | 33.500 | 530 | 0,003 | 0,007 | 16.750 | 530 | 0,003 | 0,007 |
| 0,3 | 0,05 | 1,5 | 40.000 | 740 | 0,006 | 0,011 | 35.000 | 590 | 0,005 | 0,009 | 30.500 | 440 | 0,003 | 0,007 | 15.250 | 440 | 0,003 | 0,007 |
| 0,3 | 0,05 | 2 | 36.000 | 610 | 0,005 | 0,010 | 32.000 | 500 | 0,004 | 0,008 | 28.000 | 370 | 0,002 | 0,006 | 14.000 | 370 | 0,002 | 0,006 |
| 0,3 | 0,05 | 2,5 | 32.000 | 480 | 0,004 | 0,010 | 28.000 | 380 | 0,003 | 0,008 | 24.500 | 290 | 0,002 | 0,006 | 12.250 | 290 | 0,002 | 0,006 |
| 0,3 | 0,05 | 3 | 28.000 | 220 | 0,002 | 0,008 | 24.500 | 180 | 0,002 | 0,007 | 21.500 | 130 | 0,001 | 0,006 | 10.750 | 130 | 0,001 | 0,006 |
| 0,4 | 0,02 | 1 | 39.500 | 1.510 | 0,007 | 0,014 | 32.000 | 1.170 | 0,006 | 0,012 | 28.500 | 820 | 0,004 | 0,010 | 14.250 | 820 | 0,004 | 0,010 |
| 0,4 | 0,02 | 1,5 | 39.500 | 1.510 | 0,007 | 0,014 | 32.000 | 1.170 | 0,006 | 0,012 | 28.500 | 820 | 0,004 | 0,010 | 14.250 | 820 | 0,004 | 0,010 |
| 0,4 | 0,02 | 2 | 37.000 | 1.370 | 0,007 | 0,014 | 30.500 | 1.050 | 0,006 | 0,012 | 27.000 | 750 | 0,004 | 0,010 | 13.500 | 750 | 0,004 | 0,010 |
| 0,4 | 0,02 | 2,5 | 33.500 | 1.130 | 0,006 | 0,012 | 27.500 | 870 | 0,005 | 0,010 | 24.500 | 620 | 0,003 | 0,008 | 12.250 | 620 | 0,003 | 0,008 |
| 0,4 | 0,02 | 3 | 30.500 | 950 | 0,005 | 0,010 | 25.000 | 720 | 0,004 | 0,008 | 22.500 | 510 | 0,002 | 0,006 | 11.250 | 510 | 0,002 | 0,006 |
| 0,4 | 0,02 | 4 | 28.500 | 760 | 0,002 | 0,007 | 23.500 | 590 | 0,002 | 0,006 | 20.500 | 420 | 0,001 | 0,005 | 10.250 | 420 | 0,001 | 0,005 |
| 0,4 | 0,05 | 1 | 39.500 | 1.510 | 0,007 | 0,014 | 32.000 | 1.170 | 0,006 | 0,012 | 28.500 | 820 | 0,004 | 0,010 | 14.250 | 820 | 0,004 | 0,010 |
| 0,4 | 0,05 | 1,5 | 39.500 | 1.510 | 0,007 | 0,014 | 32.000 | 1.170 | 0,006 | 0,012 | 28.500 | 820 | 0,004 | 0,010 | 14.250 | 820 | 0,004 | 0,010 |
| 0,4 | 0,05 | 2 | 37.000 | 1.370 | 0,007 | 0,014 | 30.500 | 1.050 | 0,006 | 0,012 | 27.000 | 750 | 0,004 | 0,010 | 13.500 | 750 | 0,004 | 0,010 |
| 0,4 | 0,05 | 2,5 | 33.500 | 1.130 | 0,006 | 0,012 | 27.500 | 870 | 0,005 | 0,010 | 24.500 | 620 | 0,003 | 0,008 | 12.250 | 620 | 0,003 | 0,008 |
| 0,4 | 0,05 | 3 | 30.500 | 950 | 0,005 | 0,010 | 25.000 | 720 | 0,004 | 0,008 | 22.500 | 510 | 0,002 | 0,006 | 11.250 | 510 | 0,002 | 0,006 |
| 0,4 | 0,05 | 4 | 28.500 | 760 | 0,002 | 0,007 | 23.500 | 590 | 0,002 | 0,006 | 20.500 | 420 | 0,001 | 0,005 | 10.250 | 420 | 0,001 | 0,005 |
| 0,4 | 0,1 | 1 | 39.500 | 1.510 | 0,012 | 0,014 | 32.000 | 1.170 | 0,010 | 0,012 | 28.500 | 820 | 0,006 | 0,010 | 14.250 | 820 | 0,006 | 0,010 |
| 0,4 | 0,1 | 2 | 37.000 | 1.370 | 0,012 | 0,014 | 30.500 | 1.050 | 0,010 | 0,012 | 27.000 | 750 | 0,006 | 0,010 | 13.500 | 750 | 0,006 | 0,010 |
| 0,4 | 0,1 | 3 | 30.500 | 950 | 0,008 | 0,010 | 25.000 | 720 | 0,007 | 0,008 | 22.500 | 510 | 0,004 | 0,006 | 11.250 | 510 | 0,004 | 0,006 |
| 0,4 | 0,1 | 4 | 28.500 | 760 | 0,005 | 0,007 | 23.500 | 590 | 0,004 | 0,006 | 20.500 | 420 | 0,002 | 0,005 | 10.250 | 420 | 0,002 | 0,005 |
| 0,5 | 0,02 | 1 | 34.500 | 1.460 | 0,007 | 0,018 | 28.500 | 1.170 | 0,006 | 0,015 | 24.000 | 870 | 0,004 | 0,012 | 12.000 | 870 | 0,004 | 0,012 |
| 0,5 | 0,02 | 2 | 34.500 | 1.460 | 0,007 | 0,018 | 28.500 | 1.170 | 0,006 | 0,015 | 24.000 | 870 | 0,004 | 0,012 | 12.000 | 870 | 0,004 | 0,012 |
| 0,5 | 0,02 | 3 | 32.500 | 1.230 | 0,007 | 0,016 | 27.000 | 990 | 0,006 | 0,013 | 22.500 | 740 | 0,004 | 0,010 | 11.250 | 740 | 0,004 | 0,010 |
| 0,5 | 0,02 | 4 | 26.500 | 900 | 0,004 | 0,012 | 22.500 | 720 | 0,003 | 0,010 | 18.500 | 540 | 0,002 | 0,008 | 9.250 | 540 | 0,002 | 0,008 |
| 0,5 | 0,02 | 5 | 25.000 | 740 | 0,002 | 0,008 | 20.500 | 590 | 0,002 | 0,007 | 17.500 | 440 | 0,001 | 0,006 | 8.750 | 440 | 0,001 | 0,006 |
| 0,5 | 0,02 | 6 | 23.000 | 650 | 0,001 | 0,007 | 19.000 | 510 | 0,001 | 0,006 | 16.000 | 390 | 0,001 | 0,005 | 8.000 | 390 | 0,001 | 0,005 |
| 0,5 | 0,05 | 1 | 34.500 | 1.460 | 0,007 | 0,018 | 28.500 | 1.170 | 0,006 | 0,015 | 24.000 | 870 | 0,004 | 0,012 | 12.000 | 870 | 0,004 | 0,012 |
| 0,5 | 0,05 | 2 | 34.500 | 1.460 | 0,007 | 0,018 | 28.500 | 1.170 | 0,006 | 0,015 | 24.000 | 870 | 0,004 | 0,012 | 12.000 | 870 | 0,004 | 0,012 |
| 0,5 | 0,05 | 3 | 32.500 | 1.230 | 0,007 | 0,016 | 27.000 | 990 | 0,006 | 0,013 | 22.500 | 740 | 0,004 | 0,010 | 11.250 | 740 | 0,004 | 0,010 |
| 0,5 | 0,05 | 4 | 26.500 | 900 | 0,004 | 0,012 | 22.500 | 720 | 0,003 | 0,010 | 18.500 | 540 | 0,002 | 0,008 | 9.250 | 540 | 0,002 | 0,008 |
| 0,5 | 0,05 | 5 | 25.000 | 740 | 0,002 | 0,008 | 20.500 | 590 | 0,002 | 0,007 | 17.500 | 440 | 0,001 | 0,006 | 8.750 | 440 | 0,001 | 0,006 |
| 0,5 | 0,05 | 6 | 23.000 | 650 | 0,001 | 0,007 | 19.000 | 510 | 0,001 | 0,006 | 16.000 | 390 | 0,001 | 0,005 | 8.000 | 390 | 0,001 | 0,005 |
| 0,5 | 0,1 | 1 | 34.500 | 1.460 | 0,012 | 0,018 | 28.500 | 1.170 | 0,010 | 0,015 | 24.000 | 870 | 0,006 | 0,012 | 12.000 | 870 | 0,006 | 0,012 |
| 0,5 | 0,1 | 2 | 34.500 | 1.460 | 0,012 | 0,018 | 28.500 | 1.170 | 0,010 | 0,015 | 24.000 | 870 | 0,006 | 0,012 | 12.000 | 870 | 0,006 | 0,012 |
| 0,5 | 0,1 | 3 | 32.500 | 1.230 | 0,012 | 0,016 | 27.000 | 990 | 0,010 | 0,013 | 22.500 | 740 | 0,006 | 0,010 | 11.250 | 740 | 0,006 | 0,010 |
| 0,5 | 0,1 | 4 | 26.500 | 900 | 0,007 | 0,012 | 22.500 | 720 | 0,006 | 0,010 | 18.500 | 540 | 0,004 | 0,008 | 9.250 | 540 | 0,004 | 0,008 |
| 0,5 | 0,1 | 5 | 25.000 | 740 | 0,005 | 0,008 | 20.500 | 590 | 0,004 | 0,007 | 17.500 | 440 | 0,002 | 0,006 | 8.750 | 440 | 0,002 | 0,006 |
| 0,5 | 0,1 | 6 | 23.000 | 650 | 0,004 | 0,007 | 19.000 | 510 | 0,003 | 0,006 | 16.000 | 390 | 0,002 | 0,005 | 8.000 | 390 | 0,002 | 0,005 |
| 0,6 | 0,05 | 1 | 31.000 | 1.580 | 0,007 | 0,022 | 26.500 | 1.280 | 0,006 | 0,018 | 24.000 | 1.040 | 0,004 | 0,014 | 12.000 | 1.040 | 0,004 | 0,014 |
| 0,6 | 0,05 | 2 | 31.000 | 1.580 | 0,007 | 0,022 | 26.500 | 1.280 | 0,006 | 0,018 | 24.000 | 1.040 | 0,004 | 0,014 | 12.000 | 1.040 | 0,004 | 0,014 |
| 0,6 | 0,05 | 4 | 26.000 | 1.110 | 0,006 | 0,014 | 22.000 | 900 | 0,005 | 0,012 | 20.000 | 740 | 0,003 | 0,010 | 10.000 | 740 | 0,003 | 0,010 |
| 0,6 | 0,05 | 6 | 22.500 | 800 | 0,002 | 0,011 | 19.000 | 650 | 0,002 | 0,009 | 17.000 | 530 | 0,001 | 0,007 | 8.500 | 530 | 0,001 | 0,007 |
| 0,6 | 0,1 | 1 | 31.000 | 1.580 | 0,014 | 0,022 | 26.500 | 1.280 | 0,012 | 0,018 | 24.000 | 1.040 | 0,007 | 0,014 | 12.000 | 1.040 | 0,007 | 0,014 |
| 0,6 | 0,1 | 2 | 31.000 | 1.580 | 0,014 | 0,022 | 26.500 | 1.280 | 0,012 | 0,018 | 24.000 | 1.040 | 0,007 | 0,014 | 12.000 | 1.040 | 0,007 | 0,014 |
| 0,6 | 0,1 | 4 | 26.000 | 1.110 | 0,011 | 0,014 | 22.000 | 900 | 0,009 | 0,012 | 20.000 | 740 | 0,005 | 0,010 | 10.000 | 740 | 0,005 | 0,010 |
| 0,6 | 0,1 | 6 | 22.500 | 800 | 0,005 | 0,011 | 19.000 | 650 | 0,004 | 0,009 | 17.000 | 530 | 0,002 | 0,007 | 8.500 | 530 | 0,002 | 0,007 |
| 0,7 | 0,02 | 1,5 | 30.000 | 1.800 | 0,007 | 0,026 | 26.000 | 1.560 | 0,006 | 0,022 | 24.000 | 1.220 | 0,004 | 0,018 | 12.000 | 1.220 | 0,004 | 0,018 |
| 0,7 | 0,02 | 2 | 30.000 | 1.800 | 0,007 | 0,026 | 26.000 | 1.560 | 0,006 | 0,022 | 24.000 | 1.220 | 0,004 | 0,018 | 12.000 | 1.220 | 0,004 | 0,018 |
| 0,7 | 0,02 | 4 | 27.000 | 1.420 | 0,005 | 0,019 | 23.500 | 1.210 | 0,004 | 0,016 | 21.500 | 940 | 0,002 | 0,013 | 10.750 | 940 | 0,002 | 0,013 |
| 0,7 | 0,02 | 6 | 22.500 | 980 | 0,002 | 0,012 | 19.500 | 830 | 0,002 | 0,010 | 18.000 | 650 | 0,001 | 0,008 | 9.000 | 650 | 0,001 | 0,008 |
| 0,7 | 0,05 | 1,5 | 30.000 | 1.800 | 0,007 | 0,026 | 26.000 | 1.560 | 0,006 | 0,022 | 24.000 | 1.220 | 0,004 | 0,018 | 12.000 | 1.220 | 0,004 | 0,018 |
| 0,7 | 0,05 | 2 | 30.000 | 1.800 | 0,007 | 0,026 | 26.000 | 1.560 | 0,006 | 0,022 | 24.000 | 1.220 | 0,004 | 0,018 | 12.000 | 1.220 | 0,004 | 0,018 |
| 0,7 | 0,05 | 4 | 27.000 | 1.420 | 0,005 | 0,019 | 23.500 | 1.210 | 0,004 | 0,016 | 21.500 | 940 | 0,002 | 0,013 | 10.750 | 940 | 0,002 | 0,013 |
| 0,7 | 0,05 | 6 | 22.500 | 980 | 0,002 | 0,012 | 19.500 | 830 | 0,002 | 0,010 | 18.000 | 650 | 0,001 | 0,008 | 9.000 | 650 | 0,001 | 0,008 |
| 0,7 | 0,1 | 2 | 30.000 | 1.800 | 0,018 | 0,026 | 26.000 | 1.560 | 0,015 | 0,022 | 24.000 | 1.220 | 0,009 | 0,018 | 12.000 | 1.220 | 0,009 | 0,018 |
| 0,7 | 0,1 | 4 | 27.000 | 1.420 | 0,014 | 0,019 | 23.500 | 1.210 | 0,012 | 0,016 | 21.500 | 940 | 0,007 | 0,013 | 10.750 | 940 | 0,007 | 0,013 |
| 0,7 | 0,1 | 6 | 22.500 | 980 | 0,011 | 0,012 | 19.500 | 830 | 0,009 | 0,010 | 18.000 | 650 | 0,005 | 0,008 | 9.000 | 650 | 0,005 | 0,008 |
| 0,8 | 0,05 | 2 | 31.000 | 2.200 | 0,012 | 0,024 | 27.500 | 1.880 | 0,010 | 0,020 | 25.500 | 1.400 | 0,006 | 0,016 | 12.750 | 1.400 | 0,006 | 0,016 |
| 0,8 | 0,05 | 4 | 29.000 | 1.800 | 0,010 | 0,024 | 25.500 | 1.580 | 0,008 | 0,020 | 23.500 | 1.190 | 0,005 | 0,016 | 11.750 | 1.190 | 0,005 | 0,016 |
| 0,8 | 0,05 | 6 | 23.500 | 1.280 | 0,007 | 0,017 | 21.000 | 1.080 | 0,006 | 0,014 | 19.500 | 830 | 0,004 | 0,011 | 9.750 | 830 | 0,004 | 0,011 |
| 0,8 | 0,1 | 2 | 31.000 | 2.200 | 0,022 | 0,024 | 27.500 | 1.880 | 0,018 | 0,020 | 25.500 | 1.400 | 0,011 | 0,016 | 12.750 | 1.400 | 0,011 | 0,016 |
| 0,8 | 0,1 | 4 | 29.000 | 1.800 | 0,018 | 0,024 | 25.500 | 1.580 | 0,015 | 0,020 | 23.500 | 1.190 | 0,009 | 0,016 | 11.750 | 1.190 | 0,009 | 0,016 |

# AE-CPR4-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 0,8 | 0,1 | 6 | 23.500 | 1.280 | 0,014 | 0,017 | 21.000 | 1.080 | 0,012 | 0,014 | 19.500 | 830 | 0,007 | 0,011 | 9.750 | 830 | 0,007 | 0,011 |
| 0,8 | 0,2 | 2 | 31.000 | 2.200 | 0,029 | 0,024 | 27.500 | 1.880 | 0,024 | 0,020 | 25.500 | 1.400 | 0,014 | 0,016 | 12.750 | 1.400 | 0,014 | 0,016 |
| 0,8 | 0,2 | 4 | 29.000 | 1.800 | 0,024 | 0,024 | 25.500 | 1.580 | 0,020 | 0,020 | 23.500 | 1.190 | 0,012 | 0,016 | 11.750 | 1.190 | 0,012 | 0,016 |
| 0,8 | 0,2 | 6 | 23.500 | 1.280 | 0,019 | 0,017 | 21.000 | 1.080 | 0,016 | 0,014 | 19.500 | 830 | 0,010 | 0,011 | 9.750 | 830 | 0,010 | 0,011 |
| 0,8 | 0,2 | 8 | 22.000 | 1.040 | 0,010 | 0,012 | 19.500 | 890 | 0,008 | 0,010 | 18.000 | 680 | 0,005 | 0,008 | 9.000 | 680 | 0,005 | 0,008 |
| 0,9 | 0,1 | 4 | 28.000 | 2.020 | 0,018 | 0,030 | 25.000 | 1.690 | 0,015 | 0,025 | 23.000 | 1.330 | 0,009 | 0,020 | 11.500 | 1.330 | 0,009 | 0,020 |
| 0,9 | 0,1 | 8 | 21.500 | 1.360 | 0,011 | 0,024 | 19.000 | 1.140 | 0,009 | 0,020 | 17.500 | 890 | 0,005 | 0,016 | 8.750 | 890 | 0,005 | 0,016 |
| 1 | 0,02 | 2 | 29.500 | 2.520 | 0,010 | 0,036 | 26.500 | 2.120 | 0,008 | 0,030 | 24.500 | 1.700 | 0,005 | 0,024 | 12.250 | 1.700 | 0,005 | 0,024 |
| 1 | 0,02 | 3 | 27.000 | 2.250 | 0,010 | 0,036 | 24.500 | 1.880 | 0,008 | 0,030 | 22.500 | 1.500 | 0,005 | 0,024 | 11.250 | 1.500 | 0,005 | 0,024 |
| 1 | 0,02 | 4 | 27.000 | 2.250 | 0,007 | 0,036 | 24.500 | 1.880 | 0,006 | 0,030 | 22.500 | 1.500 | 0,004 | 0,024 | 11.250 | 1.500 | 0,004 | 0,024 |
| 1 | 0,02 | 6 | 24.000 | 1.800 | 0,007 | 0,032 | 21.500 | 1.500 | 0,006 | 0,027 | 20.000 | 1.200 | 0,004 | 0,022 | 10.000 | 1.200 | 0,004 | 0,022 |
| 1 | 0,02 | 8 | 21.000 | 1.430 | 0,004 | 0,025 | 19.000 | 1.190 | 0,003 | 0,021 | 17.500 | 930 | 0,002 | 0,017 | 8.750 | 930 | 0,002 | 0,017 |
| 1 | 0,02 | 10 | 19.500 | 1.160 | 0,004 | 0,018 | 17.500 | 960 | 0,003 | 0,015 | 16.500 | 770 | 0,002 | 0,012 | 8.250 | 770 | 0,002 | 0,012 |
| 1 | 0,05 | 2 | 29.500 | 2.520 | 0,010 | 0,036 | 26.500 | 2.120 | 0,008 | 0,030 | 24.500 | 1.700 | 0,005 | 0,024 | 12.250 | 1.700 | 0,005 | 0,024 |
| 1 | 0,05 | 3 | 27.000 | 2.250 | 0,010 | 0,036 | 24.500 | 1.880 | 0,008 | 0,030 | 22.500 | 1.500 | 0,005 | 0,024 | 11.250 | 1.500 | 0,005 | 0,024 |
| 1 | 0,05 | 4 | 27.000 | 2.250 | 0,007 | 0,036 | 24.500 | 1.880 | 0,006 | 0,030 | 22.500 | 1.500 | 0,004 | 0,024 | 11.250 | 1.500 | 0,004 | 0,024 |
| 1 | 0,05 | 6 | 24.000 | 1.800 | 0,007 | 0,032 | 21.500 | 1.500 | 0,006 | 0,027 | 20.000 | 1.200 | 0,004 | 0,022 | 10.000 | 1.200 | 0,004 | 0,022 |
| 1 | 0,05 | 8 | 21.000 | 1.430 | 0,004 | 0,025 | 19.000 | 1.190 | 0,003 | 0,021 | 17.500 | 930 | 0,002 | 0,017 | 8.750 | 930 | 0,002 | 0,017 |
| 1 | 0,05 | 10 | 19.500 | 1.160 | 0,004 | 0,018 | 17.500 | 960 | 0,003 | 0,015 | 16.500 | 770 | 0,002 | 0,012 | 8.250 | 770 | 0,002 | 0,012 |
| 1 | 0,05 | 12 | 18.000 | 1.010 | 0,004 | 0,016 | 16.000 | 840 | 0,003 | 0,013 | 15.000 | 660 | 0,002 | 0,010 | 7.500 | 660 | 0,002 | 0,010 |
| 1 | 0,1 | 2 | 29.500 | 2.520 | 0,024 | 0,036 | 26.500 | 2.120 | 0,020 | 0,030 | 24.500 | 1.700 | 0,012 | 0,024 | 12.250 | 1.700 | 0,012 | 0,024 |
| 1 | 0,1 | 3 | 27.000 | 2.250 | 0,024 | 0,036 | 24.500 | 1.880 | 0,020 | 0,030 | 22.500 | 1.500 | 0,012 | 0,024 | 11.250 | 1.500 | 0,012 | 0,024 |
| 1 | 0,1 | 4 | 27.000 | 2.250 | 0,018 | 0,036 | 24.500 | 1.880 | 0,015 | 0,030 | 22.500 | 1.500 | 0,009 | 0,024 | 11.250 | 1.500 | 0,009 | 0,024 |
| 1 | 0,1 | 6 | 24.000 | 1.800 | 0,018 | 0,032 | 21.500 | 1.500 | 0,015 | 0,027 | 20.000 | 1.200 | 0,009 | 0,022 | 10.000 | 1.200 | 0,009 | 0,022 |
| 1 | 0,1 | 8 | 21.000 | 1.430 | 0,011 | 0,025 | 19.000 | 1.190 | 0,009 | 0,021 | 17.500 | 930 | 0,005 | 0,017 | 8.750 | 930 | 0,005 | 0,017 |
| 1 | 0,1 | 10 | 19.500 | 1.160 | 0,007 | 0,018 | 17.500 | 960 | 0,006 | 0,015 | 16.500 | 770 | 0,004 | 0,012 | 8.250 | 770 | 0,004 | 0,012 |
| 1 | 0,1 | 12 | 18.000 | 1.010 | 0,005 | 0,016 | 16.000 | 840 | 0,004 | 0,013 | 15.000 | 660 | 0,002 | 0,010 | 7.500 | 660 | 0,002 | 0,010 |
| 1 | 0,1 | 16 | 14.500 | 710 | 0,004 | 0,012 | 13.000 | 590 | 0,003 | 0,010 | 12.000 | 480 | 0,002 | 0,008 | 6.000 | 480 | 0,002 | 0,008 |
| 1 | 0,1 | 20 | 12.000 | 510 | 0,002 | 0,011 | 11.000 | 420 | 0,002 | 0,009 | 10.000 | 340 | 0,001 | 0,007 | 5.000 | 340 | 0,001 | 0,007 |
| 1 | 0,2 | 2 | 29.500 | 2.520 | 0,036 | 0,036 | 26.500 | 2.120 | 0,030 | 0,030 | 24.500 | 1.700 | 0,018 | 0,024 | 12.250 | 1.700 | 0,018 | 0,024 |
| 1 | 0,2 | 3 | 27.000 | 2.250 | 0,036 | 0,036 | 24.500 | 1.880 | 0,030 | 0,030 | 22.500 | 1.500 | 0,018 | 0,024 | 11.250 | 1.500 | 0,018 | 0,024 |
| 1 | 0,2 | 4 | 27.000 | 2.250 | 0,024 | 0,036 | 24.500 | 1.880 | 0,020 | 0,030 | 22.500 | 1.500 | 0,012 | 0,024 | 11.250 | 1.500 | 0,012 | 0,024 |
| 1 | 0,2 | 6 | 24.000 | 1.800 | 0,024 | 0,032 | 21.500 | 1.500 | 0,020 | 0,027 | 20.000 | 1.200 | 0,012 | 0,022 | 10.000 | 1.200 | 0,012 | 0,022 |
| 1 | 0,2 | 8 | 21.000 | 1.430 | 0,014 | 0,025 | 19.000 | 1.190 | 0,012 | 0,021 | 17.500 | 930 | 0,007 | 0,017 | 8.750 | 930 | 0,007 | 0,017 |
| 1 | 0,2 | 10 | 19.500 | 1.160 | 0,010 | 0,018 | 17.500 | 960 | 0,008 | 0,015 | 16.500 | 770 | 0,005 | 0,012 | 8.250 | 770 | 0,005 | 0,012 |
| 1 | 0,2 | 12 | 18.000 | 1.010 | 0,007 | 0,016 | 16.000 | 840 | 0,006 | 0,013 | 15.000 | 660 | 0,004 | 0,010 | 7.500 | 660 | 0,004 | 0,010 |
| 1 | 0,2 | 16 | 14.500 | 710 | 0,005 | 0,012 | 13.000 | 590 | 0,004 | 0,010 | 12.000 | 470 | 0,002 | 0,008 | 6.000 | 470 | 0,002 | 0,008 |
| 1 | 0,2 | 20 | 12.000 | 510 | 0,004 | 0,011 | 11.000 | 420 | 0,003 | 0,009 | 10.000 | 330 | 0,002 | 0,007 | 5.000 | 330 | 0,002 | 0,007 |
| 1 | 0,3 | 2 | 29.500 | 2.520 | 0,043 | 0,036 | 26.500 | 2.120 | 0,036 | 0,030 | 24.500 | 1.700 | 0,022 | 0,024 | 12.250 | 1.700 | 0,022 | 0,024 |
| 1 | 0,3 | 3 | 27.000 | 2.250 | 0,043 | 0,036 | 24.500 | 1.880 | 0,036 | 0,030 | 22.500 | 1.500 | 0,022 | 0,024 | 11.250 | 1.500 | 0,022 | 0,024 |
| 1 | 0,3 | 4 | 27.000 | 2.250 | 0,036 | 0,036 | 24.500 | 1.880 | 0,030 | 0,030 | 22.500 | 1.500 | 0,018 | 0,024 | 11.250 | 1.500 | 0,018 | 0,024 |
| 1 | 0,3 | 6 | 24.000 | 1.800 | 0,036 | 0,032 | 21.500 | 1.500 | 0,030 | 0,027 | 20.000 | 1.200 | 0,018 | 0,022 | 10.000 | 1.200 | 0,018 | 0,022 |
| 1 | 0,3 | 8 | 21.000 | 1.430 | 0,022 | 0,025 | 19.000 | 1.190 | 0,018 | 0,021 | 17.500 | 930 | 0,011 | 0,017 | 8.750 | 930 | 0,011 | 0,017 |
| 1 | 0,3 | 10 | 19.500 | 1.160 | 0,014 | 0,018 | 17.500 | 960 | 0,012 | 0,015 | 16.500 | 770 | 0,007 | 0,012 | 8.250 | 770 | 0,007 | 0,012 |
| 1 | 0,3 | 12 | 18.000 | 1.010 | 0,011 | 0,016 | 16.000 | 840 | 0,009 | 0,013 | 15.000 | 660 | 0,005 | 0,010 | 7.500 | 660 | 0,005 | 0,010 |
| 1 | 0,3 | 16 | 14.500 | 710 | 0,007 | 0,012 | 13.000 | 590 | 0,006 | 0,010 | 12.000 | 470 | 0,004 | 0,008 | 6.000 | 470 | 0,004 | 0,008 |
| 1 | 0,3 | 20 | 12.000 | 510 | 0,006 | 0,011 | 11.000 | 420 | 0,005 | 0,009 | 10.000 | 330 | 0,003 | 0,007 | 5.000 | 330 | 0,003 | 0,007 |
| 1,2 | 0,2 | 6 | 22.500 | 2.180 | 0,019 | 0,043 | 21.000 | 1.880 | 0,016 | 0,036 | 19.000 | 1.440 | 0,010 | 0,029 | 9.500 | 1.440 | 0,010 | 0,029 |
| 1,2 | 0,2 | 8 | 20.000 | 1.730 | 0,011 | 0,034 | 18.500 | 1.470 | 0,009 | 0,028 | 17.000 | 1.140 | 0,005 | 0,022 | 8.500 | 1.140 | 0,005 | 0,022 |
| 1,2 | 0,2 | 10 | 18.500 | 1.500 | 0,006 | 0,025 | 17.500 | 1.290 | 0,005 | 0,021 | 16.000 | 1.010 | 0,003 | 0,017 | 8.000 | 1.010 | 0,003 | 0,017 |
| 1,2 | 0,3 | 6 | 22.500 | 2.180 | 0,029 | 0,043 | 21.000 | 1.880 | 0,024 | 0,036 | 19.000 | 1.440 | 0,014 | 0,029 | 9.500 | 1.440 | 0,014 | 0,029 |
| 1,2 | 0,3 | 8 | 20.000 | 1.730 | 0,016 | 0,034 | 18.500 | 1.470 | 0,013 | 0,028 | 17.000 | 1.140 | 0,008 | 0,022 | 8.500 | 1.140 | 0,008 | 0,022 |
| 1,2 | 0,3 | 10 | 18.500 | 1.500 | 0,010 | 0,025 | 17.500 | 1.290 | 0,008 | 0,021 | 16.000 | 1.010 | 0,005 | 0,017 | 8.000 | 1.010 | 0,005 | 0,017 |
| 1,5 | 0,05 | 3 | 22.000 | 2.900 | 0,007 | 0,054 | 19.500 | 2.420 | 0,006 | 0,045 | 17.000 | 1.740 | 0,004 | 0,036 | 8.500 | 1.740 | 0,004 | 0,036 |
| 1,5 | 0,05 | 4 | 22.000 | 2.900 | 0,007 | 0,054 | 19.500 | 2.420 | 0,006 | 0,045 | 17.000 | 1.740 | 0,004 | 0,036 | 8.500 | 1.740 | 0,004 | 0,036 |
| 1,5 | 0,05 | 6 | 21.000 | 2.630 | 0,006 | 0,054 | 18.500 | 2.180 | 0,005 | 0,045 | 16.000 | 1.580 | 0,003 | 0,036 | 8.000 | 1.580 | 0,003 | 0,036 |
| 1,5 | 0,05 | 8 | 20.000 | 2.250 | 0,006 | 0,054 | 17.500 | 1.880 | 0,005 | 0,045 | 15.500 | 1.370 | 0,003 | 0,036 | 7.750 | 1.370 | 0,003 | 0,036 |
| 1,5 | 0,05 | 10 | 17.500 | 1.880 | 0,048 | 0,043 | 15.500 | 1.580 | 0,040 | 0,036 | 13.500 | 1.140 | 0,024 | 0,029 | 6.750 | 1.140 | 0,024 | 0,029 |
| 1,5 | 0,05 | 12 | 16.500 | 1.650 | 0,036 | 0,037 | 14.500 | 1.370 | 0,030 | 0,031 | 12.500 | 1.010 | 0,018 | 0,025 | 6.250 | 1.010 | 0,018 | 0,025 |
| 1,5 | 0,05 | 16 | 11.000 | 960 | 0,024 | 0,026 | 10.000 | 800 | 0,020 | 0,022 | 8.650 | 590 | 0,012 | 0,018 | 4.325 | 590 | 0,012 | 0,018 |
| 1,5 | 0,1 | 3 | 22.000 | 2.900 | 0,014 | 0,054 | 19.500 | 2.420 | 0,012 | 0,045 | 17.000 | 1.740 | 0,007 | 0,036 | 8.500 | 1.740 | 0,007 | 0,036 |
| 1,5 | 0,1 | 4 | 22.000 | 2.900 | 0,014 | 0,054 | 19.500 | 2.420 | 0,012 | 0,045 | 17.000 | 1.740 | 0,007 | 0,036 | 8.500 | 1.740 | 0,007 | 0,036 |
| 1,5 | 0,1 | 6 | 21.000 | 2.630 | 0,012 | 0,054 | 18.500 | 2.180 | 0,010 | 0,045 | 16.000 | 1.580 | 0,006 | 0,036 | 8.000 | 1.580 | 0,006 | 0,036 |
| 1,5 | 0,1 | 8 | 20.000 | 2.250 | 0,012 | 0,054 | 17.500 | 1.880 | 0,010 | 0,045 | 15.500 | 1.370 | 0,006 | 0,036 | 7.750 | 1.370 | 0,006 | 0,036 |
| 1,5 | 0,1 | 10 | 17.500 | 1.880 | 0,108 | 0,043 | 15.500 | 1.580 | 0,090 | 0,036 | 13.500 | 1.140 | 0,054 | 0,029 | 6.750 | 1.140 | 0,054 | 0,029 |
| 1,5 | 0,1 | 12 | 16.500 | 1.650 | 0,072 | 0,037 | 14.500 | 1.370 | 0,060 | 0,031 | 12.500 | 1.010 | 0,036 | 0,025 | 6.250 | 1.010 | 0,036 | 0,025 |
| 1,5 | 0,1 | 16 | 11.000 | 960 | 0,048 | 0,026 | 10.000 | 800 | 0,040 | 0,022 | 8.650 | 590 | 0,024 | 0,018 | 4.325 | 590 | 0,024 | 0,018 |
| 1,5 | 0,2 | 3 | 22.000 | 2.900 | 0,029 | 0,054 | 19.500 | 2.420 | 0,024 | 0,045 | 17.000 | 1.740 | 0,014 | 0,036 | 8.500 | 1.740 | 0,014 | 0,036 |
| 1,5 | 0,2 | 4 | 22.000 | 2.900 | 0,029 | 0,054 | 19.500 | 2.420 | 0,024 | 0,045 | 17.000 | 1.740 | 0,014 | 0,036 | 8.500 | 1.740 | 0,014 | 0,036 |
| 1,5 | 0,2 | 6 | 21.000 | 2.630 | 0,024 | 0,054 | 18.500 | 2.180 | 0,020 | 0,045 | 16.000 | 1.580 | 0,012 | 0,036 | 8.000 | 1.580 | 0,012 | 0,036 |
| 1,5 | 0,2 | 8 | 20.000 | 2.250 | 0,024 | 0,054 | 17.500 | 1.880 | 0,020 | 0,045 | 15.500 | 1.370 | 0,012 | 0,036 | 7.750 | 1.370 | 0,012 | 0,036 |
| 1,5 | 0,2 | 10 | 17.500 | 1.880 | 0,022 | 0,043 | 15.500 | 1.580 | 0,018 | 0,036 | 13.500 | 1.140 | 0,011 | 0,029 | 6.750 | 1.140 | 0,011 | 0,029 |
| 1,5 | 0,2 | 12 | 16.500 | 1.650 | 0,014 | 0,037 | 14.500 | 1.370 | 0,012 | 0,031 | 12.500 | 1.010 | 0,007 | 0,025 | 6.250 | 1.010 | 0,007 | 0,025 |
| 1,5 | 0,2 | 16 | 11.000 | 960 | 0,010 | 0,026 | 10.000 | 800 | 0,008 | 0,022 | 8.650 | 590 | 0,005 | 0,018 | 4.325 | 590 | 0,005 | 0,018 |
| 1,5 | 0,3 | 3 | 22.000 | 2.900 | 0,043 | 0,054 | 19.500 | 2.420 | 0,036 | 0,045 | 17.000 | 1.740 | 0,022 | 0,036 | 8.500 | 1.740 | 0,022 | 0,036 |
| 1,5 | 0,3 | 4 | 22.000 | 2.900 | 0,043 | 0,054 | 19.500 | 2.420 | 0,036 | 0,045 | 17.000 | 1.740 | 0,022 | 0,036 | 8.500 | 1.740 | 0,022 | 0,036 |

# CUTTING CONDITIONS



# AE-CPR4-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 1,5 | 0,3 | 6 | 21.000 | 2.630 | 0,036 | 0,054 | 18.500 | 2.180 | 0,030 | 0,045 | 16.000 | 1.580 | 0,018 | 0,036 | 8.000 | 1.580 | 0,018 | 0,036 |
| 1,5 | 0,3 | 8 | 20.000 | 2.250 | 0,036 | 0,054 | 17.500 | 1.880 | 0,030 | 0,045 | 15.500 | 1.370 | 0,018 | 0,036 | 7.750 | 1.370 | 0,018 | 0,036 |
| 1,5 | 0,3 | 10 | 17.500 | 1.880 | 0,032 | 0,043 | 15.500 | 1.580 | 0,027 | 0,036 | 13.500 | 1.140 | 0,016 | 0,029 | 6.750 | 1.140 | 0,016 | 0,029 |
| 1,5 | 0,3 | 12 | 16.500 | 1.650 | 0,022 | 0,037 | 14.500 | 1.370 | 0,018 | 0,031 | 12.500 | 1.010 | 0,011 | 0,025 | 6.250 | 1.010 | 0,011 | 0,025 |
| 1,5 | 0,3 | 16 | 11.000 | 960 | 0,014 | 0,026 | 10.000 | 800 | 0,012 | 0,022 | 8.650 | 590 | 0,007 | 0,018 | 4.325 | 590 | 0,007 | 0,018 |
| 1,5 | 0,5 | 3 | 22.000 | 2.900 | 0,072 | 0,054 | 19.500 | 2.420 | 0,060 | 0,045 | 17.000 | 1.740 | 0,036 | 0,036 | 8.500 | 1.740 | 0,036 | 0,036 |
| 1,5 | 0,5 | 4 | 22.000 | 2.900 | 0,072 | 0,054 | 19.500 | 2.420 | 0,060 | 0,045 | 17.000 | 1.740 | 0,036 | 0,036 | 8.500 | 1.740 | 0,036 | 0,036 |
| 1,5 | 0,5 | 6 | 21.000 | 2.630 | 0,060 | 0,054 | 18.500 | 2.180 | 0,050 | 0,045 | 16.000 | 1.580 | 0,030 | 0,036 | 8.000 | 1.580 | 0,030 | 0,036 |
| 1,5 | 0,5 | 8 | 20.000 | 2.250 | 0,060 | 0,054 | 17.500 | 1.880 | 0,050 | 0,045 | 15.500 | 1.370 | 0,030 | 0,036 | 7.750 | 1.370 | 0,030 | 0,036 |
| 1,5 | 0,5 | 10 | 17.500 | 1.880 | 0,054 | 0,043 | 15.500 | 1.580 | 0,045 | 0,036 | 13.500 | 1.140 | 0,027 | 0,029 | 6.750 | 1.140 | 0,027 | 0,029 |
| 1,5 | 0,5 | 12 | 16.500 | 1.650 | 0,036 | 0,037 | 14.500 | 1.370 | 0,030 | 0,031 | 12.500 | 1.010 | 0,018 | 0,025 | 6.250 | 1.010 | 0,018 | 0,025 |
| 1,5 | 0,5 | 16 | 11.000 | 960 | 0,024 | 0,026 | 10.000 | 800 | 0,020 | 0,022 | 8.650 | 590 | 0,012 | 0,018 | 4.325 | 590 | 0,012 | 0,018 |
| 2 | 0,05 | 4 | 18.000 | 3.300 | 0,010 | 0,072 | 17.500 | 2.900 | 0,008 | 0,060 | 16.500 | 2.450 | 0,005 | 0,048 | 8.250 | 2.450 | 0,005 | 0,048 |
| 2 | 0,05 | 6 | 17.500 | 3.100 | 0,010 | 0,072 | 17.000 | 2.700 | 0,008 | 0,060 | 16.000 | 2.300 | 0,005 | 0,048 | 8.000 | 2.300 | 0,005 | 0,048 |
| 2 | 0,05 | 8 | 16.500 | 2.780 | 0,010 | 0,072 | 16.000 | 2.400 | 0,008 | 0,060 | 15.000 | 2.030 | 0,005 | 0,048 | 7.500 | 2.030 | 0,005 | 0,048 |
| 2 | 0,05 | 10 | 15.500 | 2.480 | 0,010 | 0,072 | 15.500 | 2.180 | 0,008 | 0,060 | 14.500 | 1.800 | 0,005 | 0,048 | 7.250 | 1.800 | 0,005 | 0,048 |
| 2 | 0,05 | 12 | 14.500 | 2.250 | 0,010 | 0,065 | 14.500 | 1.950 | 0,008 | 0,054 | 13.500 | 1.580 | 0,005 | 0,043 | 6.750 | 1.580 | 0,005 | 0,043 |
| 2 | 0,05 | 16 | 13.000 | 1.730 | 0,006 | 0,050 | 12.500 | 1.500 | 0,005 | 0,042 | 12.000 | 1.250 | 0,003 | 0,034 | 6.000 | 1.250 | 0,003 | 0,034 |
| 2 | 0,05 | 20 | 12.000 | 1.410 | 0,004 | 0,036 | 11.500 | 1.230 | 0,003 | 0,030 | 11.000 | 1.020 | 0,002 | 0,024 | 5.500 | 1.020 | 0,002 | 0,024 |
| 2 | 0,1 | 4 | 18.000 | 3.300 | 0,018 | 0,072 | 17.500 | 2.900 | 0,015 | 0,060 | 16.500 | 2.450 | 0,009 | 0,048 | 8.250 | 2.450 | 0,009 | 0,048 |
| 2 | 0,1 | 6 | 17.500 | 3.100 | 0,018 | 0,072 | 17.000 | 2.700 | 0,015 | 0,060 | 16.000 | 2.300 | 0,009 | 0,048 | 8.000 | 2.300 | 0,009 | 0,048 |
| 2 | 0,1 | 8 | 16.500 | 2.780 | 0,018 | 0,072 | 16.000 | 2.400 | 0,015 | 0,060 | 15.000 | 2.030 | 0,009 | 0,048 | 7.500 | 2.030 | 0,009 | 0,048 |
| 2 | 0,1 | 10 | 15.500 | 2.480 | 0,018 | 0,072 | 15.500 | 2.180 | 0,015 | 0,060 | 14.500 | 1.800 | 0,009 | 0,048 | 7.250 | 1.800 | 0,009 | 0,048 |
| 2 | 0,1 | 12 | 14.500 | 2.250 | 0,018 | 0,065 | 14.500 | 1.950 | 0,015 | 0,054 | 13.500 | 1.580 | 0,009 | 0,043 | 6.750 | 1.580 | 0,009 | 0,043 |
| 2 | 0,1 | 16 | 13.000 | 1.730 | 0,011 | 0,050 | 12.500 | 1.500 | 0,009 | 0,042 | 12.000 | 1.250 | 0,005 | 0,034 | 6.000 | 1.250 | 0,005 | 0,034 |
| 2 | 0,1 | 20 | 12.000 | 1.410 | 0,007 | 0,036 | 11.500 | 1.230 | 0,006 | 0,030 | 11.000 | 1.020 | 0,004 | 0,024 | 5.500 | 1.020 | 0,004 | 0,024 |
| 2 | 0,1 | 25 | 11.000 | 1.200 | 0,005 | 0,032 | 11.000 | 1.050 | 0,004 | 0,027 | 10.000 | 870 | 0,002 | 0,022 | 5.000 | 870 | 0,002 | 0,022 |
| 2 | 0,2 | 4 | 18.000 | 3.300 | 0,024 | 0,072 | 17.500 | 2.900 | 0,020 | 0,060 | 16.500 | 2.450 | 0,012 | 0,048 | 8.250 | 2.450 | 0,012 | 0,048 |
| 2 | 0,2 | 6 | 17.500 | 3.100 | 0,024 | 0,072 | 17.000 | 2.700 | 0,020 | 0,060 | 16.000 | 2.300 | 0,012 | 0,048 | 8.000 | 2.300 | 0,012 | 0,048 |
| 2 | 0,2 | 8 | 16.500 | 2.780 | 0,024 | 0,072 | 16.000 | 2.400 | 0,020 | 0,060 | 15.000 | 2.030 | 0,012 | 0,048 | 7.500 | 2.030 | 0,012 | 0,048 |
| 2 | 0,2 | 10 | 15.500 | 2.480 | 0,024 | 0,072 | 15.500 | 2.180 | 0,020 | 0,060 | 14.500 | 1.800 | 0,012 | 0,048 | 7.250 | 1.800 | 0,012 | 0,048 |
| 2 | 0,2 | 12 | 14.500 | 2.250 | 0,024 | 0,065 | 14.500 | 1.950 | 0,020 | 0,054 | 13.500 | 1.580 | 0,012 | 0,043 | 6.750 | 1.580 | 0,012 | 0,043 |
| 2 | 0,2 | 16 | 13.000 | 1.730 | 0,014 | 0,050 | 12.500 | 1.500 | 0,012 | 0,042 | 12.000 | 1.250 | 0,007 | 0,034 | 6.000 | 1.250 | 0,007 | 0,034 |
| 2 | 0,2 | 20 | 12.000 | 1.410 | 0,010 | 0,036 | 11.500 | 1.230 | 0,008 | 0,030 | 11.000 | 1.020 | 0,005 | 0,024 | 5.500 | 1.020 | 0,005 | 0,024 |
| 2 | 0,2 | 25 | 11.000 | 1.200 | 0,007 | 0,032 | 11.000 | 1.050 | 0,006 | 0,027 | 10.000 | 870 | 0,004 | 0,022 | 5.000 | 870 | 0,004 | 0,022 |
| 2 | 0,3 | 4 | 18.000 | 3.300 | 0,036 | 0,072 | 17.500 | 2.900 | 0,030 | 0,060 | 16.500 | 2.450 | 0,018 | 0,048 | 8.250 | 2.450 | 0,018 | 0,048 |
| 2 | 0,3 | 6 | 17.500 | 3.100 | 0,036 | 0,072 | 17.000 | 2.700 | 0,030 | 0,060 | 16.000 | 2.300 | 0,018 | 0,048 | 8.000 | 2.300 | 0,018 | 0,048 |
| 2 | 0,3 | 8 | 16.500 | 2.780 | 0,036 | 0,072 | 16.000 | 2.400 | 0,030 | 0,060 | 15.000 | 2.030 | 0,018 | 0,048 | 7.500 | 2.030 | 0,018 | 0,048 |
| 2 | 0,3 | 10 | 15.500 | 2.480 | 0,036 | 0,072 | 15.500 | 2.180 | 0,030 | 0,060 | 14.500 | 1.800 | 0,018 | 0,048 | 7.250 | 1.800 | 0,018 | 0,048 |
| 2 | 0,3 | 12 | 14.500 | 2.250 | 0,036 | 0,065 | 14.500 | 1.950 | 0,030 | 0,054 | 13.500 | 1.580 | 0,018 | 0,043 | 6.750 | 1.580 | 0,018 | 0,043 |
| 2 | 0,3 | 16 | 13.000 | 1.730 | 0,022 | 0,050 | 12.500 | 1.500 | 0,018 | 0,042 | 12.000 | 1.250 | 0,011 | 0,034 | 6.000 | 1.250 | 0,011 | 0,034 |
| 2 | 0,3 | 20 | 12.000 | 1.410 | 0,014 | 0,036 | 11.500 | 1.230 | 0,012 | 0,030 | 11.000 | 1.020 | 0,007 | 0,024 | 5.500 | 1.020 | 0,007 | 0,024 |
| 2 | 0,5 | 4 | 18.000 | 3.300 | 0,060 | 0,072 | 17.500 | 2.900 | 0,050 | 0,060 | 16.500 | 2.450 | 0,030 | 0,048 | 8.250 | 2.450 | 0,030 | 0,048 |
| 2 | 0,5 | 6 | 17.500 | 3.100 | 0,060 | 0,072 | 17.000 | 2.700 | 0,050 | 0,060 | 16.000 | 2.300 | 0,030 | 0,048 | 8.000 | 2.300 | 0,030 | 0,048 |
| 2 | 0,5 | 8 | 16.500 | 2.780 | 0,060 | 0,072 | 16.000 | 2.400 | 0,050 | 0,060 | 15.000 | 2.030 | 0,030 | 0,048 | 7.500 | 2.030 | 0,030 | 0,048 |
| 2 | 0,5 | 10 | 15.500 | 2.480 | 0,060 | 0,072 | 15.500 | 2.180 | 0,050 | 0,060 | 14.500 | 1.800 | 0,030 | 0,048 | 7.250 | 1.800 | 0,030 | 0,048 |
| 2 | 0,5 | 12 | 14.500 | 2.250 | 0,060 | 0,065 | 14.500 | 1.950 | 0,050 | 0,054 | 13.500 | 1.580 | 0,030 | 0,043 | 6.750 | 1.580 | 0,030 | 0,043 |
| 2 | 0,5 | 16 | 13.000 | 1.730 | 0,036 | 0,050 | 12.500 | 1.500 | 0,030 | 0,042 | 12.000 | 1.250 | 0,018 | 0,034 | 6.000 | 1.250 | 0,018 | 0,034 |
| 2 | 0,5 | 20 | 12.000 | 1.410 | 0,024 | 0,036 | 11.500 | 1.230 | 0,020 | 0,030 | 11.000 | 1.020 | 0,012 | 0,024 | 5.500 | 1.020 | 0,012 | 0,024 |
| 2 | 0,5 | 25 | 11.000 | 1.200 | 0,018 | 0,032 | 11.000 | 1.050 | 0,015 | 0,027 | 10.000 | 870 | 0,009 | 0,022 | 5.000 | 870 | 0,009 | 0,022 |
| 2,5 | 0,1 | 10 | 13.000 | 2.780 | 0,012 | 0,090 | 13.000 | 2.100 | 0,010 | 0,075 | 12.000 | 2.030 | 0,006 | 0,060 | 6.000 | 2.030 | 0,006 | 0,060 |
| 2,5 | 0,1 | 20 | 10.000 | 1.730 | 0,007 | 0,062 | 10.000 | 1.340 | 0,006 | 0,052 | 9.450 | 1.250 | 0,004 | 0,042 | 4.725 | 1.250 | 0,004 | 0,042 |
| 2,5 | 0,1 | 30 | 8.500 | 1.400 | 0,004 | 0,036 | 8.500 | 1.080 | 0,003 | 0,030 | 8.000 | 1.000 | 0,002 | 0,024 | 4.000 | 1.000 | 0,002 | 0,024 |
| 2,5 | 0,2 | 10 | 13.000 | 2.780 | 0,024 | 0,090 | 13.000 | 2.100 | 0,020 | 0,075 | 12.000 | 2.030 | 0,012 | 0,060 | 6.000 | 2.030 | 0,012 | 0,060 |
| 2,5 | 0,2 | 20 | 10.000 | 1.730 | 0,014 | 0,062 | 10.000 | 1.340 | 0,012 | 0,052 | 9.450 | 1.250 | 0,007 | 0,042 | 4.725 | 1.250 | 0,007 | 0,042 |
| 2,5 | 0,2 | 30 | 8.500 | 1.400 | 0,007 | 0,036 | 8.500 | 1.080 | 0,006 | 0,030 | 8.000 | 1.000 | 0,004 | 0,024 | 4.000 | 1.000 | 0,004 | 0,024 |
| 2,5 | 0,3 | 10 | 13.000 | 2.780 | 0,036 | 0,090 | 13.000 | 2.100 | 0,030 | 0,075 | 12.000 | 2.030 | 0,018 | 0,060 | 6.000 | 2.030 | 0,018 | 0,060 |
| 2,5 | 0,3 | 20 | 10.000 | 1.730 | 0,022 | 0,062 | 10.000 | 1.340 | 0,018 | 0,052 | 9.450 | 1.250 | 0,011 | 0,042 | 4.725 | 1.250 | 0,011 | 0,042 |
| 2,5 | 0,3 | 30 | 8.500 | 1.400 | 0,011 | 0,036 | 8.500 | 1.080 | 0,009 | 0,030 | 8.000 | 1.000 | 0,005 | 0,024 | 4.000 | 1.000 | 0,005 | 0,024 |
| 2,5 | 0,5 | 10 | 13.000 | 2.780 | 0,060 | 0,090 | 13.000 | 2.100 | 0,050 | 0,075 | 12.000 | 2.030 | 0,030 | 0,060 | 6.000 | 2.030 | 0,030 | 0,060 |
| 2,5 | 0,5 | 20 | 10.000 | 1.730 | 0,036 | 0,062 | 10.000 | 1.340 | 0,030 | 0,052 | 9.450 | 1.250 | 0,018 | 0,042 | 4.725 | 1.250 | 0,018 | 0,042 |
| 2,5 | 0,5 | 30 | 8.500 | 1.400 | 0,018 | 0,036 | 8.500 | 1.080 | 0,015 | 0,030 | 8.000 | 1.000 | 0,009 | 0,024 | 4.000 | 1.000 | 0,009 | 0,024 |
| 3 | 0,1 | 4 | 14.000 | 4.100 | 0,012 | 0,108 | 13.000 | 2.850 | 0,010 | 0,090 | 12.000 | 2.250 | 0,006 | 0,072 | 6.000 | 2.250 | 0,006 | 0,072 |
| 3 | 0,1 | 6 | 12.500 | 3.600 | 0,012 | 0,108 | 11.500 | 2.500 | 0,010 | 0,090 | 10.500 | 1.950 | 0,006 | 0,072 | 5.250 | 1.950 | 0,006 | 0,072 |
| 3 | 0,1 | 8 | 12.000 | 3.000 | 0,012 | 0,096 | 11.000 | 2.100 | 0,010 | 0,080 | 10.000 | 1.650 | 0,006 | 0,064 | 5.000 | 1.650 | 0,006 | 0,064 |
| 3 | 0,1 | 10 | 12.000 | 3.000 | 0,012 | 0,096 | 11.000 | 2.100 | 0,010 | 0,080 | 10.000 | 1.650 | 0,006 | 0,064 | 5.000 | 1.650 | 0,006 | 0,064 |
| 3 | 0,1 | 12 | 12.000 | 3.000 | 0,012 | 0,096 | 11.000 | 2.100 | 0,010 | 0,080 | 10.000 | 1.650 | 0,006 | 0,064 | 5.000 | 1.650 | 0,006 | 0,064 |
| 3 | 0,1 | 16 | 10.500 | 2.400 | 0,012 | 0,096 | 9.600 | 1.730 | 0,010 | 0,080 | 9.000 | 1.320 | 0,006 | 0,064 | 4.500 | 1.320 | 0,006 | 0,064 |
| 3 | 0,1 | 20 | 9.300 | 2.030 | 0,012 | 0,077 | 8.400 | 1.410 | 0,010 | 0,064 | 7.850 | 1.100 | 0,006 | 0,051 | 3.925 | 1.100 | 0,006 | 0,051 |
| 3 | 0,1 | 25 | 8.900 | 1.650 | 0,007 | 0,058 | 8.050 | 1.200 | 0,006 | 0,048 | 7.550 | 920 | 0,004 | 0,038 | 3.775 | 920 | 0,004 | 0,038 |
| 3 | 0,2 | 4 | 14.000 | 4.100 | 0,024 | 0,108 | 13.000 | 2.850 | 0,020 | 0,090 | 12.000 | 2.250 | 0,012 | 0,072 | 6.000 | 2.250 | 0,012 | 0,072 |
| 3 | 0,2 | 6 | 12.500 | 3.600 | 0,024 | 0,108 | 11.500 | 2.500 | 0,020 | 0,090 | 10.500 | 1.950 | 0,012 | 0,072 | 5.250 | 1.950 | 0,012 | 0,072 |
| 3 | 0,2 | 8 | 12.000 | 3.000 | 0,024 | 0,096 | 11.000 | 2.100 | 0,020 | 0,080 | 10.000 | 1.650 | 0,012 | 0,064 | 5.000 | 1.650 | 0,012 | 0,064 |
| 3 | 0,2 | 10 | 12.000 | 3.000 | 0,024 | 0,096 | 11.000 | 2.100 | 0,020 | 0,080 | 10.000 | 1.650 | 0,012 | 0,064 | 5.000 | 1.650 | 0,012 | 0,064 |
| 3 | 0,2 | 12 | 12.000 | 3.000 | 0,024 | 0,096 | 11.000 | 2.100 | 0,020 | 0,080 | 10.000 | 1.650 | 0,012 | 0,064 | 5.000 | 1.650 | 0,012 | 0,064 |
| 3 | 0,2 | 16 | 10.500 | 2.400 | 0,024 | 0,096 | 9.600 | 1.730 | 0,020 | 0,080 | 9.000 | 1.320 | 0,012 | 0,064 | 4.500 | 1.320 | 0,012 | 0,064 |

# AE-CPR4-H

## Side Milling (Contour Line Finish Milling)

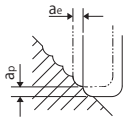
| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 3 | 0,2 | 20 | 9.300 | 2.030 | 0,024 | 0,077 | 8.400 | 1.410 | 0,020 | 0,064 | 7.850 | 1.100 | 0,012 | 0,051 | 3.925 | 1.100 | 0,012 | 0,051 |
| 3 | 0,2 | 25 | 8.900 | 1.650 | 0,014 | 0,058 | 8.050 | 1.200 | 0,012 | 0,048 | 7.550 | 920 | 0,007 | 0,038 | 3.775 | 920 | 0,007 | 0,038 |
| 3 | 0,2 | 30 | 8.600 | 1.500 | 0,010 | 0,048 | 7.800 | 1.080 | 0,008 | 0,040 | 7.300 | 840 | 0,005 | 0,032 | 3.650 | 840 | 0,005 | 0,032 |
| 3 | 0,2 | 35 | 7.950 | 1.320 | 0,007 | 0,043 | 7.200 | 950 | 0,006 | 0,036 | 6.750 | 720 | 0,004 | 0,029 | 3.375 | 720 | 0,004 | 0,029 |
| 3 | 0,3 | 4 | 14.000 | 4.100 | 0,036 | 0,108 | 13.000 | 2.850 | 0,030 | 0,090 | 12.000 | 2.250 | 0,018 | 0,072 | 6.000 | 2.250 | 0,018 | 0,072 |
| 3 | 0,3 | 6 | 12.500 | 3.600 | 0,036 | 0,108 | 11.500 | 2.500 | 0,030 | 0,090 | 10.500 | 1.950 | 0,018 | 0,072 | 5.250 | 1.950 | 0,018 | 0,072 |
| 3 | 0,3 | 8 | 12.000 | 3.000 | 0,036 | 0,096 | 11.000 | 2.100 | 0,030 | 0,080 | 10.000 | 1.650 | 0,018 | 0,064 | 5.000 | 1.650 | 0,018 | 0,064 |
| 3 | 0,3 | 10 | 12.000 | 3.000 | 0,036 | 0,096 | 11.000 | 2.100 | 0,030 | 0,080 | 10.000 | 1.650 | 0,018 | 0,064 | 5.000 | 1.650 | 0,018 | 0,064 |
| 3 | 0,3 | 12 | 12.000 | 3.000 | 0,036 | 0,096 | 11.000 | 2.100 | 0,030 | 0,080 | 10.000 | 1.650 | 0,018 | 0,064 | 5.000 | 1.650 | 0,018 | 0,064 |
| 3 | 0,3 | 16 | 10.500 | 2.400 | 0,036 | 0,096 | 9.600 | 1.730 | 0,030 | 0,080 | 9.000 | 1.320 | 0,018 | 0,064 | 4.500 | 1.320 | 0,018 | 0,064 |
| 3 | 0,3 | 20 | 9.300 | 2.030 | 0,036 | 0,077 | 8.400 | 1.410 | 0,030 | 0,064 | 7.850 | 1.100 | 0,018 | 0,051 | 3.925 | 1.100 | 0,018 | 0,051 |
| 3 | 0,3 | 25 | 8.900 | 1.650 | 0,022 | 0,058 | 8.050 | 1.200 | 0,018 | 0,048 | 7.550 | 920 | 0,011 | 0,038 | 3.775 | 920 | 0,011 | 0,038 |
| 3 | 0,3 | 30 | 8.600 | 1.500 | 0,014 | 0,048 | 7.800 | 1.080 | 0,012 | 0,040 | 7.300 | 840 | 0,007 | 0,032 | 3.650 | 840 | 0,007 | 0,032 |
| 3 | 0,3 | 35 | 7.950 | 1.320 | 0,011 | 0,043 | 7.200 | 950 | 0,009 | 0,036 | 6.750 | 720 | 0,005 | 0,029 | 3.375 | 720 | 0,005 | 0,029 |
| 3 | 0,5 | 4 | 14.000 | 4.100 | 0,060 | 0,108 | 13.000 | 2.850 | 0,050 | 0,090 | 12.000 | 2.250 | 0,030 | 0,072 | 6.000 | 2.250 | 0,030 | 0,072 |
| 3 | 0,5 | 6 | 12.500 | 3.600 | 0,060 | 0,108 | 11.500 | 2.500 | 0,050 | 0,090 | 10.500 | 1.950 | 0,030 | 0,072 | 5.250 | 1.950 | 0,030 | 0,072 |
| 3 | 0,5 | 8 | 12.000 | 3.000 | 0,060 | 0,096 | 11.000 | 2.100 | 0,050 | 0,080 | 10.000 | 1.650 | 0,030 | 0,064 | 5.000 | 1.650 | 0,030 | 0,064 |
| 3 | 0,5 | 10 | 12.000 | 3.000 | 0,060 | 0,096 | 11.000 | 2.100 | 0,050 | 0,080 | 10.000 | 1.650 | 0,030 | 0,064 | 5.000 | 1.650 | 0,030 | 0,064 |
| 3 | 0,5 | 12 | 12.000 | 3.000 | 0,060 | 0,096 | 11.000 | 2.100 | 0,050 | 0,080 | 10.000 | 1.650 | 0,030 | 0,064 | 5.000 | 1.650 | 0,030 | 0,064 |
| 3 | 0,5 | 16 | 10.500 | 2.400 | 0,060 | 0,096 | 9.600 | 1.730 | 0,050 | 0,080 | 9.000 | 1.320 | 0,030 | 0,064 | 4.500 | 1.320 | 0,030 | 0,064 |
| 3 | 0,5 | 20 | 9.300 | 2.030 | 0,060 | 0,077 | 8.400 | 1.410 | 0,050 | 0,064 | 7.850 | 1.100 | 0,030 | 0,051 | 3.925 | 1.100 | 0,030 | 0,051 |
| 3 | 0,5 | 25 | 8.900 | 1.650 | 0,036 | 0,058 | 8.050 | 1.200 | 0,030 | 0,048 | 7.550 | 920 | 0,018 | 0,038 | 3.775 | 920 | 0,018 | 0,038 |
| 3 | 0,5 | 30 | 8.600 | 1.500 | 0,024 | 0,048 | 7.800 | 1.080 | 0,020 | 0,040 | 7.300 | 840 | 0,012 | 0,032 | 3.650 | 840 | 0,012 | 0,032 |
| 3 | 0,5 | 35 | 7.950 | 1.320 | 0,018 | 0,043 | 7.200 | 950 | 0,015 | 0,036 | 6.750 | 720 | 0,009 | 0,029 | 3.375 | 720 | 0,009 | 0,029 |
| 4 | 0,1 | 8 | 9.500 | 3.100 | 0,012 | 0,144 | 8.650 | 2.550 | 0,010 | 0,120 | 7.800 | 1.800 | 0,006 | 0,096 | 3.900 | 1.800 | 0,006 | 0,096 |
| 4 | 0,1 | 12 | 9.500 | 3.100 | 0,012 | 0,144 | 8.650 | 2.550 | 0,010 | 0,120 | 7.800 | 1.800 | 0,006 | 0,096 | 3.900 | 1.800 | 0,006 | 0,096 |
| 4 | 0,1 | 16 | 7.900 | 2.500 | 0,012 | 0,096 | 7.150 | 2.050 | 0,010 | 0,080 | 6.450 | 1.450 | 0,006 | 0,064 | 3.225 | 1.450 | 0,006 | 0,064 |
| 4 | 0,1 | 20 | 7.450 | 2.400 | 0,012 | 0,096 | 6.750 | 1.950 | 0,010 | 0,080 | 6.100 | 1.350 | 0,006 | 0,064 | 3.050 | 1.350 | 0,006 | 0,064 |
| 4 | 0,1 | 25 | 6.550 | 2.000 | 0,012 | 0,086 | 5.950 | 1.650 | 0,010 | 0,072 | 5.350 | 1.150 | 0,006 | 0,058 | 2.675 | 1.150 | 0,006 | 0,058 |
| 4 | 0,1 | 30 | 6.100 | 1.650 | 0,008 | 0,067 | 5.550 | 1.350 | 0,007 | 0,056 | 5.000 | 960 | 0,004 | 0,045 | 2.500 | 960 | 0,004 | 0,045 |
| 4 | 0,2 | 8 | 9.500 | 3.100 | 0,024 | 0,144 | 8.650 | 2.550 | 0,020 | 0,120 | 7.800 | 1.800 | 0,012 | 0,096 | 3.900 | 1.800 | 0,012 | 0,096 |
| 4 | 0,2 | 12 | 9.500 | 3.100 | 0,024 | 0,144 | 8.650 | 2.550 | 0,020 | 0,120 | 7.800 | 1.800 | 0,012 | 0,096 | 3.900 | 1.800 | 0,012 | 0,096 |
| 4 | 0,2 | 16 | 7.900 | 2.500 | 0,024 | 0,096 | 7.150 | 2.050 | 0,020 | 0,080 | 6.450 | 1.450 | 0,012 | 0,064 | 3.225 | 1.450 | 0,012 | 0,064 |
| 4 | 0,2 | 20 | 7.450 | 2.400 | 0,024 | 0,096 | 6.750 | 1.950 | 0,020 | 0,080 | 6.100 | 1.350 | 0,012 | 0,064 | 3.050 | 1.350 | 0,012 | 0,064 |
| 4 | 0,2 | 25 | 6.550 | 2.000 | 0,024 | 0,086 | 5.950 | 1.650 | 0,020 | 0,072 | 5.350 | 1.150 | 0,012 | 0,058 | 2.675 | 1.150 | 0,012 | 0,058 |
| 4 | 0,2 | 30 | 6.100 | 1.650 | 0,017 | 0,067 | 5.550 | 1.350 | 0,014 | 0,056 | 5.000 | 960 | 0,008 | 0,045 | 2.500 | 960 | 0,008 | 0,045 |
| 4 | 0,2 | 40 | 5.700 | 1.300 | 0,010 | 0,048 | 5.150 | 1.050 | 0,008 | 0,040 | 4.650 | 730 | 0,005 | 0,032 | 2.325 | 730 | 0,005 | 0,032 |
| 4 | 0,3 | 8 | 9.500 | 3.100 | 0,036 | 0,144 | 8.650 | 2.550 | 0,030 | 0,120 | 7.800 | 1.800 | 0,018 | 0,096 | 3.900 | 1.800 | 0,018 | 0,096 |
| 4 | 0,3 | 12 | 9.500 | 3.100 | 0,036 | 0,144 | 8.650 | 2.550 | 0,030 | 0,120 | 7.800 | 1.800 | 0,018 | 0,096 | 3.900 | 1.800 | 0,018 | 0,096 |
| 4 | 0,3 | 16 | 7.900 | 2.500 | 0,036 | 0,096 | 7.150 | 2.050 | 0,030 | 0,080 | 6.450 | 1.450 | 0,018 | 0,064 | 3.225 | 1.450 | 0,018 | 0,064 |
| 4 | 0,3 | 20 | 7.450 | 2.400 | 0,036 | 0,096 | 6.750 | 1.950 | 0,030 | 0,080 | 6.100 | 1.350 | 0,018 | 0,064 | 3.050 | 1.350 | 0,018 | 0,064 |
| 4 | 0,3 | 25 | 6.550 | 2.000 | 0,036 | 0,086 | 5.950 | 1.650 | 0,030 | 0,072 | 5.350 | 1.150 | 0,018 | 0,058 | 2.675 | 1.150 | 0,018 | 0,058 |
| 4 | 0,3 | 30 | 6.100 | 1.650 | 0,025 | 0,067 | 5.550 | 1.350 | 0,021 | 0,056 | 5.000 | 960 | 0,013 | 0,045 | 2.500 | 960 | 0,013 | 0,045 |
| 4 | 0,3 | 40 | 5.700 | 1.300 | 0,014 | 0,048 | 5.150 | 1.050 | 0,012 | 0,040 | 4.650 | 730 | 0,007 | 0,032 | 2.325 | 730 | 0,007 | 0,032 |
| 4 | 0,5 | 8 | 9.500 | 3.100 | 0,060 | 0,144 | 8.650 | 2.550 | 0,050 | 0,120 | 7.800 | 1.800 | 0,030 | 0,096 | 3.900 | 1.800 | 0,030 | 0,096 |
| 4 | 0,5 | 12 | 9.500 | 3.100 | 0,060 | 0,144 | 8.650 | 2.550 | 0,050 | 0,120 | 7.800 | 1.800 | 0,030 | 0,096 | 3.900 | 1.800 | 0,030 | 0,096 |
| 4 | 0,5 | 16 | 7.900 | 2.500 | 0,060 | 0,096 | 7.150 | 2.050 | 0,050 | 0,080 | 6.450 | 1.450 | 0,030 | 0,064 | 3.225 | 1.450 | 0,030 | 0,064 |
| 4 | 0,5 | 20 | 7.450 | 2.400 | 0,060 | 0,096 | 6.750 | 1.950 | 0,050 | 0,080 | 6.100 | 1.350 | 0,030 | 0,064 | 3.050 | 1.350 | 0,030 | 0,064 |
| 4 | 0,5 | 25 | 6.550 | 2.000 | 0,060 | 0,086 | 5.950 | 1.650 | 0,050 | 0,072 | 5.350 | 1.150 | 0,030 | 0,058 | 2.675 | 1.150 | 0,030 | 0,058 |
| 4 | 0,5 | 30 | 6.100 | 1.650 | 0,042 | 0,067 | 5.550 | 1.350 | 0,035 | 0,056 | 5.000 | 960 | 0,021 | 0,045 | 2.500 | 960 | 0,021 | 0,045 |
| 4 | 0,5 | 40 | 5.700 | 1.300 | 0,024 | 0,048 | 5.150 | 1.050 | 0,020 | 0,040 | 4.650 | 730 | 0,012 | 0,032 | 2.325 | 730 | 0,012 | 0,032 |
| 4 | 0,5 | 50 | 5.000 | 960 | 0,018 | 0,043 | 4.550 | 790 | 0,015 | 0,036 | 4.100 | 550 | 0,009 | 0,029 | 2.050 | 550 | 0,009 | 0,029 |
| 4 | 1 | 8 | 9.500 | 3.100 | 0,096 | 0,144 | 8.650 | 2.550 | 0,080 | 0,120 | 7.800 | 1.800 | 0,048 | 0,096 | 3.900 | 1.800 | 0,048 | 0,096 |
| 4 | 1 | 12 | 9.500 | 3.100 | 0,096 | 0,144 | 8.650 | 2.550 | 0,080 | 0,120 | 7.800 | 1.800 | 0,048 | 0,096 | 3.900 | 1.800 | 0,048 | 0,096 |
| 4 | 1 | 16 | 7.900 | 2.500 | 0,096 | 0,096 | 7.150 | 2.050 | 0,080 | 0,080 | 6.450 | 1.450 | 0,048 | 0,064 | 3.225 | 1.450 | 0,048 | 0,064 |
| 4 | 1 | 20 | 7.450 | 2.400 | 0,096 | 0,096 | 6.750 | 1.950 | 0,080 | 0,080 | 6.100 | 1.350 | 0,048 | 0,064 | 3.050 | 1.350 | 0,048 | 0,064 |
| 4 | 1 | 25 | 6.550 | 2.000 | 0,096 | 0,086 | 5.950 | 1.650 | 0,080 | 0,072 | 5.350 | 1.150 | 0,048 | 0,058 | 2.675 | 1.150 | 0,048 | 0,058 |
| 4 | 1 | 30 | 6.100 | 1.650 | 0,067 | 0,067 | 5.550 | 1.350 | 0,056 | 0,056 | 5.000 | 960 | 0,034 | 0,045 | 2.500 | 960 | 0,034 | 0,045 |
| 4 | 1 | 40 | 5.700 | 1.300 | 0,038 | 0,048 | 5.150 | 1.050 | 0,032 | 0,040 | 4.650 | 730 | 0,019 | 0,032 | 2.325 | 730 | 0,019 | 0,032 |
| 6 | 0,1 | 12 | 7.950 | 3.550 | 0,012 | 0,216 | 7.200 | 2.900 | 0,010 | 0,180 | 6.550 | 2.050 | 0,006 | 0,144 | 3.275 | 2.050 | 0,006 | 0,144 |
| 6 | 0,1 | 18 | 6.750 | 2.950 | 0,012 | 0,144 | 6.100 | 2.400 | 0,010 | 0,120 | 5.550 | 1.700 | 0,006 | 0,096 | 2.775 | 1.700 | 0,006 | 0,096 |
| 6 | 0,1 | 24 | 6.150 | 2.450 | 0,012 | 0,144 | 5.550 | 2.000 | 0,010 | 0,120 | 5.050 | 1.400 | 0,006 | 0,096 | 2.525 | 1.400 | 0,006 | 0,096 |
| 6 | 0,1 | 30 | 5.300 | 2.150 | 0,010 | 0,108 | 4.800 | 1.750 | 0,008 | 0,090 | 4.350 | 1.250 | 0,005 | 0,072 | 2.175 | 1.250 | 0,005 | 0,072 |
| 6 | 0,1 | 48 | 3.100 | 1.250 | 0,006 | 0,072 | 2.800 | 1.000 | 0,005 | 0,060 | 2.550 | 700 | 0,003 | 0,048 | 1.275 | 700 | 0,003 | 0,048 |
| 6 | 0,2 | 12 | 7.950 | 3.550 | 0,024 | 0,216 | 7.200 | 2.900 | 0,020 | 0,180 | 6.550 | 2.050 | 0,012 | 0,144 | 3.275 | 2.050 | 0,012 | 0,144 |
| 6 | 0,2 | 18 | 6.750 | 2.950 | 0,024 | 0,144 | 6.100 | 2.400 | 0,020 | 0,120 | 5.550 | 1.700 | 0,012 | 0,096 | 2.775 | 1.700 | 0,012 | 0,096 |
| 6 | 0,2 | 24 | 6.150 | 2.450 | 0,024 | 0,144 | 5.550 | 2.000 | 0,020 | 0,120 | 5.050 | 1.400 | 0,012 | 0,096 | 2.525 | 1.400 | 0,012 | 0,096 |
| 6 | 0,2 | 30 | 5.300 | 2.150 | 0,019 | 0,108 | 4.800 | 1.750 | 0,016 | 0,090 | 4.350 | 1.250 | 0,010 | 0,072 | 2.175 | 1.250 | 0,010 | 0,072 |
| 6 | 0,2 | 48 | 3.100 | 1.250 | 0,012 | 0,072 | 2.800 | 1.000 | 0,010 | 0,060 | 2.550 | 700 | 0,006 | 0,048 | 1.275 | 700 | 0,006 | 0,048 |
| 6 | 0,3 | 12 | 7.950 | 3.550 | 0,036 | 0,216 | 7.200 | 2.900 | 0,030 | 0,180 | 6.550 | 2.050 | 0,018 | 0,144 | 3.275 | 2.050 | 0,018 | 0,144 |
| 6 | 0,3 | 18 | 6.750 | 2.950 | 0,036 | 0,144 | 6.100 | 2.400 | 0,030 | 0,120 | 5.550 | 1.700 | 0,018 | 0,096 | 2.775 | 1.700 | 0,018 | 0,096 |
| 6 | 0,3 | 24 | 6.150 | 2.450 | 0,036 | 0,144 | 5.550 | 2.000 | 0,030 | 0,120 | 5.050 | 1.400 | 0,018 | 0,096 | 2.525 | 1.400 | 0,018 | 0,096 |
| 6 | 0,3 | 30 | 5.300 | 2.150 | 0,029 | 0,108 | 4.800 | 1.750 | 0,024 | 0,090 | 4.350 | 1.250 | 0,014 | 0,072 | 2.175 | 1.250 | 0,014 | 0,072 |
| 6 | 0,3 | 48 | 3.100 | 1.250 | 0,018 | 0,072 | 2.800 | 1.000 | 0,015 | 0,060 | 2.550 | 700 | 0,009 | 0,048 | 1.275 | 700 | 0,009 | 0,048 |
| 6 | 0,5 | 12 | 7.950 | 3.550 | 0,054 | 0,216 | 7.200 | 2.900 | 0,045 | 0,180 | 6.550 | 2.050 | 0,027 | 0,144 | 3.275 | 2.050 | 0,027 | 0,144 |
| 6 | 0,5 | 18 | 6.750 | 2.950 | 0,054 | 0,144 | 6.100 | 2.400 | 0,045 | 0,120 | 5.550 | 1.700 | 0,027 | 0,096 | 2.775 | 1.700 | 0,027 | 0,096 |

# AE-CPR4-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel PX5 • SKD61 • NAK80• HPM1 | | | | Hardened Steel STAVAX • HPM38 | | | | Hardened Steel | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 50HRC | | | | 50 ~ 58HRC | | | | 58 ~ 65HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 6 | 0,5 | 24 | 6.150 | 2.450 | 0,054 | 0,144 | 5.550 | 2.000 | 0,045 | 0,120 | 5.050 | 1.400 | 0,027 | 0,096 | 2.525 | 1.400 | 0,027 | 0,096 |
| 6 | 0,5 | 30 | 5.300 | 2.150 | 0,043 | 0,108 | 4.800 | 1.750 | 0,036 | 0,090 | 4.350 | 1.250 | 0,022 | 0,072 | 2.175 | 1.250 | 0,022 | 0,072 |
| 6 | 0,5 | 48 | 3.100 | 1.250 | 0,027 | 0,072 | 2.800 | 1.000 | 0,023 | 0,060 | 2.550 | 700 | 0,014 | 0,048 | 1.275 | 700 | 0,014 | 0,048 |
| 6 | 1 | 12 | 7.950 | 3.550 | 0,108 | 0,216 | 7.200 | 2.900 | 0,090 | 0,180 | 6.550 | 2.050 | 0,054 | 0,144 | 3.275 | 2.050 | 0,054 | 0,144 |
| 6 | 1 | 18 | 6.750 | 2.950 | 0,108 | 0,144 | 6.100 | 2.400 | 0,090 | 0,120 | 5.550 | 1.700 | 0,054 | 0,096 | 2.775 | 1.700 | 0,054 | 0,096 |
| 6 | 1 | 24 | 6.150 | 2.450 | 0,108 | 0,144 | 5.550 | 2.000 | 0,090 | 0,120 | 5.050 | 1.400 | 0,054 | 0,096 | 2.525 | 1.400 | 0,054 | 0,096 |
| 6 | 1 | 30 | 5.300 | 2.150 | 0,086 | 0,108 | 4.800 | 1.750 | 0,072 | 0,090 | 4.350 | 1.250 | 0,043 | 0,072 | 2.175 | 1.250 | 0,043 | 0,072 |
| 6 | 1 | 48 | 3.100 | 1.250 | 0,054 | 0,072 | 2.800 | 1.000 | 0,045 | 0,060 | 2.550 | 700 | 0,027 | 0,048 | 1.275 | 700 | 0,027 | 0,048 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation(side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. When using a tool with a diameter of θ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.
8. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.



# AE-CPR2-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 0,2 | 0,02 | 0,5 | 40.000 | 560 | 0,006 | 0,072 | 36.000 | 470 | 0,005 | 0,060 | 31.500 | 380 | 0,003 | 0,048 | 15.750 | 380 | 0,003 | 0,048 |
| 0,2 | 0,02 | 1 | 38.000 | 530 | 0,005 | 0,072 | 34.000 | 440 | 0,004 | 0,060 | 30.000 | 360 | 0,002 | 0,048 | 15.000 | 360 | 0,002 | 0,048 |
| 0,2 | 0,02 | 1,5 | 36.000 | 430 | 0,004 | 0,054 | 32.000 | 350 | 0,003 | 0,045 | 28.500 | 290 | 0,002 | 0,036 | 14.250 | 290 | 0,002 | 0,036 |
| 0,2 | 0,02 | 2 | 34.000 | 250 | 0,002 | 0,054 | 30.000 | 200 | 0,002 | 0,045 | 27.000 | 160 | 0,001 | 0,036 | 13.500 | 160 | 0,001 | 0,036 |
| 0,2 | 0,05 | 0,5 | 40.000 | 560 | 0,006 | 0,072 | 36.000 | 470 | 0,005 | 0,060 | 31.500 | 380 | 0,003 | 0,048 | 15.750 | 380 | 0,003 | 0,048 |
| 0,2 | 0,05 | 1 | 38.000 | 530 | 0,005 | 0,072 | 34.000 | 440 | 0,004 | 0,060 | 30.000 | 360 | 0,002 | 0,048 | 15.000 | 360 | 0,002 | 0,048 |
| 0,2 | 0,05 | 1,5 | 36.000 | 430 | 0,004 | 0,054 | 32.000 | 350 | 0,003 | 0,045 | 28.500 | 290 | 0,002 | 0,036 | 14.250 | 290 | 0,002 | 0,036 |
| 0,2 | 0,05 | 2 | 34.000 | 250 | 0,002 | 0,054 | 30.000 | 200 | 0,002 | 0,045 | 27.000 | 160 | 0,001 | 0,036 | 13.500 | 160 | 0,001 | 0,036 |
| 0,3 | 0,02 | 1 | 36.500 | 730 | 0,006 | 0,108 | 32.500 | 560 | 0,005 | 0,090 | 30.500 | 480 | 0,003 | 0,072 | 15.250 | 480 | 0,003 | 0,072 |
| 0,3 | 0,02 | 1,5 | 33.000 | 600 | 0,004 | 0,090 | 30.000 | 470 | 0,003 | 0,075 | 28.000 | 410 | 0,002 | 0,060 | 14.000 | 410 | 0,002 | 0,060 |
| 0,3 | 0,02 | 2 | 30.000 | 510 | 0,002 | 0,073 | 27.000 | 390 | 0,002 | 0,061 | 25.500 | 340 | 0,001 | 0,049 | 12.750 | 340 | 0,001 | 0,049 |
| 0,3 | 0,02 | 2,5 | 26.500 | 400 | 0,002 | 0,073 | 24.000 | 320 | 0,002 | 0,061 | 22.500 | w280 | 0,001 | 0,049 | 11.250 | 280 | 0,001 | 0,049 |
| 0,3 | 0,02 | 3 | 23.000 | 190 | 0,001 | 0,066 | 21.000 | 150 | 0,001 | 0,055 | 19.500 | 130 | 0,001 | 0,044 | 9.750 | 130 | 0,001 | 0,044 |
| 0,3 | 0,05 | 1 | 36.500 | 730 | 0,006 | 0,108 | 32.500 | 560 | 0,005 | 0,090 | 30.500 | 480 | 0,003 | 0,072 | 15.250 | 480 | 0,003 | 0,072 |
| 0,3 | 0,05 | 1,5 | 33.000 | 600 | 0,004 | 0,090 | 30.000 | 470 | 0,003 | 0,075 | 28.000 | 410 | 0,002 | 0,060 | 14.000 | 410 | 0,002 | 0,060 |
| 0,3 | 0,05 | 2 | 30.000 | 510 | 0,002 | 0,073 | 27.000 | 390 | 0,002 | 0,061 | 25.500 | 340 | 0,001 | 0,049 | 12.750 | 340 | 0,001 | 0,049 |
| 0,3 | 0,05 | 2,5 | 26.500 | 400 | 0,002 | 0,073 | 24.000 | 320 | 0,002 | 0,061 | 22.500 | 280 | 0,001 | 0,049 | 11.250 | 280 | 0,001 | 0,049 |
| 0,3 | 0,05 | 3 | 23.000 | 190 | 0,001 | 0,066 | 21.000 | 150 | 0,001 | 0,055 | 19.500 | 130 | 0,001 | 0,044 | 9.750 | 130 | 0,001 | 0,044 |
| 0,4 | 0,02 | 1 | 29.500 | 750 | 0,008 | 0,144 | 26.000 | 580 | 0,007 | 0,120 | 24.500 | 470 | 0,004 | 0,096 | 12.250 | 470 | 0,004 | 0,096 |
| 0,4 | 0,02 | 1,5 | 29.500 | 750 | 0,008 | 0,144 | 26.000 | 580 | 0,007 | 0,120 | 24.500 | 470 | 0,004 | 0,096 | 12.250 | 470 | 0,004 | 0,096 |
| 0,4 | 0,02 | 2 | 27.500 | 680 | 0,006 | 0,122 | 24.500 | 520 | 0,005 | 0,102 | 23.000 | 420 | 0,003 | 0,082 | 11.500 | 420 | 0,003 | 0,082 |
| 0,4 | 0,02 | 2,5 | 25.000 | 570 | 0,004 | 0,106 | 22.500 | 440 | 0,003 | 0,088 | 21.000 | 350 | 0,002 | 0,070 | 10.500 | 350 | 0,002 | 0,070 |
| 0,4 | 0,02 | 3 | 23.000 | 470 | 0,002 | 0,090 | 20.000 | 360 | 0,002 | 0,075 | 19.000 | 290 | 0,001 | 0,060 | 9.500 | 290 | 0,001 | 0,060 |
| 0,4 | 0,02 | 4 | 21.000 | 380 | 0,001 | 0,043 | 18.500 | 290 | 0,001 | 0,036 | 17.500 | 240 | 0,001 | 0,029 | 8.750 | 240 | 0,001 | 0,029 |
| 0,4 | 0,05 | 1 | 29.500 | 750 | 0,008 | 0,144 | 26.000 | 580 | 0,007 | 0,120 | 24.500 | 470 | 0,004 | 0,096 | 12.250 | 470 | 0,004 | 0,096 |
| 0,4 | 0,05 | 1,5 | 29.500 | 750 | 0,008 | 0,144 | 26.000 | 580 | 0,007 | 0,120 | 24.500 | 470 | 0,004 | 0,096 | 12.250 | 470 | 0,004 | 0,096 |
| 0,4 | 0,05 | 2 | 27.500 | 680 | 0,006 | 0,122 | 24.500 | 520 | 0,005 | 0,102 | 23.000 | 420 | 0,003 | 0,082 | 11.500 | 420 | 0,003 | 0,082 |
| 0,4 | 0,05 | 3 | 23.000 | 470 | 0,002 | 0,090 | 20.000 | 360 | 0,002 | 0,075 | 19.000 | 290 | 0,001 | 0,060 | 9.500 | 290 | 0,001 | 0,060 |
| 0,4 | 0,05 | 4 | 21.000 | 380 | 0,001 | 0,043 | 18.500 | 290 | 0,001 | 0,036 | 17.500 | 240 | 0,001 | 0,029 | 8.750 | 240 | 0,001 | 0,029 |
| 0,4 | 0,1 | 1 | 29.500 | 750 | 0,012 | 0,144 | 26.000 | 580 | 0,010 | 0,120 | 24.500 | 470 | 0,006 | 0,096 | 12.250 | 470 | 0,006 | 0,096 |
| 0,4 | 0,1 | 2 | 27.500 | 680 | 0,010 | 0,122 | 24.500 | 520 | 0,008 | 0,102 | 23.000 | 420 | 0,005 | 0,082 | 11.500 | 420 | 0,005 | 0,082 |
| 0,4 | 0,1 | 3 | 23.000 | 470 | 0,004 | 0,090 | 20.000 | 360 | 0,003 | 0,075 | 19.000 | 290 | 0,002 | 0,060 | 9.500 | 290 | 0,002 | 0,060 |
| 0,4 | 0,1 | 4 | 21.000 | 380 | 0,002 | 0,043 | 18.500 | 290 | 0,002 | 0,036 | 17.500 | 240 | 0,001 | 0,029 | 8.750 | 240 | 0,001 | 0,029 |
| 0,5 | 0,02 | 1 | 29.000 | 820 | 0,008 | 0,180 | 26.000 | 670 | 0,007 | 0,150 | 26.000 | 620 | 0,004 | 0,120 | 13.000 | 620 | 0,004 | 0,120 |
| 0,5 | 0,02 | 2 | 29.000 | 820 | 0,008 | 0,180 | 26.000 | 670 | 0,007 | 0,150 | 26.000 | 620 | 0,004 | 0,120 | 13.000 | 620 | 0,004 | 0,120 |
| 0,5 | 0,02 | 3 | 27.500 | 700 | 0,004 | 0,126 | 24.500 | 570 | 0,003 | 0,105 | 24.500 | 530 | 0,002 | 0,084 | 12.250 | 530 | 0,002 | 0,084 |
| 0,5 | 0,02 | 4 | 22.500 | 510 | 0,002 | 0,108 | 20.000 | 420 | 0,002 | 0,090 | 20.000 | 390 | 0,001 | 0,072 | 10.000 | 390 | 0,001 | 0,072 |
| 0,5 | 0,02 | 5 | 21.000 | 420 | 0,001 | 0,054 | 18.500 | 340 | 0,001 | 0,045 | 18.500 | 320 | 0,001 | 0,036 | 9.250 | 320 | 0,001 | 0,036 |
| 0,5 | 0,02 | 6 | 19.500 | 360 | 0,001 | 0,036 | 17.000 | 300 | 0,001 | 0,030 | 17.000 | 270 | 0,001 | 0,024 | 8.500 | 270 | 0,001 | 0,024 |
| 0,5 | 0,05 | 1 | 29.000 | 820 | 0,008 | 0,180 | 26.000 | 670 | 0,007 | 0,150 | 26.000 | 620 | 0,004 | 0,120 | 13.000 | 620 | 0,004 | 0,120 |
| 0,5 | 0,05 | 2 | 29.000 | 820 | 0,008 | 0,180 | 26.000 | 670 | 0,007 | 0,150 | 26.000 | 620 | 0,004 | 0,120 | 13.000 | 620 | 0,004 | 0,120 |
| 0,5 | 0,05 | 3 | 27.500 | 700 | 0,004 | 0,126 | 24.500 | 570 | 0,003 | 0,105 | 24.500 | 530 | 0,002 | 0,084 | 12.250 | 530 | 0,002 | 0,084 |
| 0,5 | 0,05 | 4 | 22.500 | 510 | 0,002 | 0,108 | 20.000 | 420 | 0,002 | 0,090 | 20.000 | 390 | 0,001 | 0,072 | 10.000 | 390 | 0,001 | 0,072 |
| 0,5 | 0,05 | 5 | 21.000 | 420 | 0,001 | 0,054 | 18.500 | 340 | 0,001 | 0,045 | 18.500 | 320 | 0,001 | 0,036 | 9.250 | 320 | 0,001 | 0,036 |
| 0,5 | 0,05 | 6 | 19.500 | 360 | 0,001 | 0,036 | 17.000 | 300 | 0,001 | 0,030 | 17.000 | 270 | 0,001 | 0,024 | 8.500 | 270 | 0,001 | 0,024 |
| 0,5 | 0,1 | 1 | 29.000 | 820 | 0,012 | 0,180 | 26.000 | 670 | 0,010 | 0,150 | 26.000 | 620 | 0,006 | 0,120 | 13.000 | 620 | 0,006 | 0,120 |
| 0,5 | 0,1 | 2 | 29.000 | 820 | 0,012 | 0,180 | 26.000 | 670 | 0,010 | 0,150 | 26.000 | 620 | 0,006 | 0,120 | 13.000 | 620 | 0,006 | 0,120 |
| 0,5 | 0,1 | 3 | 27.500 | 700 | 0,006 | 0,126 | 24.500 | 570 | 0,005 | 0,105 | 24.500 | 530 | 0,003 | 0,084 | 12.250 | 530 | 0,003 | 0,084 |
| 0,5 | 0,1 | 4 | 22.500 | 510 | 0,004 | 0,108 | 20.000 | 420 | 0,003 | 0,090 | 20.000 | 390 | 0,002 | 0,072 | 10.000 | 390 | 0,002 | 0,072 |
| 0,5 | 0,1 | 5 | 21.000 | 420 | 0,002 | 0,054 | 18.500 | 340 | 0,002 | 0,045 | 18.500 | 320 | 0,001 | 0,036 | 9.250 | 320 | 0,001 | 0,036 |
| 0,5 | 0,1 | 6 | 19.500 | 360 | 0,001 | 0,036 | 17.000 | 300 | 0,001 | 0,030 | 17.000 | 270 | 0,001 | 0,024 | 8.500 | 270 | 0,001 | 0,024 |
| 0,6 | 0,05 | 2 | 29.000 | 980 | 0,007 | 0,216 | 26.000 | 810 | 0,006 | 0,180 | 21.500 | 620 | 0,004 | 0,144 | 10.750 | 620 | 0,004 | 0,144 |
| 0,6 | 0,05 | 4 | 24.500 | 700 | 0,003 | 0,146 | 21.500 | 570 | 0,003 | 0,122 | 18.000 | 440 | 0,002 | 0,098 | 9.000 | 440 | 0,002 | 0,098 |
| 0,6 | 0,05 | 6 | 21.000 | 500 | 0,001 | 0,065 | 18.500 | 410 | 0,001 | 0,054 | 15.500 | 320 | 0,001 | 0,043 | 7.750 | 320 | 0,001 | 0,043 |
| 0,6 | 0,1 | 1 | 29.000 | 980 | 0,014 | 0,216 | 26.000 | 810 | 0,012 | 0,180 | 21.500 | 620 | 0,007 | 0,144 | 10.750 | 620 | 0,007 | 0,144 |
| 0,6 | 0,1 | 2 | 29.000 | 980 | 0,014 | 0,216 | 26.000 | 810 | 0,012 | 0,180 | 21.500 | 620 | 0,007 | 0,144 | 10.750 | 620 | 0,007 | 0,144 |
| 0,6 | 0,1 | 4 | 24.500 | 700 | 0,006 | 0,146 | 21.500 | 570 | 0,005 | 0,122 | 18.000 | 440 | 0,003 | 0,098 | 9.000 | 440 | 0,003 | 0,098 |
| 0,6 | 0,1 | 6 | 21.000 | 500 | 0,002 | 0,065 | 18.500 | 410 | 0,002 | 0,054 | 15.500 | 320 | 0,001 | 0,043 | 7.750 | 320 | 0,001 | 0,043 |
| 0,8 | 0,05 | 2 | 25.000 | 1.130 | 0,012 | 0,288 | 22.500 | 930 | 0,010 | 0,240 | 19.000 | 700 | 0,006 | 0,192 | 9.500 | 700 | 0,006 | 0,192 |
| 0,8 | 0,05 | 4 | 23.500 | 1.000 | 0,096 | 0,288 | 20.500 | 800 | 0,080 | 0,240 | 17.000 | 570 | 0,048 | 0,192 | 8.500 | 570 | 0,048 | 0,192 |
| 0,8 | 0,05 | 6 | 19.500 | 700 | 0,042 | 0,288 | 16.500 | 560 | 0,035 | 0,240 | 14.000 | 390 | 0,021 | 0,192 | 7.000 | 390 | 0,021 | 0,192 |
| 0,8 | 0,1 | 2 | 25.000 | 1.130 | 0,024 | 0,288 | 22.500 | 930 | 0,020 | 0,240 | 19.000 | 700 | 0,012 | 0,192 | 9.500 | 700 | 0,012 | 0,192 |
| 0,8 | 0,1 | 4 | 23.500 | 1.000 | 0,019 | 0,288 | 20.500 | 800 | 0,016 | 0,240 | 17.000 | 570 | 0,010 | 0,192 | 8.500 | 570 | 0,010 | 0,192 |
| 0,8 | 0,1 | 6 | 19.500 | 700 | 0,008 | 0,288 | 16.500 | 560 | 0,007 | 0,240 | 14.000 | 390 | 0,004 | 0,192 | 7.000 | 390 | 0,004 | 0,192 |
| 0,8 | 0,2 | 2 | 25.000 | 1.130 | 0,048 | 0,288 | 22.500 | 930 | 0,040 | 0,240 | 19.000 | 700 | 0,024 | 0,192 | 9.500 | 700 | 0,024 | 0,192 |
| 0,8 | 0,2 | 4 | 23.500 | 1.000 | 0,038 | 0,288 | 20.500 | 800 | 0,032 | 0,240 | 17.000 | 570 | 0,019 | 0,192 | 8.500 | 570 | 0,019 | 0,192 |
| 0,8 | 0,2 | 6 | 19.500 | 700 | 0,017 | 0,288 | 16.500 | 560 | 0,014 | 0,240 | 14.000 | 390 | 0,008 | 0,192 | 7.000 | 390 | 0,008 | 0,192 |
| 0,8 | 0,2 | 8 | 18.000 | 570 | 0,010 | 0,259 | 15.500 | 450 | 0,008 | 0,216 | 13.000 | 320 | 0,005 | 0,173 | 6.500 | 320 | 0,005 | 0,173 |
| 1 | 0,05 | 2 | 25.500 | 1.500 | 0,018 | 0,360 | 22.500 | 1.230 | 0,015 | 0,300 | 18.500 | 880 | 0,009 | 0,240 | 9.250 | 880 | 0,009 | 0,240 |
| 1 | 0,05 | 3 | 23.000 | 1.300 | 0,018 | 0,360 | 20.000 | 1.050 | 0,015 | 0,300 | 17.000 | 760 | 0,009 | 0,240 | 8.500 | 760 | 0,009 | 0,240 |
| 1 | 0,05 | 4 | 23.000 | 1.300 | 0,012 | 0,360 | 20.000 | 1.050 | 0,010 | 0,300 | 17.000 | 760 | 0,006 | 0,240 | 8.500 | 760 | 0,006 | 0,240 |
| 1 | 0,05 | 6 | 20.500 | 1.050 | 0,006 | 0,252 | 18.000 | 840 | 0,005 | 0,210 | 15.500 | 610 | 0,003 | 0,168 | 7.750 | 610 | 0,003 | 0,168 |
| 1 | 0,05 | 8 | 18.000 | 800 | 0,004 | 0,216 | 15.500 | 650 | 0,003 | 0,180 | 13.500 | 470 | 0,002 | 0,144 | 6.750 | 470 | 0,002 | 0,144 |
| 1 | 0,05 | 10 | 16.500 | 650 | 0,002 | 0,108 | 14.500 | 530 | 0,002 | 0,090 | 12.500 | 380 | 0,001 | 0,072 | 6.250 | 380 | 0,001 | 0,072 |
| 1 | 0,05 | 12 | 15.500 | 570 | 0,001 | 0,072 | 13.500 | 460 | 0,001 | 0,060 | 11.500 | 340 | 0,001 | 0,048 | 5.750 | 340 | 0,001 | 0,048 |
| 1 | 0,1 | 2 | 25.500 | 1.500 | 0,036 | 0,360 | 22.500 | 1.230 | 0,030 | 0,300 | 18.500 | 880 | 0,018 | 0,240 | 9.250 | 880 | 0,018 | 0,240 |

# AE-CPR2-H

## Regular Milling

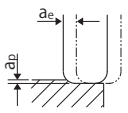
| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 1 | 0,1 | 3 | 23.000 | 1.300 | 0,036 | 0,360 | 20.000 | 1.050 | 0,030 | 0,300 | 17.000 | 760 | 0,018 | 0,240 | 8.500 | 760 | 0,018 | 0,240 |
| 1 | 0,1 | 4 | 23.000 | 1.300 | 0,024 | 0,360 | 20.000 | 1.050 | 0,020 | 0,300 | 17.000 | 760 | 0,012 | 0,240 | 8.500 | 760 | 0,012 | 0,240 |
| 1 | 0,1 | 6 | 20.500 | 1.050 | 0,012 | 0,252 | 18.000 | 840 | 0,010 | 0,210 | 15.500 | 610 | 0,006 | 0,168 | 7.750 | 610 | 0,006 | 0,168 |
| 1 | 0,1 | 8 | 18.000 | 800 | 0,007 | 0,216 | 15.500 | 650 | 0,006 | 0,180 | 13.500 | 470 | 0,004 | 0,144 | 6.750 | 470 | 0,004 | 0,144 |
| 1 | 0,1 | 10 | 16.500 | 650 | 0,005 | 0,108 | 14.500 | 530 | 0,004 | 0,090 | 12.500 | 380 | 0,002 | 0,072 | 6.250 | 380 | 0,002 | 0,072 |
| 1 | 0,1 | 12 | 15.500 | 570 | 0,004 | 0,072 | 13.500 | 460 | 0,003 | 0,060 | 11.500 | 340 | 0,002 | 0,048 | 5.750 | 340 | 0,002 | 0,048 |
| 1 | 0,2 | 2 | 25.500 | 1.500 | 0,072 | 0,360 | 22.500 | 1.230 | 0,060 | 0,300 | 18.500 | 880 | 0,036 | 0,240 | 9.250 | 880 | 0,036 | 0,240 |
| 1 | 0,2 | 3 | 23.000 | 1.300 | 0,072 | 0,360 | 20.000 | 1.050 | 0,060 | 0,300 | 17.000 | 760 | 0,036 | 0,240 | 8.500 | 760 | 0,036 | 0,240 |
| 1 | 0,2 | 4 | 23.000 | 1.300 | 0,048 | 0,360 | 20.000 | 1.050 | 0,040 | 0,300 | 17.000 | 760 | 0,024 | 0,240 | 8.500 | 760 | 0,024 | 0,240 |
| 1 | 0,2 | 6 | 20.500 | 1.050 | 0,024 | 0,252 | 18.000 | 840 | 0,020 | 0,210 | 15.500 | 610 | 0,012 | 0,168 | 7.750 | 610 | 0,012 | 0,168 |
| 1 | 0,2 | 8 | 18.000 | 800 | 0,014 | 0,216 | 15.500 | 650 | 0,012 | 0,180 | 13.500 | 470 | 0,007 | 0,144 | 6.750 | 470 | 0,007 | 0,144 |
| 1 | 0,2 | 10 | 16.500 | 650 | 0,010 | 0,108 | 14.500 | 530 | 0,008 | 0,090 | 12.500 | 380 | 0,005 | 0,072 | 6.250 | 380 | 0,005 | 0,072 |
| 1 | 0,2 | 12 | 15.500 | 570 | 0,007 | 0,072 | 13.500 | 460 | 0,006 | 0,060 | 11.500 | 340 | 0,004 | 0,048 | 5.750 | 340 | 0,004 | 0,048 |
| 1 | 0,2 | 16 | 12.000 | 400 | 0,005 | 0,036 | 10.500 | 330 | 0,004 | 0,030 | 9.150 | 240 | 0,002 | 0,024 | 4.575 | 240 | 0,002 | 0,024 |
| 1 | 0,2 | 20 | 10.000 | 290 | 0,004 | 0,029 | 8.900 | 230 | 0,003 | 0,024 | 7.650 | 170 | 0,002 | 0,019 | 3.825 | 170 | 0,002 | 0,019 |
| 1 | 0,3 | 2 | 25.500 | 1.500 | 0,090 | 0,360 | 22.500 | 1.230 | 0,075 | 0,300 | 18.500 | 880 | 0,045 | 0,240 | 9.250 | 880 | 0,045 | 0,240 |
| 1 | 0,3 | 3 | 23.000 | 1.300 | 0,090 | 0,360 | 20.000 | 1.050 | 0,075 | 0,300 | 17.000 | 760 | 0,045 | 0,240 | 8.500 | 760 | 0,045 | 0,240 |
| 1 | 0,3 | 4 | 23.000 | 1.300 | 0,060 | 0,360 | 20.000 | 1.050 | 0,050 | 0,300 | 17.000 | 760 | 0,030 | 0,240 | 8.500 | 760 | 0,030 | 0,240 |
| 1 | 0,3 | 6 | 20.500 | 1.050 | 0,030 | 0,252 | 18.000 | 840 | 0,025 | 0,210 | 15.500 | 610 | 0,015 | 0,168 | 7.750 | 610 | 0,015 | 0,168 |
| 1 | 0,3 | 8 | 18.000 | 800 | 0,018 | 0,216 | 15.500 | 650 | 0,015 | 0,180 | 13.500 | 470 | 0,009 | 0,144 | 6.750 | 470 | 0,009 | 0,144 |
| 1 | 0,3 | 10 | 16.500 | 650 | 0,012 | 0,108 | 14.500 | 530 | 0,010 | 0,090 | 12.500 | 380 | 0,006 | 0,072 | 6.250 | 380 | 0,006 | 0,072 |
| 1 | 0,3 | 12 | 15.500 | 570 | 0,008 | 0,072 | 13.500 | 460 | 0,007 | 0,060 | 11.500 | 340 | 0,004 | 0,048 | 5.750 | 340 | 0,004 | 0,048 |
| 1,2 | 0,2 | 6 | 19.000 | 1.200 | 0,038 | 0,432 | 18.000 | 1.050 | 0,032 | 0,360 | 14.500 | 740 | 0,019 | 0,288 | 7.250 | 740 | 0,019 | 0,288 |
| 1,2 | 0,2 | 8 | 17.000 | 970 | 0,022 | 0,302 | 16.000 | 850 | 0,018 | 0,252 | 13.000 | 580 | 0,011 | 0,202 | 6.500 | 580 | 0,011 | 0,202 |
| 1,2 | 0,2 | 10 | 16.000 | 850 | 0,013 | 0,259 | 15.000 | 740 | 0,011 | 0,216 | 12.000 | 510 | 0,007 | 0,173 | 6.000 | 510 | 0,007 | 0,173 |
| 1,2 | 0,3 | 6 | 19.000 | 1.200 | 0,048 | 0,432 | 18.000 | 1.050 | 0,040 | 0,360 | 14.500 | 740 | 0,024 | 0,288 | 7.250 | 740 | 0,024 | 0,288 |
| 1,2 | 0,3 | 8 | 17.000 | 970 | 0,026 | 0,302 | 16.000 | 850 | 0,022 | 0,252 | 13.000 | 580 | 0,013 | 0,202 | 6.500 | 580 | 0,013 | 0,202 |
| 1,2 | 0,3 | 10 | 16.000 | 850 | 0,017 | 0,259 | 15.000 | 740 | 0,014 | 0,216 | 12.000 | 510 | 0,008 | 0,173 | 6.000 | 510 | 0,008 | 0,173 |
| 1,5 | 0,05 | 3 | 18.000 | 1.630 | 0,018 | 0,540 | 17.000 | 1.400 | 0,015 | 0,450 | 14.500 | 970 | 0,009 | 0,360 | 7.250 | 970 | 0,009 | 0,360 |
| 1,5 | 0,05 | 4 | 18.000 | 1.630 | 0,015 | 0,540 | 17.000 | 1.400 | 0,013 | 0,450 | 14.500 | 970 | 0,008 | 0,360 | 7.250 | 970 | 0,008 | 0,360 |
| 1,5 | 0,05 | 6 | 17.000 | 1.450 | 0,012 | 0,540 | 16.000 | 1.250 | 0,010 | 0,450 | 13.500 | 880 | 0,006 | 0,360 | 6.750 | 880 | 0,006 | 0,360 |
| 1,5 | 0,05 | 8 | 16.000 | 1.250 | 0,008 | 0,458 | 15.500 | 1.100 | 0,007 | 0,382 | 12.500 | 750 | 0,004 | 0,306 | 6.250 | 750 | 0,004 | 0,306 |
| 1,5 | 0,05 | 10 | 14.500 | 1.000 | 0,005 | 0,350 | 13.500 | 900 | 0,005 | 0,292 | 11.000 | 630 | 0,003 | 0,234 | 5.500 | 630 | 0,003 | 0,234 |
| 1,5 | 0,05 | 12 | 13.500 | 900 | 0,004 | 0,324 | 12.500 | 790 | 0,003 | 0,270 | 10.500 | 550 | 0,002 | 0,216 | 5.250 | 550 | 0,002 | 0,216 |
| 1,5 | 0,1 | 3 | 18.000 | 1.630 | 0,036 | 0,540 | 17.000 | 1.400 | 0,030 | 0,450 | 14.500 | 970 | 0,018 | 0,360 | 7.250 | 970 | 0,018 | 0,360 |
| 1,5 | 0,1 | 4 | 18.000 | 1.630 | 0,030 | 0,540 | 17.000 | 1.400 | 0,025 | 0,450 | 14.500 | 970 | 0,015 | 0,360 | 7.250 | 970 | 0,015 | 0,360 |
| 1,5 | 0,1 | 6 | 17.000 | 1.450 | 0,024 | 0,540 | 16.000 | 1.250 | 0,020 | 0,450 | 13.500 | 880 | 0,012 | 0,360 | 6.750 | 880 | 0,012 | 0,360 |
| 1,5 | 0,1 | 8 | 16.000 | 1.250 | 0,016 | 0,458 | 15.500 | 1.100 | 0,013 | 0,382 | 12.500 | 750 | 0,008 | 0,306 | 6.250 | 750 | 0,008 | 0,306 |
| 1,5 | 0,1 | 10 | 14.500 | 1.000 | 0,011 | 0,350 | 13.500 | 900 | 0,009 | 0,292 | 11.000 | 630 | 0,005 | 0,234 | 5.500 | 630 | 0,005 | 0,234 |
| 1,5 | 0,1 | 12 | 13.500 | 900 | 0,007 | 0,324 | 12.500 | 790 | 0,006 | 0,270 | 10.500 | 550 | 0,004 | 0,216 | 5.250 | 550 | 0,004 | 0,216 |
| 1,5 | 0,2 | 3 | 18.000 | 1.630 | 0,072 | 0,540 | 17.000 | 1.400 | 0,060 | 0,450 | 14.500 | 970 | 0,036 | 0,360 | 7.250 | 970 | 0,036 | 0,360 |
| 1,5 | 0,2 | 4 | 18.000 | 1.630 | 0,060 | 0,540 | 17.000 | 1.400 | 0,050 | 0,450 | 14.500 | 970 | 0,030 | 0,360 | 7.250 | 970 | 0,030 | 0,360 |
| 1,5 | 0,2 | 6 | 17.000 | 1.450 | 0,048 | 0,540 | 16.000 | 1.250 | 0,040 | 0,450 | 13.500 | 880 | 0,024 | 0,360 | 6.750 | 880 | 0,024 | 0,360 |
| 1,5 | 0,2 | 8 | 16.000 | 1.250 | 0,031 | 0,458 | 15.500 | 1.100 | 0,026 | 0,382 | 12.500 | 750 | 0,016 | 0,306 | 6.250 | 750 | 0,016 | 0,306 |
| 1,5 | 0,2 | 10 | 14.500 | 1.000 | 0,022 | 0,350 | 13.500 | 900 | 0,018 | 0,292 | 11.000 | 630 | 0,011 | 0,234 | 5.500 | 630 | 0,011 | 0,234 |
| 1,5 | 0,2 | 12 | 13.500 | 900 | 0,014 | 0,324 | 12.500 | 790 | 0,012 | 0,270 | 10.500 | 550 | 0,007 | 0,216 | 5.250 | 550 | 0,007 | 0,216 |
| 1,5 | 0,2 | 16 | 9.150 | 530 | 0,008 | 0,134 | 8.650 | 460 | 0,007 | 0,112 | 7.150 | 320 | 0,004 | 0,090 | 3.575 | 320 | 0,004 | 0,090 |
| 1,5 | 0,3 | 3 | 18.000 | 1.630 | 0,108 | 0,540 | 17.000 | 1.400 | 0,090 | 0,450 | 14.500 | 970 | 0,054 | 0,360 | 7.250 | 970 | 0,054 | 0,360 |
| 1,5 | 0,3 | 4 | 18.000 | 1.630 | 0,090 | 0,540 | 17.000 | 1.400 | 0,075 | 0,450 | 14.500 | 970 | 0,045 | 0,360 | 7.250 | 970 | 0,045 | 0,360 |
| 1,5 | 0,3 | 6 | 17.000 | 1.450 | 0,072 | 0,540 | 16.000 | 1.250 | 0,060 | 0,450 | 13.500 | 880 | 0,036 | 0,360 | 6.750 | 880 | 0,036 | 0,360 |
| 1,5 | 0,3 | 8 | 16.000 | 1.250 | 0,047 | 0,458 | 15.500 | 1.100 | 0,039 | 0,382 | 12.500 | 750 | 0,023 | 0,306 | 6.250 | 750 | 0,023 | 0,306 |
| 1,5 | 0,3 | 10 | 14.500 | 1.000 | 0,032 | 0,350 | 13.500 | 900 | 0,027 | 0,292 | 11.000 | 630 | 0,016 | 0,234 | 5.500 | 630 | 0,016 | 0,234 |
| 1,5 | 0,3 | 12 | 13.500 | 900 | 0,022 | 0,324 | 12.500 | 790 | 0,018 | 0,270 | 10.500 | 550 | 0,011 | 0,216 | 5.250 | 550 | 0,011 | 0,216 |
| 1,5 | 0,3 | 16 | 9.150 | 530 | 0,012 | 0,134 | 8.650 | 460 | 0,010 | 0,112 | 7.150 | 320 | 0,006 | 0,090 | 3.575 | 320 | 0,006 | 0,090 |
| 1,5 | 0,5 | 3 | 18.000 | 1.630 | 0,180 | 0,540 | 17.000 | 1.400 | 0,150 | 0,450 | 14.500 | 970 | 0,090 | 0,360 | 7.250 | 970 | 0,090 | 0,360 |
| 1,5 | 0,5 | 4 | 18.000 | 1.630 | 0,150 | 0,540 | 17.000 | 1.400 | 0,125 | 0,450 | 14.500 | 970 | 0,075 | 0,360 | 7.250 | 970 | 0,075 | 0,360 |
| 1,5 | 0,5 | 6 | 17.000 | 1.450 | 0,120 | 0,540 | 16.000 | 1.250 | 0,100 | 0,450 | 13.500 | 880 | 0,060 | 0,360 | 6.750 | 880 | 0,060 | 0,360 |
| 1,5 | 0,5 | 8 | 16.000 | 1.250 | 0,078 | 0,458 | 15.500 | 1.100 | 0,065 | 0,382 | 12.500 | 750 | 0,039 | 0,306 | 6.250 | 750 | 0,039 | 0,306 |
| 1,5 | 0,5 | 10 | 14.500 | 1.000 | 0,054 | 0,350 | 13.500 | 900 | 0,045 | 0,292 | 11.000 | 630 | 0,027 | 0,234 | 5.500 | 630 | 0,027 | 0,234 |
| 1,5 | 0,5 | 12 | 13.500 | 900 | 0,036 | 0,324 | 12.500 | 790 | 0,030 | 0,270 | 10.500 | 550 | 0,018 | 0,216 | 5.250 | 550 | 0,018 | 0,216 |
| 1,5 | 0,5 | 16 | 9.150 | 530 | 0,020 | 0,134 | 8.650 | 460 | 0,017 | 0,112 | 7.150 | 320 | 0,010 | 0,090 | 3.575 | 320 | 0,010 | 0,090 |
| 2 | 0,05 | 4 | 15.000 | 1.730 | 0,018 | 0,720 | 15.000 | 1.570 | 0,015 | 0,600 | 13.000 | 1.100 | 0,009 | 0,480 | 6.500 | 1.100 | 0,009 | 0,480 |
| 2 | 0,05 | 6 | 14.000 | 1.670 | 0,015 | 0,720 | 14.000 | 1.450 | 0,013 | 0,600 | 12.000 | 1.070 | 0,008 | 0,480 | 6.000 | 1.070 | 0,008 | 0,480 |
| 2 | 0,05 | 8 | 13.000 | 1.450 | 0,012 | 0,720 | 13.000 | 1.300 | 0,010 | 0,600 | 11.500 | 1.000 | 0,006 | 0,480 | 5.750 | 1.000 | 0,006 | 0,480 |
| 2 | 0,05 | 10 | 12.000 | 1.300 | 0,010 | 0,612 | 12.000 | 1.150 | 0,008 | 0,510 | 11.000 | 910 | 0,005 | 0,408 | 5.500 | 910 | 0,005 | 0,408 |
| 2 | 0,05 | 12 | 11.500 | 1.150 | 0,006 | 0,504 | 11.500 | 1.050 | 0,005 | 0,420 | 10.000 | 810 | 0,003 | 0,336 | 5.000 | 810 | 0,003 | 0,336 |
| 2 | 0,05 | 16 | 10.000 | 900 | 0,004 | 0,432 | 10.000 | 800 | 0,003 | 0,360 | 8.900 | 630 | 0,002 | 0,288 | 4.450 | 630 | 0,002 | 0,288 |
| 2 | 0,05 | 20 | 9.300 | 730 | 0,002 | 0,216 | 9.300 | 650 | 0,002 | 0,180 | 8.250 | 510 | 0,001 | 0,144 | 4.125 | 510 | 0,001 | 0,144 |
| 2 | 0,1 | 4 | 15.000 | 1.730 | 0,036 | 0,720 | 15.000 | 1.570 | 0,030 | 0,600 | 13.000 | 1.100 | 0,018 | 0,480 | 6.500 | 1.100 | 0,018 | 0,480 |
| 2 | 0,1 | 6 | 14.000 | 1.670 | 0,030 | 0,720 | 14.000 | 1.450 | 0,025 | 0,600 | 12.000 | 1.070 | 0,015 | 0,480 | 6.000 | 1.070 | 0,015 | 0,480 |
| 2 | 0,1 | 8 | 13.000 | 1.450 | 0,024 | 0,720 | 13.000 | 1.300 | 0,020 | 0,600 | 11.500 | 1.000 | 0,012 | 0,480 | 5.750 | 1.000 | 0,012 | 0,480 |
| 2 | 0,1 | 10 | 12.000 | 1.300 | 0,019 | 0,612 | 12.000 | 1.150 | 0,016 | 0,510 | 11.000 | 910 | 0,010 | 0,408 | 5.500 | 910 | 0,010 | 0,408 |
| 2 | 0,1 | 12 | 11.500 | 1.150 | 0,012 | 0,504 | 11.500 | 1.050 | 0,010 | 0,420 | 10.000 | 810 | 0,006 | 0,336 | 5.000 | 810 | 0,006 | 0,336 |
| 2 | 0,1 | 16 | 10.000 | 900 | 0,007 | 0,432 | 10.000 | 800 | 0,006 | 0,360 | 8.900 | 630 | 0,004 | 0,288 | 4.450 | 630 | 0,004 | 0,288 |
| 2 | 0,1 | 20 | 9.300 | 730 | 0,005 | 0,216 | 9.300 | 650 | 0,004 | 0,180 | 8.250 | 510 | 0,002 | 0,144 | 4.125 | 510 | 0,002 | 0,144 |
| 2 | 0,1 | 25 | 8.600 | 630 | 0,002 | 0,144 | 8.600 | 560 | 0,002 | 0,120 | 7.650 | 440 | 0,001 | 0,096 | 3.825 | 440 | 0,001 | 0,096 |

# AE-CPR2-H

## Regular Milling

| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 2 | 0,2 | 4 | 15.000 | 1.730 | 0,072 | 0,720 | 15.000 | 1.570 | 0,060 | 0,600 | 13.000 | 1.100 | 0,036 | 0,480 | 6.500 | 1.100 | 0,036 | 0,480 |
| 2 | 0,2 | 6 | 14.000 | 1.670 | 0,066 | 0,720 | 14.000 | 1.450 | 0,055 | 0,600 | 12.000 | 1.070 | 0,033 | 0,480 | 6.000 | 1.070 | 0,033 | 0,480 |
| 2 | 0,2 | 8 | 13.000 | 1.450 | 0,048 | 0,720 | 13.000 | 1.300 | 0,040 | 0,600 | 11.500 | 1.000 | 0,024 | 0,480 | 5.750 | 1.000 | 0,024 | 0,480 |
| 2 | 0,2 | 10 | 12.000 | 1.300 | 0,038 | 0,612 | 12.000 | 1.150 | 0,032 | 0,510 | 11.000 | 910 | 0,019 | 0,408 | 5.500 | 910 | 0,019 | 0,408 |
| 2 | 0,2 | 12 | 11.500 | 1.150 | 0,024 | 0,504 | 11.500 | 1.050 | 0,020 | 0,420 | 10.000 | 810 | 0,012 | 0,336 | 5.000 | 810 | 0,012 | 0,336 |
| 2 | 0,2 | 16 | 10.000 | 900 | 0,014 | 0,432 | 10.000 | 800 | 0,012 | 0,360 | 8.900 | 630 | 0,007 | 0,288 | 4.450 | 630 | 0,007 | 0,288 |
| 2 | 0,2 | 20 | 9.300 | 730 | 0,010 | 0,216 | 9.300 | 650 | 0,008 | 0,180 | 8.250 | 510 | 0,005 | 0,144 | 4.125 | 510 | 0,005 | 0,144 |
| 2 | 0,2 | 25 | 8.600 | 630 | 0,005 | 0,144 | 8.600 | 560 | 0,004 | 0,120 | 7.650 | 440 | 0,002 | 0,096 | 3.825 | 440 | 0,002 | 0,096 |
| 2 | 0,3 | 4 | 15.000 | 1.730 | 0,108 | 0,720 | 15.000 | 1.570 | 0,090 | 0,600 | 13.000 | 1.100 | 0,054 | 0,480 | 6.500 | 1.100 | 0,054 | 0,480 |
| 2 | 0,3 | 6 | 14.000 | 1.670 | 0,090 | 0,720 | 14.000 | 1.450 | 0,075 | 0,600 | 12.000 | 1.070 | 0,045 | 0,480 | 6.000 | 1.070 | 0,045 | 0,480 |
| 2 | 0,3 | 8 | 13.000 | 1.450 | 0,072 | 0,720 | 13.000 | 1.300 | 0,060 | 0,600 | 11.500 | 1.000 | 0,036 | 0,480 | 5.750 | 1.000 | 0,036 | 0,480 |
| 2 | 0,3 | 10 | 12.000 | 1.300 | 0,058 | 0,612 | 12.000 | 1.150 | 0,048 | 0,510 | 11.000 | 910 | 0,029 | 0,408 | 5.500 | 910 | 0,029 | 0,408 |
| 2 | 0,3 | 12 | 11.500 | 1.150 | 0,036 | 0,504 | 11.500 | 1.050 | 0,030 | 0,420 | 10.000 | 810 | 0,018 | 0,336 | 5.000 | 810 | 0,018 | 0,336 |
| 2 | 0,3 | 16 | 10.000 | 900 | 0,022 | 0,432 | 10.000 | 800 | 0,018 | 0,360 | 8.900 | 630 | 0,011 | 0,288 | 4.450 | 630 | 0,011 | 0,288 |
| 2 | 0,3 | 20 | 9.300 | 730 | 0,014 | 0,216 | 9.300 | 650 | 0,012 | 0,180 | 8.250 | 510 | 0,007 | 0,144 | 4.125 | 510 | 0,007 | 0,144 |
| 2 | 0,3 | 25 | 8.600 | 630 | 0,007 | 0,144 | 8.600 | 560 | 0,006 | 0,120 | 7.650 | 440 | 0,004 | 0,096 | 3.825 | 440 | 0,004 | 0,096 |
| 2 | 0,5 | 4 | 15.000 | 1.730 | 0,150 | 0,720 | 15.000 | 1.570 | 0,125 | 0,600 | 13.000 | 1.100 | 0,075 | 0,480 | 6.500 | 1.100 | 0,075 | 0,480 |
| 2 | 0,5 | 6 | 14.000 | 1.670 | 0,120 | 0,720 | 14.000 | 1.450 | 0,100 | 0,600 | 12.000 | 1.070 | 0,060 | 0,480 | 6.000 | 1.070 | 0,060 | 0,480 |
| 2 | 0,5 | 8 | 13.000 | 1.450 | 0,090 | 0,720 | 13.000 | 1.300 | 0,075 | 0,600 | 11.500 | 1.000 | 0,045 | 0,480 | 5.750 | 1.000 | 0,045 | 0,480 |
| 2 | 0,5 | 10 | 12.000 | 1.300 | 0,072 | 0,612 | 12.000 | 1.150 | 0,060 | 0,510 | 11.000 | 910 | 0,036 | 0,408 | 5.500 | 910 | 0,036 | 0,408 |
| 2 | 0,5 | 12 | 11.500 | 1.150 | 0,044 | 0,504 | 11.500 | 1.050 | 0,037 | 0,420 | 10.000 | 810 | 0,022 | 0,336 | 5.000 | 810 | 0,022 | 0,336 |
| 2 | 0,5 | 16 | 10.000 | 900 | 0,026 | 0,432 | 10.000 | 800 | 0,022 | 0,360 | 8.900 | 630 | 0,013 | 0,288 | 4.450 | 630 | 0,013 | 0,288 |
| 2 | 0,5 | 20 | 9.300 | 730 | 0,018 | 0,216 | 9.300 | 650 | 0,015 | 0,180 | 8.250 | 510 | 0,009 | 0,144 | 4.125 | 510 | 0,009 | 0,144 |
| 2 | 0,5 | 25 | 8.600 | 630 | 0,011 | 0,144 | 8.600 | 560 | 0,009 | 0,120 | 7.650 | 440 | 0,005 | 0,096 | 3.825 | 440 | 0,005 | 0,096 |
| 2,5 | 0,2 | 10 | 11.500 | 1.600 | 0,048 | 0,900 | 10.500 | 1.200 | 0,040 | 0,750 | 10.500 | 1.200 | 0,024 | 0,600 | 5.250 | 1.200 | 0,024 | 0,600 |
| 2,5 | 0,2 | 20 | 8.900 | 1.000 | 0,024 | 0,540 | 8.000 | 740 | 0,020 | 0,450 | 8.000 | 740 | 0,012 | 0,360 | 4.000 | 740 | 0,012 | 0,360 |
| 2,5 | 0,2 | 30 | 7.650 | 700 | 0,012 | 0,180 | 6.850 | 520 | 0,010 | 0,150 | 6.850 | 520 | 0,006 | 0,120 | 3.425 | 520 | 0,006 | 0,120 |
| 2,5 | 0,5 | 10 | 11.500 | 1.600 | 0,090 | 0,900 | 10.500 | 1.200 | 0,075 | 0,750 | 10.500 | 1.200 | 0,045 | 0,600 | 5.250 | 1.200 | 0,045 | 0,600 |
| 2,5 | 0,5 | 20 | 8.900 | 1.000 | 0,044 | 0,540 | 8.000 | 740 | 0,037 | 0,450 | 8.000 | 740 | 0,022 | 0,360 | 4.000 | 740 | 0,022 | 0,360 |
| 2,5 | 0,5 | 30 | 7.650 | 700 | 0,013 | 0,180 | 6.850 | 520 | 0,011 | 0,150 | 6.850 | 520 | 0,007 | 0,120 | 3.425 | 520 | 0,007 | 0,120 |
| 3 | 0,2 | 8 | 9.550 | 1.500 | 0,048 | 1,080 | 8.600 | 1.150 | 0,040 | 0,900 | 7.650 | 830 | 0,024 | 0,720 | 3.825 | 830 | 0,024 | 0,720 |
| 3 | 0,2 | 12 | 9.550 | 1.500 | 0,048 | 1,080 | 8.600 | 1.150 | 0,040 | 0,900 | 7.650 | 830 | 0,024 | 0,720 | 3.825 | 830 | 0,024 | 0,720 |
| 3 | 0,2 | 16 | 8.500 | 1.200 | 0,034 | 0,864 | 7.650 | 910 | 0,028 | 0,720 | 6.800 | 660 | 0,017 | 0,576 | 3.400 | 660 | 0,017 | 0,576 |
| 3 | 0,2 | 20 | 7.400 | 990 | 0,022 | 0,734 | 6.700 | 750 | 0,018 | 0,612 | 5.950 | 550 | 0,011 | 0,490 | 2.975 | 550 | 0,011 | 0,490 |
| 3 | 0,2 | 25 | 7.100 | 830 | 0,014 | 0,648 | 6.400 | 640 | 0,012 | 0,540 | 5.700 | 460 | 0,007 | 0,432 | 2.850 | 460 | 0,007 | 0,432 |
| 3 | 0,2 | 30 | 6.900 | 760 | 0,010 | 0,324 | 6.200 | 580 | 0,008 | 0,270 | 5.500 | 420 | 0,005 | 0,216 | 2.750 | 420 | 0,005 | 0,216 |
| 3 | 0,2 | 35 | 6.350 | 660 | 0,007 | 0,216 | 5.700 | 500 | 0,006 | 0,180 | 5.100 | 370 | 0,004 | 0,144 | 2.550 | 370 | 0,004 | 0,144 |
| 3 | 0,3 | 12 | 9.550 | 1.500 | 0,072 | 1,080 | 8.600 | 1.150 | 0,060 | 0,900 | 7.650 | 830 | 0,036 | 0,720 | 3.825 | 830 | 0,036 | 0,720 |
| 3 | 0,3 | 16 | 8.500 | 1.200 | 0,050 | 0,864 | 7.650 | 910 | 0,042 | 0,720 | 6.800 | 660 | 0,025 | 0,576 | 3.400 | 660 | 0,025 | 0,576 |
| 3 | 0,3 | 20 | 7.400 | 990 | 0,032 | 0,734 | 6.700 | 750 | 0,027 | 0,612 | 5.950 | 550 | 0,016 | 0,490 | 2.975 | 550 | 0,016 | 0,490 |
| 3 | 0,3 | 25 | 7.100 | 830 | 0,022 | 0,648 | 6.400 | 640 | 0,018 | 0,540 | 5.700 | 460 | 0,011 | 0,432 | 2.850 | 460 | 0,011 | 0,432 |
| 3 | 0,3 | 30 | 6.900 | 760 | 0,014 | 0,324 | 6.200 | 580 | 0,012 | 0,270 | 5.500 | 420 | 0,007 | 0,216 | 2.750 | 420 | 0,007 | 0,216 |
| 3 | 0,3 | 35 | 6.350 | 660 | 0,011 | 0,216 | 5.700 | 500 | 0,009 | 0,180 | 5.100 | 370 | 0,005 | 0,144 | 2.550 | 370 | 0,005 | 0,144 |
| 3 | 0,5 | 12 | 9.550 | 1.500 | 0,090 | 1,080 | 8.600 | 1.150 | 0,075 | 0,900 | 7.650 | 830 | 0,045 | 0,720 | 3.825 | 830 | 0,045 | 0,720 |
| 3 | 0,5 | 16 | 8.500 | 1.200 | 0,062 | 0,864 | 7.650 | 910 | 0,052 | 0,720 | 6.800 | 660 | 0,031 | 0,576 | 3.400 | 660 | 0,031 | 0,576 |
| 3 | 0,5 | 20 | 7.400 | 990 | 0,040 | 0,734 | 6.700 | 750 | 0,033 | 0,612 | 5.950 | 550 | 0,020 | 0,490 | 2.975 | 550 | 0,020 | 0,490 |
| 3 | 0,5 | 25 | 7.100 | 830 | 0,026 | 0,648 | 6.400 | 640 | 0,022 | 0,540 | 5.700 | 460 | 0,013 | 0,432 | 2.850 | 460 | 0,013 | 0,432 |
| 3 | 0,5 | 30 | 6.900 | 760 | 0,018 | 0,324 | 6.200 | 580 | 0,015 | 0,270 | 5.500 | 420 | 0,009 | 0,216 | 2.750 | 420 | 0,009 | 0,216 |
| 3 | 0,5 | 35 | 6.350 | 660 | 0,013 | 0,216 | 5.700 | 500 | 0,011 | 0,180 | 5.100 | 370 | 0,007 | 0,144 | 2.550 | 370 | 0,007 | 0,144 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation(side milling) with a low machining load.
   If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. When using a tool with a diameter of θ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
7. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.



# AE-CPR2-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 0,2 | 0,02 | 0,5 | 50.000 | 700 | 0,006 | 0,007 | 43.000 | 550 | 0,005 | 0,006 | 43.000 | 520 | 0,003 | 0,005 | 21.500 | 520 | 0,003 | 0,005 |
| 0,2 | 0,02 | 1 | 47.500 | 680 | 0,006 | 0,007 | 40.500 | 520 | 0,005 | 0,006 | 40.500 | 490 | 0,003 | 0,005 | 20.250 | 490 | 0,003 | 0,005 |
| 0,2 | 0,02 | 1,5 | 45.000 | 540 | 0,005 | 0,006 | 38.000 | 420 | 0,004 | 0,005 | 38.000 | 400 | 0,002 | 0,004 | 19.000 | 400 | 0,002 | 0,004 |
| 0,2 | 0,02 | 2 | 42.000 | 300 | 0,004 | 0,006 | 35.500 | 230 | 0,003 | 0,005 | 35.500 | 220 | 0,002 | 0,004 | 17.750 | 220 | 0,002 | 0,004 |
| 0,2 | 0,05 | 0,5 | 50.000 | 700 | 0,006 | 0,007 | 43.000 | 550 | 0,005 | 0,006 | 43.000 | 520 | 0,003 | 0,005 | 21.500 | 520 | 0,003 | 0,005 |
| 0,2 | 0,05 | 1 | 47.500 | 680 | 0,006 | 0,007 | 40.500 | 520 | 0,005 | 0,006 | 40.500 | 490 | 0,003 | 0,005 | 20.250 | 490 | 0,003 | 0,005 |
| 0,2 | 0,05 | 1,5 | 45.000 | 540 | 0,005 | 0,006 | 38.000 | 420 | 0,004 | 0,005 | 38.000 | 400 | 0,002 | 0,004 | 19.000 | 400 | 0,002 | 0,004 |
| 0,2 | 0,05 | 2 | 42.000 | 300 | 0,004 | 0,006 | 35.500 | 230 | 0,003 | 0,005 | 35.500 | 220 | 0,002 | 0,004 | 17.750 | 220 | 0,002 | 0,004 |
| 0,3 | 0,02 | 1 | 43.000 | 850 | 0,006 | 0,011 | 38.000 | 690 | 0,005 | 0,009 | 33.500 | 530 | 0,003 | 0,007 | 16.750 | 530 | 0,003 | 0,007 |
| 0,3 | 0,02 | 1,5 | 40.000 | 740 | 0,006 | 0,011 | 35.000 | 590 | 0,005 | 0,009 | 30.500 | 440 | 0,003 | 0,007 | 15.250 | 440 | 0,003 | 0,007 |
| 0,3 | 0,02 | 2 | 36.000 | 610 | 0,005 | 0,010 | 32.000 | 500 | 0,004 | 0,008 | 28.000 | 370 | 0,002 | 0,006 | 14.000 | 370 | 0,002 | 0,006 |
| 0,3 | 0,02 | 2,5 | 32.000 | 480 | 0,004 | 0,010 | 28.000 | 380 | 0,003 | 0,008 | 24.500 | 290 | 0,002 | 0,006 | 12.250 | 290 | 0,002 | 0,006 |
| 0,3 | 0,02 | 3 | 28.000 | 220 | 0,002 | 0,008 | 24.500 | 180 | 0,002 | 0,007 | 21.500 | 130 | 0,001 | 0,006 | 10.750 | 130 | 0,001 | 0,006 |
| 0,3 | 0,05 | 1 | 43.000 | 850 | 0,006 | 0,011 | 38.000 | 690 | 0,005 | 0,009 | 33.500 | 530 | 0,003 | 0,007 | 16.750 | 530 | 0,003 | 0,007 |
| 0,3 | 0,05 | 1,5 | 40.000 | 740 | 0,006 | 0,011 | 35.000 | 590 | 0,005 | 0,009 | 30.500 | 440 | 0,003 | 0,007 | 15.250 | 440 | 0,003 | 0,007 |
| 0,3 | 0,05 | 2 | 36.000 | 610 | 0,005 | 0,010 | 32.000 | 500 | 0,004 | 0,008 | 28.000 | 370 | 0,002 | 0,006 | 14.000 | 370 | 0,002 | 0,006 |
| 0,3 | 0,05 | 2,5 | 32.000 | 480 | 0,004 | 0,010 | 28.000 | 380 | 0,003 | 0,008 | 24.500 | 290 | 0,002 | 0,006 | 12.250 | 290 | 0,002 | 0,006 |
| 0,3 | 0,05 | 3 | 28.000 | 220 | 0,002 | 0,008 | 24.500 | 180 | 0,002 | 0,007 | 21.500 | 130 | 0,001 | 0,006 | 10.750 | 130 | 0,001 | 0,006 |
| 0,4 | 0,02 | 1 | 39.500 | 1.010 | 0,007 | 0,014 | 32.000 | 780 | 0,006 | 0,012 | 28.500 | 550 | 0,004 | 0,010 | 14.250 | 550 | 0,004 | 0,010 |
| 0,4 | 0,02 | 1,5 | 39.500 | 1.010 | 0,007 | 0,014 | 32.000 | 780 | 0,006 | 0,012 | 28.500 | 550 | 0,004 | 0,010 | 14.250 | 550 | 0,004 | 0,010 |
| 0,4 | 0,02 | 2 | 37.000 | 910 | 0,007 | 0,014 | 30.500 | 700 | 0,006 | 0,012 | 27.000 | 500 | 0,004 | 0,010 | 13.500 | 500 | 0,004 | 0,010 |
| 0,4 | 0,02 | 2,5 | 33.500 | 750 | 0,006 | 0,012 | 27.500 | 580 | 0,005 | 0,010 | 24.500 | 410 | 0,003 | 0,008 | 12.250 | 410 | 0,003 | 0,008 |
| 0,4 | 0,02 | 3 | 30.500 | 630 | 0,005 | 0,010 | 25.000 | 480 | 0,004 | 0,008 | 22.500 | 340 | 0,002 | 0,006 | 11.250 | 340 | 0,002 | 0,006 |
| 0,4 | 0,02 | 4 | 28.500 | 510 | 0,002 | 0,007 | 23.500 | 390 | 0,002 | 0,006 | 20.500 | 280 | 0,001 | 0,005 | 10.250 | 280 | 0,001 | 0,005 |
| 0,4 | 0,05 | 1 | 39.500 | 1.010 | 0,007 | 0,014 | 32.000 | 780 | 0,006 | 0,012 | 28.500 | 550 | 0,004 | 0,010 | 14.250 | 550 | 0,004 | 0,010 |
| 0,4 | 0,05 | 1,5 | 39.500 | 1.010 | 0,007 | 0,014 | 32.000 | 780 | 0,006 | 0,012 | 28.500 | 550 | 0,004 | 0,010 | 14.250 | 550 | 0,004 | 0,010 |
| 0,4 | 0,05 | 2 | 37.000 | 910 | 0,007 | 0,014 | 30.500 | 700 | 0,006 | 0,012 | 27.000 | 500 | 0,004 | 0,010 | 13.500 | 500 | 0,004 | 0,010 |
| 0,4 | 0,05 | 3 | 30.500 | 630 | 0,005 | 0,010 | 25.000 | 480 | 0,004 | 0,008 | 22.500 | 340 | 0,002 | 0,006 | 11.250 | 340 | 0,002 | 0,006 |
| 0,4 | 0,05 | 4 | 28.500 | 510 | 0,002 | 0,007 | 23.500 | 390 | 0,002 | 0,006 | 20.500 | 280 | 0,001 | 0,005 | 10.250 | 280 | 0,001 | 0,005 |
| 0,4 | 0,1 | 1 | 39.500 | 1.010 | 0,012 | 0,014 | 32.000 | 780 | 0,010 | 0,012 | 28.500 | 550 | 0,006 | 0,010 | 14.250 | 550 | 0,006 | 0,010 |
| 0,4 | 0,1 | 2 | 37.000 | 910 | 0,012 | 0,014 | 30.500 | 700 | 0,010 | 0,012 | 27.000 | 500 | 0,006 | 0,010 | 13.500 | 500 | 0,006 | 0,010 |
| 0,4 | 0,1 | 3 | 30.500 | 630 | 0,008 | 0,010 | 25.000 | 480 | 0,007 | 0,008 | 22.500 | 340 | 0,004 | 0,006 | 11.250 | 340 | 0,004 | 0,006 |
| 0,4 | 0,1 | 4 | 28.500 | 510 | 0,005 | 0,007 | 23.500 | 390 | 0,004 | 0,006 | 20.500 | 280 | 0,002 | 0,005 | 10.250 | 280 | 0,002 | 0,005 |
| 0,5 | 0,02 | 1 | 34.500 | 970 | 0,007 | 0,018 | 28.500 | 780 | 0,006 | 0,015 | 24.000 | 580 | 0,004 | 0,012 | 12.000 | 580 | 0,004 | 0,012 |
| 0,5 | 0,02 | 2 | 34.500 | 970 | 0,007 | 0,018 | 28.500 | 780 | 0,006 | 0,015 | 24.000 | 580 | 0,004 | 0,012 | 12.000 | 580 | 0,004 | 0,012 |
| 0,5 | 0,02 | 3 | 32.500 | 820 | 0,007 | 0,016 | 27.000 | 660 | 0,006 | 0,013 | 22.500 | 490 | 0,004 | 0,010 | 11.250 | 490 | 0,004 | 0,010 |
| 0,5 | 0,02 | 4 | 26.500 | 600 | 0,004 | 0,012 | 22.500 | 480 | 0,003 | 0,010 | 18.500 | 360 | 0,002 | 0,008 | 9.250 | 360 | 0,002 | 0,008 |
| 0,5 | 0,02 | 5 | 25.000 | 490 | 0,002 | 0,008 | 20.500 | 390 | 0,002 | 0,007 | 17.500 | 290 | 0,001 | 0,006 | 8.750 | 290 | 0,001 | 0,006 |
| 0,5 | 0,02 | 6 | 23.000 | 430 | 0,001 | 0,007 | 19.000 | 340 | 0,001 | 0,006 | 16.000 | 260 | 0,001 | 0,005 | 8.000 | 260 | 0,001 | 0,005 |
| 0,5 | 0,05 | 1 | 34.500 | 970 | 0,007 | 0,018 | 28.500 | 780 | 0,006 | 0,015 | 24.000 | 580 | 0,004 | 0,012 | 12.000 | 580 | 0,004 | 0,012 |
| 0,5 | 0,05 | 2 | 34.500 | 970 | 0,007 | 0,018 | 28.500 | 780 | 0,006 | 0,015 | 24.000 | 580 | 0,004 | 0,012 | 12.000 | 580 | 0,004 | 0,012 |
| 0,5 | 0,05 | 3 | 32.500 | 820 | 0,007 | 0,016 | 27.000 | 660 | 0,006 | 0,013 | 22.500 | 490 | 0,004 | 0,010 | 11.250 | 490 | 0,004 | 0,010 |
| 0,5 | 0,05 | 4 | 26.500 | 600 | 0,004 | 0,012 | 22.500 | 480 | 0,003 | 0,010 | 18.500 | 360 | 0,002 | 0,008 | 9.250 | 360 | 0,002 | 0,008 |
| 0,5 | 0,05 | 5 | 25.000 | 490 | 0,002 | 0,008 | 20.500 | 390 | 0,002 | 0,007 | 17.500 | 290 | 0,001 | 0,006 | 8.750 | 290 | 0,001 | 0,006 |
| 0,5 | 0,05 | 6 | 23.000 | 430 | 0,001 | 0,007 | 19.000 | 340 | 0,001 | 0,006 | 16.000 | 260 | 0,001 | 0,005 | 8.000 | 260 | 0,001 | 0,005 |
| 0,5 | 0,1 | 1 | 34.500 | 970 | 0,012 | 0,018 | 28.500 | 780 | 0,010 | 0,015 | 24.000 | 580 | 0,006 | 0,012 | 12.000 | 580 | 0,006 | 0,012 |
| 0,5 | 0,1 | 2 | 34.500 | 970 | 0,012 | 0,018 | 28.500 | 780 | 0,010 | 0,015 | 24.000 | 580 | 0,006 | 0,012 | 12.000 | 580 | 0,006 | 0,012 |
| 0,5 | 0,1 | 3 | 32.500 | 820 | 0,012 | 0,016 | 27.000 | 660 | 0,010 | 0,013 | 22.500 | 490 | 0,006 | 0,010 | 11.250 | 490 | 0,006 | 0,010 |
| 0,5 | 0,1 | 4 | 26.500 | 600 | 0,007 | 0,012 | 22.500 | 480 | 0,006 | 0,010 | 18.500 | 360 | 0,004 | 0,008 | 9.250 | 360 | 0,004 | 0,008 |
| 0,5 | 0,1 | 5 | 25.000 | 490 | 0,005 | 0,008 | 20.500 | 390 | 0,004 | 0,007 | 17.500 | 290 | 0,002 | 0,006 | 8.750 | 290 | 0,002 | 0,006 |
| 0,5 | 0,1 | 6 | 23.000 | 430 | 0,004 | 0,007 | 19.000 | 340 | 0,003 | 0,006 | 16.000 | 260 | 0,002 | 0,005 | 8.000 | 260 | 0,002 | 0,005 |
| 0,6 | 0,05 | 2 | 31.000 | 1.050 | 0,007 | 0,022 | 26.500 | 850 | 0,006 | 0,018 | 24.000 | 690 | 0,004 | 0,014 | 12.000 | 690 | 0,004 | 0,014 |
| 0,6 | 0,05 | 4 | 26.000 | 740 | 0,006 | 0,014 | 22.000 | 600 | 0,005 | 0,012 | 20.000 | 490 | 0,003 | 0,010 | 10.000 | 490 | 0,003 | 0,010 |
| 0,6 | 0,05 | 6 | 22.500 | 530 | 0,002 | 0,011 | 19.000 | 430 | 0,002 | 0,009 | 17.000 | 350 | 0,001 | 0,007 | 8.500 | 350 | 0,001 | 0,007 |
| 0,6 | 0,1 | 1 | 31.000 | 1.050 | 0,014 | 0,022 | 26.500 | 850 | 0,012 | 0,018 | 24.000 | 690 | 0,007 | 0,014 | 12.000 | 690 | 0,007 | 0,014 |
| 0,6 | 0,1 | 2 | 31.000 | 1.050 | 0,014 | 0,022 | 26.500 | 850 | 0,012 | 0,018 | 24.000 | 690 | 0,007 | 0,014 | 12.000 | 690 | 0,007 | 0,014 |
| 0,6 | 0,1 | 4 | 26.000 | 740 | 0,011 | 0,014 | 22.000 | 600 | 0,009 | 0,012 | 20.000 | 490 | 0,005 | 0,010 | 10.000 | 490 | 0,005 | 0,010 |
| 0,6 | 0,1 | 6 | 22.500 | 530 | 0,005 | 0,011 | 19.000 | 430 | 0,004 | 0,009 | 17.000 | 350 | 0,002 | 0,007 | 8.500 | 350 | 0,002 | 0,007 |
| 0,8 | 0,05 | 2 | 31.000 | 1.470 | 0,012 | 0,024 | 27.500 | 1.250 | 0,010 | 0,020 | 25.500 | 930 | 0,006 | 0,016 | 12.750 | 930 | 0,006 | 0,016 |
| 0,8 | 0,05 | 4 | 29.000 | 1.200 | 0,010 | 0,024 | 25.500 | 1.050 | 0,008 | 0,020 | 23.500 | 790 | 0,005 | 0,016 | 11.750 | 790 | 0,005 | 0,016 |
| 0,8 | 0,05 | 6 | 23.500 | 850 | 0,007 | 0,017 | 21.000 | 720 | 0,006 | 0,014 | 19.500 | 550 | 0,004 | 0,011 | 9.750 | 550 | 0,004 | 0,011 |
| 0,8 | 0,1 | 2 | 31.000 | 1.470 | 0,022 | 0,024 | 27.500 | 1.250 | 0,018 | 0,020 | 25.500 | 930 | 0,011 | 0,016 | 12.750 | 930 | 0,011 | 0,016 |
| 0,8 | 0,1 | 4 | 29.000 | 1.200 | 0,018 | 0,024 | 25.500 | 1.050 | 0,015 | 0,020 | 23.500 | 790 | 0,009 | 0,016 | 11.750 | 790 | 0,009 | 0,016 |
| 0,8 | 0,1 | 6 | 23.500 | 850 | 0,014 | 0,017 | 21.000 | 720 | 0,012 | 0,014 | 19.500 | 550 | 0,007 | 0,011 | 9.750 | 550 | 0,007 | 0,011 |
| 0,8 | 0,2 | 2 | 31.000 | 1.470 | 0,029 | 0,024 | 27.500 | 1.250 | 0,024 | 0,020 | 25.500 | 930 | 0,014 | 0,016 | 12.750 | 930 | 0,014 | 0,016 |
| 0,8 | 0,2 | 4 | 29.000 | 1.200 | 0,024 | 0,024 | 25.500 | 1.050 | 0,020 | 0,020 | 23.500 | 790 | 0,012 | 0,016 | 11.750 | 790 | 0,012 | 0,016 |
| 0,8 | 0,2 | 6 | 23.500 | 850 | 0,019 | 0,017 | 21.000 | 720 | 0,016 | 0,014 | 19.500 | 550 | 0,010 | 0,011 | 9.750 | 550 | 0,010 | 0,011 |
| 0,8 | 0,2 | 8 | 22.000 | 690 | 0,010 | 0,012 | 19.500 | 590 | 0,008 | 0,010 | 18.000 | 450 | 0,005 | 0,008 | 9.000 | 450 | 0,005 | 0,008 |
| 1 | 0,05 | 2 | 29.500 | 1.680 | 0,010 | 0,036 | 26.500 | 1.410 | 0,008 | 0,030 | 24.500 | 1.130 | 0,005 | 0,024 | 12.250 | 1.130 | 0,005 | 0,024 |
| 1 | 0,05 | 3 | 27.000 | 1.500 | 0,010 | 0,036 | 24.500 | 1.250 | 0,008 | 0,030 | 22.500 | 1.000 | 0,005 | 0,024 | 11.250 | 1.000 | 0,005 | 0,024 |
| 1 | 0,05 | 4 | 27.000 | 1.500 | 0,007 | 0,036 | 24.500 | 1.250 | 0,006 | 0,030 | 22.500 | 1.000 | 0,004 | 0,024 | 11.250 | 1.000 | 0,004 | 0,024 |
| 1 | 0,05 | 6 | 24.000 | 1.200 | 0,007 | 0,032 | 21.500 | 1.000 | 0,006 | 0,027 | 20.000 | 800 | 0,004 | 0,022 | 10.000 | 800 | 0,004 | 0,022 |
| 1 | 0,05 | 8 | 21.000 | 950 | 0,004 | 0,025 | 19.000 | 790 | 0,003 | 0,021 | 17.500 | 620 | 0,002 | 0,017 | 8.750 | 620 | 0,002 | 0,017 |
| 1 | 0,05 | 10 | 19.500 | 770 | 0,004 | 0,018 | 17.500 | 640 | 0,003 | 0,015 | 16.500 | 510 | 0,002 | 0,012 | 8.250 | 510 | 0,002 | 0,012 |
| 1 | 0,05 | 12 | 18.000 | 670 | 0,004 | 0,016 | 16.000 | 560 | 0,003 | 0,013 | 15.000 | 440 | 0,002 | 0,010 | 7.500 | 440 | 0,002 | 0,010 |
| 1 | 0,1 | 2 | 29.500 | 1.680 | 0,024 | 0,036 | 26.500 | 1.410 | 0,020 | 0,030 | 24.500 | 1.130 | 0,012 | 0,024 | 12.250 | 1.130 | 0,012 | 0,024 |

# CUTTING CONDITIONS



# AE-CPR2-H

## Side Milling (Contour Line Finish Milling)

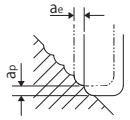
| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S (min$^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 1 | 0,1 | 3 | 27.000 | 1.500 | 0,024 | 0,036 | 24.500 | 1.250 | 0,020 | 0,030 | 22.500 | 1.000 | 0,012 | 0,024 | 11.250 | 1.000 | 0,012 | 0,024 |
| 1 | 0,1 | 4 | 27.000 | 1.500 | 0,018 | 0,036 | 24.500 | 1.250 | 0,015 | 0,030 | 22.500 | 1.000 | 0,009 | 0,024 | 11.250 | 1.000 | 0,009 | 0,024 |
| 1 | 0,1 | 6 | 24.000 | 1.200 | 0,018 | 0,032 | 21.500 | 1.000 | 0,015 | 0,027 | 20.000 | 800 | 0,009 | 0,022 | 10.000 | 800 | 0,009 | 0,022 |
| 1 | 0,1 | 8 | 21.000 | 950 | 0,011 | 0,025 | 19.000 | 790 | 0,009 | 0,021 | 17.500 | 620 | 0,005 | 0,017 | 8.750 | 620 | 0,005 | 0,017 |
| 1 | 0,1 | 10 | 19.500 | 770 | 0,007 | 0,018 | 17.500 | 640 | 0,006 | 0,015 | 16.500 | 510 | 0,004 | 0,012 | 8.250 | 510 | 0,004 | 0,012 |
| 1 | 0,1 | 12 | 18.000 | 670 | 0,005 | 0,016 | 16.000 | 560 | 0,004 | 0,013 | 15.000 | 440 | 0,002 | 0,010 | 7.500 | 440 | 0,002 | 0,010 |
| 1 | 0,2 | 2 | 29.500 | 1.680 | 0,036 | 0,036 | 26.500 | 1.410 | 0,030 | 0,030 | 24.500 | 1.130 | 0,018 | 0,024 | 12.250 | 1.130 | 0,018 | 0,024 |
| 1 | 0,2 | 3 | 27.000 | 1.500 | 0,036 | 0,036 | 24.500 | 1.250 | 0,030 | 0,030 | 22.500 | 1.000 | 0,018 | 0,024 | 11.250 | 1.000 | 0,018 | 0,024 |
| 1 | 0,2 | 4 | 27.000 | 1.500 | 0,024 | 0,036 | 24.500 | 1.250 | 0,020 | 0,030 | 22.500 | 1.000 | 0,012 | 0,024 | 11.250 | 1.000 | 0,012 | 0,024 |
| 1 | 0,2 | 6 | 24.000 | 1.200 | 0,024 | 0,032 | 21.500 | 1.000 | 0,020 | 0,027 | 20.000 | 800 | 0,012 | 0,022 | 10.000 | 800 | 0,012 | 0,022 |
| 1 | 0,2 | 8 | 21.000 | 950 | 0,014 | 0,025 | 19.000 | 790 | 0,012 | 0,021 | 17.500 | 620 | 0,007 | 0,017 | 8.750 | 620 | 0,007 | 0,017 |
| 1 | 0,2 | 10 | 19.500 | 770 | 0,010 | 0,018 | 17.500 | 640 | 0,008 | 0,015 | 16.500 | 510 | 0,005 | 0,012 | 8.250 | 510 | 0,005 | 0,012 |
| 1 | 0,2 | 12 | 18.000 | 670 | 0,007 | 0,016 | 16.000 | 560 | 0,006 | 0,013 | 15.000 | 440 | 0,004 | 0,010 | 7.500 | 440 | 0,004 | 0,010 |
| 1 | 0,2 | 16 | 14.500 | 470 | 0,005 | 0,012 | 13.000 | 390 | 0,004 | 0,010 | 12.000 | 310 | 0,002 | 0,008 | 6.000 | 310 | 0,002 | 0,008 |
| 1 | 0,2 | 20 | 12.000 | 340 | 0,004 | 0,011 | 11.000 | 280 | 0,003 | 0,009 | 10.000 | 220 | 0,002 | 0,007 | 5.000 | 220 | 0,002 | 0,007 |
| 1 | 0,3 | 2 | 29.500 | 1.680 | 0,043 | 0,036 | 26.500 | 1.410 | 0,036 | 0,030 | 24.500 | 1.130 | 0,022 | 0,024 | 12.250 | 1.130 | 0,022 | 0,024 |
| 1 | 0,3 | 3 | 27.000 | 1.500 | 0,043 | 0,036 | 24.500 | 1.250 | 0,036 | 0,030 | 22.500 | 1.000 | 0,022 | 0,024 | 11.250 | 1.000 | 0,022 | 0,024 |
| 1 | 0,3 | 4 | 27.000 | 1.500 | 0,036 | 0,036 | 24.500 | 1.250 | 0,030 | 0,030 | 22.500 | 1.000 | 0,018 | 0,024 | 11.250 | 1.000 | 0,018 | 0,024 |
| 1 | 0,3 | 6 | 24.000 | 1.200 | 0,036 | 0,032 | 21.500 | 1.000 | 0,030 | 0,027 | 20.000 | 800 | 0,018 | 0,022 | 10.000 | 800 | 0,018 | 0,022 |
| 1 | 0,3 | 8 | 21.000 | 950 | 0,022 | 0,025 | 19.000 | 790 | 0,018 | 0,021 | 17.500 | 620 | 0,011 | 0,017 | 8.750 | 620 | 0,011 | 0,017 |
| 1 | 0,3 | 10 | 19.500 | 770 | 0,014 | 0,018 | 17.500 | 640 | 0,012 | 0,015 | 16.500 | 510 | 0,007 | 0,012 | 8.250 | 510 | 0,007 | 0,012 |
| 1 | 0,3 | 12 | 18.000 | 670 | 0,011 | 0,016 | 16.000 | 560 | 0,009 | 0,013 | 15.000 | 440 | 0,005 | 0,010 | 7.500 | 440 | 0,005 | 0,010 |
| 1,2 | 0,2 | 6 | 22.500 | 1.450 | 0,019 | 0,043 | 21.000 | 1.250 | 0,016 | 0,036 | 19.000 | 960 | 0,010 | 0,029 | 9.500 | 960 | 0,010 | 0,029 |
| 1,2 | 0,2 | 8 | 20.000 | 1.150 | 0,011 | 0,034 | 18.500 | 980 | 0,009 | 0,028 | 17.000 | 760 | 0,005 | 0,022 | 8.500 | 760 | 0,005 | 0,022 |
| 1,2 | 0,2 | 10 | 18.500 | 1.000 | 0,006 | 0,025 | 17.500 | 860 | 0,005 | 0,021 | 16.000 | 670 | 0,003 | 0,017 | 8.000 | 670 | 0,003 | 0,017 |
| 1,2 | 0,3 | 6 | 22.500 | 1.450 | 0,029 | 0,043 | 21.000 | 1.250 | 0,024 | 0,036 | 19.000 | 960 | 0,014 | 0,029 | 9.500 | 960 | 0,014 | 0,029 |
| 1,2 | 0,3 | 8 | 20.000 | 1.150 | 0,016 | 0,034 | 18.500 | 980 | 0,013 | 0,028 | 17.000 | 760 | 0,008 | 0,022 | 8.500 | 760 | 0,008 | 0,022 |
| 1,2 | 0,3 | 10 | 18.500 | 1.000 | 0,010 | 0,025 | 17.500 | 860 | 0,008 | 0,021 | 16.000 | 670 | 0,005 | 0,017 | 8.000 | 670 | 0,005 | 0,017 |
| 1,5 | 0,05 | 3 | 22.000 | 1.930 | 0,007 | 0,054 | 19.500 | 1.610 | 0,006 | 0,045 | 17.000 | 1.160 | 0,004 | 0,036 | 8.500 | 1.160 | 0,004 | 0,036 |
| 1,5 | 0,05 | 4 | 22.000 | 1.930 | 0,007 | 0,054 | 19.500 | 1.610 | 0,006 | 0,045 | 17.000 | 1.160 | 0,004 | 0,036 | 8.500 | 1.160 | 0,004 | 0,036 |
| 1,5 | 0,05 | 6 | 21.000 | 1.750 | 0,006 | 0,054 | 18.500 | 1.450 | 0,005 | 0,045 | 16.000 | 1.050 | 0,003 | 0,036 | 8.000 | 1.050 | 0,003 | 0,036 |
| 1,5 | 0,05 | 8 | 20.000 | 1.500 | 0,006 | 0,054 | 17.500 | 1.250 | 0,005 | 0,045 | 15.500 | 910 | 0,003 | 0,036 | 7.750 | 910 | 0,003 | 0,036 |
| 1,5 | 0,05 | 10 | 17.500 | 1.250 | 0,048 | 0,043 | 15.500 | 1.050 | 0,040 | 0,036 | 13.500 | 760 | 0,024 | 0,029 | 6.750 | 760 | 0,024 | 0,029 |
| 1,5 | 0,05 | 12 | 16.500 | 1.100 | 0,036 | 0,037 | 14.500 | 910 | 0,030 | 0,031 | 12.500 | 670 | 0,018 | 0,025 | 6.250 | 670 | 0,018 | 0,025 |
| 1,5 | 0,1 | 3 | 22.000 | 1.930 | 0,014 | 0,054 | 19.500 | 1.610 | 0,012 | 0,045 | 17.000 | 1.160 | 0,007 | 0,036 | 8.500 | 1.160 | 0,007 | 0,036 |
| 1,5 | 0,1 | 4 | 22.000 | 1.930 | 0,014 | 0,054 | 19.500 | 1.610 | 0,012 | 0,045 | 17.000 | 1.160 | 0,007 | 0,036 | 8.500 | 1.160 | 0,007 | 0,036 |
| 1,5 | 0,1 | 6 | 21.000 | 1.750 | 0,012 | 0,054 | 18.500 | 1.450 | 0,010 | 0,045 | 16.000 | 1.050 | 0,006 | 0,036 | 8.000 | 1.050 | 0,006 | 0,036 |
| 1,5 | 0,1 | 8 | 20.000 | 1.500 | 0,012 | 0,054 | 17.500 | 1.250 | 0,010 | 0,045 | 15.500 | 910 | 0,006 | 0,036 | 7.750 | 910 | 0,006 | 0,036 |
| 1,5 | 0,1 | 10 | 17.500 | 1.250 | 0,108 | 0,043 | 15.500 | 1.050 | 0,090 | 0,036 | 13.500 | 760 | 0,054 | 0,029 | 6.750 | 760 | 0,054 | 0,029 |
| 1,5 | 0,1 | 12 | 16.500 | 1.100 | 0,072 | 0,037 | 14.500 | 910 | 0,060 | 0,031 | 12.500 | 670 | 0,036 | 0,025 | 6.250 | 670 | 0,036 | 0,025 |
| 1,5 | 0,2 | 3 | 22.000 | 1.930 | 0,029 | 0,054 | 19.500 | 1.610 | 0,024 | 0,045 | 17.000 | 1.160 | 0,014 | 0,036 | 8.500 | 1.160 | 0,014 | 0,036 |
| 1,5 | 0,2 | 4 | 22.000 | 1.930 | 0,029 | 0,054 | 19.500 | 1.610 | 0,024 | 0,045 | 17.000 | 1.160 | 0,014 | 0,036 | 8.500 | 1.160 | 0,014 | 0,036 |
| 1,5 | 0,2 | 6 | 21.000 | 1.750 | 0,024 | 0,054 | 18.500 | 1.450 | 0,020 | 0,045 | 16.000 | 1.050 | 0,012 | 0,036 | 8.000 | 1.050 | 0,012 | 0,036 |
| 1,5 | 0,2 | 8 | 20.000 | 1.500 | 0,024 | 0,054 | 17.500 | 1.250 | 0,020 | 0,045 | 15.500 | 910 | 0,012 | 0,036 | 7.750 | 910 | 0,012 | 0,036 |
| 1,5 | 0,2 | 10 | 17.500 | 1.250 | 0,022 | 0,043 | 15.500 | 1.050 | 0,018 | 0,036 | 13.500 | 760 | 0,011 | 0,029 | 6.750 | 760 | 0,011 | 0,029 |
| 1,5 | 0,2 | 12 | 16.500 | 1.100 | 0,014 | 0,037 | 14.500 | 910 | 0,012 | 0,031 | 12.500 | 670 | 0,007 | 0,025 | 6.250 | 670 | 0,007 | 0,025 |
| 1,5 | 0,2 | 16 | 11.000 | 640 | 0,010 | 0,026 | 10.000 | 530 | 0,008 | 0,022 | 8.650 | 390 | 0,005 | 0,018 | 4.325 | 390 | 0,005 | 0,018 |
| 1,5 | 0,3 | 3 | 22.000 | 1.930 | 0,043 | 0,054 | 19.500 | 1.610 | 0,036 | 0,045 | 17.000 | 1.160 | 0,022 | 0,036 | 8.500 | 1.160 | 0,022 | 0,036 |
| 1,5 | 0,3 | 4 | 22.000 | 1.930 | 0,043 | 0,054 | 19.500 | 1.610 | 0,036 | 0,045 | 17.000 | 1.160 | 0,022 | 0,036 | 8.500 | 1.160 | 0,022 | 0,036 |
| 1,5 | 0,3 | 6 | 21.000 | 1.750 | 0,036 | 0,054 | 18.500 | 1.450 | 0,030 | 0,045 | 16.000 | 1.050 | 0,018 | 0,036 | 8.000 | 1.050 | 0,018 | 0,036 |
| 1,5 | 0,3 | 8 | 20.000 | 1.500 | 0,036 | 0,054 | 17.500 | 1.250 | 0,030 | 0,045 | 15.500 | 910 | 0,018 | 0,036 | 7.750 | 910 | 0,018 | 0,036 |
| 1,5 | 0,3 | 10 | 17.500 | 1.250 | 0,032 | 0,043 | 15.500 | 1.050 | 0,027 | 0,036 | 13.500 | 760 | 0,016 | 0,029 | 6.750 | 760 | 0,016 | 0,029 |
| 1,5 | 0,3 | 12 | 16.500 | 1.100 | 0,022 | 0,037 | 14.500 | 910 | 0,018 | 0,031 | 12.500 | 670 | 0,011 | 0,025 | 6.250 | 670 | 0,011 | 0,025 |
| 1,5 | 0,3 | 16 | 11.000 | 640 | 0,014 | 0,026 | 10.000 | 530 | 0,012 | 0,022 | 8.650 | 390 | 0,007 | 0,018 | 4.325 | 390 | 0,007 | 0,018 |
| 1,5 | 0,5 | 3 | 22.000 | 1.930 | 0,072 | 0,054 | 19.500 | 1.610 | 0,060 | 0,045 | 17.000 | 1.160 | 0,036 | 0,036 | 8.500 | 1.160 | 0,036 | 0,036 |
| 1,5 | 0,5 | 4 | 22.000 | 1.930 | 0,072 | 0,054 | 19.500 | 1.610 | 0,060 | 0,045 | 17.000 | 1.160 | 0,036 | 0,036 | 8.500 | 1.160 | 0,036 | 0,036 |
| 1,5 | 0,5 | 6 | 21.000 | 1.750 | 0,060 | 0,054 | 18.500 | 1.450 | 0,050 | 0,045 | 16.000 | 1.050 | 0,030 | 0,036 | 8.000 | 1.050 | 0,030 | 0,036 |
| 1,5 | 0,5 | 8 | 20.000 | 1.500 | 0,060 | 0,054 | 17.500 | 1.250 | 0,050 | 0,045 | 15.500 | 910 | 0,030 | 0,036 | 7.750 | 910 | 0,030 | 0,036 |
| 1,5 | 0,5 | 10 | 17.500 | 1.250 | 0,054 | 0,043 | 15.500 | 1.050 | 0,045 | 0,036 | 13.500 | 760 | 0,027 | 0,029 | 6.750 | 760 | 0,027 | 0,029 |
| 1,5 | 0,5 | 12 | 16.500 | 1.100 | 0,036 | 0,037 | 14.500 | 910 | 0,030 | 0,031 | 12.500 | 670 | 0,018 | 0,025 | 6.250 | 670 | 0,018 | 0,025 |
| 1,5 | 0,5 | 16 | 11.000 | 640 | 0,024 | 0,026 | 10.000 | 530 | 0,020 | 0,022 | 8.650 | 390 | 0,012 | 0,018 | 4.325 | 390 | 0,012 | 0,018 |
| 2 | 0,05 | 4 | 18.000 | 2.200 | 0,010 | 0,072 | 17.500 | 1.930 | 0,008 | 0,060 | 16.500 | 1.630 | 0,005 | 0,048 | 8.250 | 1.630 | 0,005 | 0,048 |
| 2 | 0,05 | 6 | 17.500 | 2.070 | 0,010 | 0,072 | 17.000 | 1.800 | 0,008 | 0,060 | 16.000 | 1.530 | 0,005 | 0,048 | 8.000 | 1.530 | 0,005 | 0,048 |
| 2 | 0,05 | 8 | 16.500 | 1.850 | 0,010 | 0,072 | 16.000 | 1.600 | 0,008 | 0,060 | 15.000 | 1.350 | 0,005 | 0,048 | 7.500 | 1.350 | 0,005 | 0,048 |
| 2 | 0,05 | 10 | 15.500 | 1.650 | 0,010 | 0,072 | 15.500 | 1.450 | 0,008 | 0,060 | 14.500 | 1.200 | 0,005 | 0,048 | 7.250 | 1.200 | 0,005 | 0,048 |
| 2 | 0,05 | 12 | 14.500 | 1.500 | 0,010 | 0,065 | 14.500 | 1.300 | 0,008 | 0,054 | 13.500 | 1.050 | 0,005 | 0,043 | 6.750 | 1.050 | 0,005 | 0,043 |
| 2 | 0,05 | 16 | 13.000 | 1.150 | 0,006 | 0,050 | 12.500 | 1.000 | 0,005 | 0,042 | 12.000 | 830 | 0,003 | 0,034 | 6.000 | 830 | 0,003 | 0,034 |
| 2 | 0,05 | 20 | 12.000 | 940 | 0,004 | 0,036 | 11.500 | 820 | 0,003 | 0,030 | 11.000 | 680 | 0,002 | 0,024 | 5.500 | 680 | 0,002 | 0,024 |
| 2 | 0,1 | 4 | 18.000 | 2.200 | 0,018 | 0,072 | 17.500 | 1.930 | 0,015 | 0,060 | 16.500 | 1.630 | 0,009 | 0,048 | 8.250 | 1.630 | 0,009 | 0,048 |
| 2 | 0,1 | 6 | 17.500 | 2.070 | 0,018 | 0,072 | 17.000 | 1.800 | 0,015 | 0,060 | 16.000 | 1.530 | 0,009 | 0,048 | 8.000 | 1.530 | 0,009 | 0,048 |
| 2 | 0,1 | 8 | 16.500 | 1.850 | 0,018 | 0,072 | 16.000 | 1.600 | 0,015 | 0,060 | 15.000 | 1.350 | 0,009 | 0,048 | 7.500 | 1.350 | 0,009 | 0,048 |
| 2 | 0,1 | 10 | 15.500 | 1.650 | 0,018 | 0,072 | 15.500 | 1.450 | 0,015 | 0,060 | 14.500 | 1.200 | 0,009 | 0,048 | 7.250 | 1.200 | 0,009 | 0,048 |
| 2 | 0,1 | 12 | 14.500 | 1.500 | 0,018 | 0,065 | 14.500 | 1.300 | 0,015 | 0,054 | 13.500 | 1.050 | 0,009 | 0,043 | 6.750 | 1.050 | 0,009 | 0,043 |
| 2 | 0,1 | 16 | 13.000 | 1.150 | 0,011 | 0,050 | 12.500 | 1.000 | 0,009 | 0,042 | 12.000 | 830 | 0,005 | 0,034 | 6.000 | 830 | 0,005 | 0,034 |
| 2 | 0,1 | 20 | 12.000 | 940 | 0,007 | 0,036 | 11.500 | 820 | 0,006 | 0,030 | 11.000 | 680 | 0,004 | 0,024 | 5.500 | 680 | 0,004 | 0,024 |
| 2 | 0,1 | 25 | 11.000 | 800 | 0,005 | 0,032 | 11.000 | 700 | 0,004 | 0,027 | 10.000 | 580 | 0,002 | 0,022 | 5.000 | 580 | 0,002 | 0,022 |

# AE-CPR2-H

## Side Milling (Contour Line Finish Milling)

| | | | Hardened Steel • Prehardened Steel SKD61 • NAK55 • NAK80 • HPM1 | | | | Hardened Steel • Prehardened Steel SKD61 •STAVAX • HPM38 | | | | Hardened Steel SKH51 • YXR7• HAP40 | | | | DIN-1.2379 1.2379 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU | ~45HRC | | | | 45 ~ 55HRC | | | | 55 ~ 65HRC | | | | 60HRC | | | |
| | | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) |
| 2 | 0,2 | 4 | 18.000 | 2.200 | 0,024 | 0,072 | 17.500 | 1.930 | 0,020 | 0,060 | 16.500 | 1.630 | 0,012 | 0,048 | 8.250 | 1.630 | 0,012 | 0,048 |
| 2 | 0,2 | 6 | 17.500 | 2.070 | 0,024 | 0,072 | 17.000 | 1.800 | 0,020 | 0,060 | 16.000 | 1.530 | 0,012 | 0,048 | 8.000 | 1.530 | 0,012 | 0,048 |
| 2 | 0,2 | 8 | 16.500 | 1.850 | 0,024 | 0,072 | 16.000 | 1.600 | 0,020 | 0,060 | 15.000 | 1.350 | 0,012 | 0,048 | 7.500 | 1.350 | 0,012 | 0,048 |
| 2 | 0,2 | 10 | 15.500 | 1.650 | 0,024 | 0,072 | 15.500 | 1.450 | 0,020 | 0,060 | 14.500 | 1.200 | 0,012 | 0,048 | 7.250 | 1.200 | 0,012 | 0,048 |
| 2 | 0,2 | 12 | 14.500 | 1.500 | 0,024 | 0,065 | 14.500 | 1.300 | 0,020 | 0,054 | 13.500 | 1.050 | 0,012 | 0,043 | 6.750 | 1.050 | 0,012 | 0,043 |
| 2 | 0,2 | 16 | 13.000 | 1.150 | 0,014 | 0,050 | 12.500 | 1.000 | 0,012 | 0,042 | 12.000 | 830 | 0,007 | 0,034 | 6.000 | 830 | 0,007 | 0,034 |
| 2 | 0,2 | 20 | 12.000 | 940 | 0,010 | 0,036 | 11.500 | 820 | 0,008 | 0,030 | 11.000 | 680 | 0,005 | 0,024 | 5.500 | 680 | 0,005 | 0,024 |
| 2 | 0,2 | 25 | 11.000 | 800 | 0,007 | 0,032 | 11.000 | 700 | 0,006 | 0,027 | 10.000 | 580 | 0,004 | 0,022 | 5.000 | 580 | 0,004 | 0,022 |
| 2 | 0,3 | 4 | 18.000 | 2.200 | 0,036 | 0,072 | 17.500 | 1.930 | 0,030 | 0,060 | 16.500 | 1.630 | 0,018 | 0,048 | 8.250 | 1.630 | 0,018 | 0,048 |
| 2 | 0,3 | 6 | 17.500 | 2.070 | 0,036 | 0,072 | 17.000 | 1.800 | 0,030 | 0,060 | 16.000 | 1.530 | 0,018 | 0,048 | 8.000 | 1.530 | 0,018 | 0,048 |
| 2 | 0,3 | 8 | 16.500 | 1.850 | 0,036 | 0,072 | 16.000 | 1.600 | 0,030 | 0,060 | 15.000 | 1.350 | 0,018 | 0,048 | 7.500 | 1.350 | 0,018 | 0,048 |
| 2 | 0,3 | 10 | 15.500 | 1.650 | 0,036 | 0,072 | 15.500 | 1.450 | 0,030 | 0,060 | 14.500 | 1.200 | 0,018 | 0,048 | 7.250 | 1.200 | 0,018 | 0,048 |
| 2 | 0,3 | 12 | 14.500 | 1.500 | 0,036 | 0,065 | 14.500 | 1.300 | 0,030 | 0,054 | 13.500 | 1.050 | 0,018 | 0,043 | 6.750 | 1.050 | 0,018 | 0,043 |
| 2 | 0,3 | 16 | 13.000 | 1.150 | 0,022 | 0,050 | 12.500 | 1.000 | 0,018 | 0,042 | 12.000 | 830 | 0,011 | 0,034 | 6.000 | 830 | 0,011 | 0,034 |
| 2 | 0,3 | 20 | 12.000 | 940 | 0,014 | 0,036 | 11.500 | 820 | 0,012 | 0,030 | 11.000 | 680 | 0,007 | 0,024 | 5.500 | 680 | 0,007 | 0,024 |
| 2 | 0,3 | 25 | 11.000 | 800 | 0,011 | 0,032 | 11.000 | 700 | 0,009 | 0,027 | 10.000 | 580 | 0,005 | 0,022 | 5.000 | 580 | 0,005 | 0,022 |
| 2 | 0,5 | 4 | 18.000 | 2.200 | 0,060 | 0,072 | 17.500 | 1.930 | 0,050 | 0,060 | 16.500 | 1.630 | 0,030 | 0,048 | 8.250 | 1.630 | 0,030 | 0,048 |
| 2 | 0,5 | 6 | 17.500 | 2.070 | 0,060 | 0,072 | 17.000 | 1.800 | 0,050 | 0,060 | 16.000 | 1.530 | 0,030 | 0,048 | 8.000 | 1.530 | 0,030 | 0,048 |
| 2 | 0,5 | 8 | 16.500 | 1.850 | 0,060 | 0,072 | 16.000 | 1.600 | 0,050 | 0,060 | 15.000 | 1.350 | 0,030 | 0,048 | 7.500 | 1.350 | 0,030 | 0,048 |
| 2 | 0,5 | 10 | 15.500 | 1.650 | 0,060 | 0,072 | 15.500 | 1.450 | 0,050 | 0,060 | 14.500 | 1.200 | 0,030 | 0,048 | 7.250 | 1.200 | 0,030 | 0,048 |
| 2 | 0,5 | 12 | 14.500 | 1.500 | 0,060 | 0,065 | 14.500 | 1.300 | 0,050 | 0,054 | 13.500 | 1.050 | 0,030 | 0,043 | 6.750 | 1.050 | 0,030 | 0,043 |
| 2 | 0,5 | 16 | 13.000 | 1.150 | 0,036 | 0,050 | 12.500 | 1.000 | 0,030 | 0,042 | 12.000 | 830 | 0,018 | 0,034 | 6.000 | 830 | 0,018 | 0,034 |
| 2 | 0,5 | 20 | 12.000 | 940 | 0,024 | 0,036 | 11.500 | 820 | 0,020 | 0,030 | 11.000 | 680 | 0,012 | 0,024 | 5.500 | 680 | 0,012 | 0,024 |
| 2 | 0,5 | 25 | 11.000 | 800 | 0,018 | 0,032 | 11.000 | 700 | 0,015 | 0,027 | 10.000 | 580 | 0,009 | 0,022 | 5.000 | 580 | 0,009 | 0,022 |
| 2,5 | 0,2 | 10 | 13.000 | 1.850 | 0,024 | 0,090 | 13.000 | 1.400 | 0,020 | 0,075 | 12.000 | 1.350 | 0,012 | 0,060 | 6.000 | 1.350 | 0,012 | 0,060 |
| 2,5 | 0,2 | 20 | 10.000 | 1.150 | 0,014 | 0,062 | 10.000 | 890 | 0,012 | 0,052 | 9.450 | 830 | 0,007 | 0,042 | 4.725 | 830 | 0,007 | 0,042 |
| 2,5 | 0,2 | 30 | 8.500 | 930 | 0,007 | 0,036 | 8.500 | 720 | 0,006 | 0,030 | 8.000 | 670 | 0,004 | 0,024 | 4.000 | 670 | 0,004 | 0,024 |
| 2,5 | 0,5 | 10 | 13.000 | 1.850 | 0,060 | 0,090 | 13.000 | 1.400 | 0,050 | 0,075 | 12.000 | 1.350 | 0,030 | 0,060 | 6.000 | 1.350 | 0,030 | 0,060 |
| 2,5 | 0,5 | 20 | 10.000 | 1.150 | 0,036 | 0,062 | 10.000 | 890 | 0,030 | 0,052 | 9.450 | 830 | 0,018 | 0,042 | 4.725 | 830 | 0,018 | 0,042 |
| 2,5 | 0,5 | 30 | 8.500 | 930 | 0,018 | 0,036 | 8.500 | 720 | 0,015 | 0,030 | 8.000 | 670 | 0,009 | 0,024 | 4.000 | 670 | 0,009 | 0,024 |
| 3 | 0,2 | 8 | 12.000 | 2.000 | 0,024 | 0,096 | 11.000 | 1.400 | 0,020 | 0,080 | 10.000 | 1.100 | 0,012 | 0,064 | 5.000 | 1.100 | 0,012 | 0,064 |
| 3 | 0,2 | 12 | 12.000 | 2.000 | 0,024 | 0,096 | 11.000 | 1.400 | 0,020 | 0,080 | 10.000 | 1.100 | 0,012 | 0,064 | 5.000 | 1.100 | 0,012 | 0,064 |
| 3 | 0,2 | 16 | 10.500 | 1.600 | 0,024 | 0,096 | 9.600 | 1.150 | 0,020 | 0,080 | 9.000 | 880 | 0,012 | 0,064 | 4.500 | 880 | 0,012 | 0,064 |
| 3 | 0,2 | 20 | 9.300 | 1.350 | 0,024 | 0,077 | 8.400 | 940 | 0,020 | 0,064 | 7.850 | 730 | 0,012 | 0,051 | 3.925 | 730 | 0,012 | 0,051 |
| 3 | 0,2 | 25 | 8.900 | 1.100 | 0,014 | 0,058 | 8.050 | 800 | 0,012 | 0,048 | 7.550 | 610 | 0,007 | 0,038 | 3.775 | 610 | 0,007 | 0,038 |
| 3 | 0,2 | 30 | 8.600 | 1.000 | 0,010 | 0,048 | 7.800 | 720 | 0,008 | 0,040 | 7.300 | 560 | 0,005 | 0,032 | 3.650 | 560 | 0,005 | 0,032 |
| 3 | 0,2 | 35 | 7.950 | 880 | 0,007 | 0,043 | 7.200 | 630 | 0,006 | 0,036 | 6.750 | 480 | 0,004 | 0,029 | 3.375 | 480 | 0,004 | 0,029 |
| 3 | 0,3 | 12 | 12.000 | 2.000 | 0,036 | 0,096 | 11.000 | 1.400 | 0,030 | 0,080 | 10.000 | 1.100 | 0,018 | 0,064 | 5.000 | 1.100 | 0,018 | 0,064 |
| 3 | 0,3 | 16 | 10.500 | 1.600 | 0,036 | 0,096 | 9.600 | 1.150 | 0,030 | 0,080 | 9.000 | 880 | 0,018 | 0,064 | 4.500 | 880 | 0,018 | 0,064 |
| 3 | 0,3 | 20 | 9.300 | 1.350 | 0,036 | 0,077 | 8.400 | 940 | 0,030 | 0,064 | 7.850 | 730 | 0,018 | 0,051 | 3.925 | 730 | 0,018 | 0,051 |
| 3 | 0,3 | 25 | 8.900 | 1.100 | 0,022 | 0,058 | 8.050 | 800 | 0,018 | 0,048 | 7.550 | 610 | 0,011 | 0,038 | 3.775 | 610 | 0,011 | 0,038 |
| 3 | 0,3 | 30 | 8.600 | 1.000 | 0,014 | 0,048 | 7.800 | 720 | 0,012 | 0,040 | 7.300 | 560 | 0,007 | 0,032 | 3.650 | 560 | 0,007 | 0,032 |
| 3 | 0,3 | 35 | 7.950 | 880 | 0,011 | 0,043 | 7.200 | 630 | 0,009 | 0,036 | 6.750 | 480 | 0,005 | 0,029 | 3.375 | 480 | 0,005 | 0,029 |
| 3 | 0,5 | 12 | 12.000 | 2.000 | 0,060 | 0,096 | 11.000 | 1.400 | 0,050 | 0,080 | 10.000 | 1.100 | 0,030 | 0,064 | 5.000 | 1.100 | 0,030 | 0,064 |
| 3 | 0,5 | 16 | 10.500 | 1.600 | 0,060 | 0,096 | 9.600 | 1.150 | 0,050 | 0,080 | 9.000 | 880 | 0,030 | 0,064 | 4.500 | 880 | 0,030 | 0,064 |
| 3 | 0,5 | 20 | 9.300 | 1.350 | 0,060 | 0,077 | 8.400 | 940 | 0,050 | 0,064 | 7.850 | 730 | 0,030 | 0,051 | 3.925 | 730 | 0,030 | 0,051 |
| 3 | 0,5 | 25 | 8.900 | 1.100 | 0,036 | 0,058 | 8.050 | 800 | 0,030 | 0,048 | 7.550 | 610 | 0,018 | 0,038 | 3.775 | 610 | 0,018 | 0,038 |
| 3 | 0,5 | 30 | 8.600 | 1.000 | 0,024 | 0,048 | 7.800 | 720 | 0,020 | 0,040 | 7.300 | 560 | 0,012 | 0,032 | 3.650 | 560 | 0,012 | 0,032 |
| 3 | 0,5 | 35 | 7.950 | 880 | 0,018 | 0,043 | 7.200 | 630 | 0,015 | 0,036 | 6.750 | 480 | 0,009 | 0,029 | 3.375 | 480 | 0,009 | 0,029 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL(Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation(side milling) with a low machining load.
   If abnormal cutting sounds, vibration or chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holding condition, etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommended during the approach of a Z cut.
6. When using a tool with a diameter of θ 0.5 or less, or L/D (aspect ratio) is greater than 10, high loads can cause tool breakage.
   Therefore, adjust the cutting conditions based on the machining situation.
7. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.
8. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.

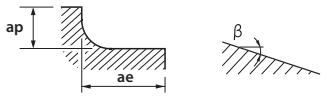


# WXS-CRE / WXS-HS-CRE

## Regular milling

| | GG | | 30~38 HRC NAK55 • HPM1 • SKT • SKD | | 38~45 HRC SUS304 • SKD • HPM50 NAK80 | | 45~55 HRC | | 55~60 HRC | | 60~ HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 2 x R0,5 | 16.000 | 5.250 | 12.500 | 3.800 | 11.000 | 3.350 | 7.950 | 2.150 | 4.750 | 860 | 4.270 | 615 |
| 3 x R0,75 | 10.500 | 6.250 | 8.500 | 4.500 | 7.450 | 3.900 | 5.300 | 2.600 | 3.200 | 995 | 2.850 | 715 |
| 4 x R1 | 7.950 | 6.600 | 6.350 | 4.800 | 5.550 | 4.200 | 4.000 | 2.750 | 2.400 | 1.050 | 2.150 | 755 |
| 6 x R1,5 | 5.300 | 7.000 | 4.250 | 5.100 | 3.700 | 4.450 | 2.650 | 2.850 | 1.600 | 1.150 | 1.400 | 825 |
| 8 x R2 | 4.000 | 7.000 | 3.200 | 5.100 | 2.800 | 4.450 | 2.000 | 2.850 | 1.200 | 1.150 | 1.050 | 825 |
| 10 x R2 | 3.200 | 7.000 | 2.550 | 5.100 | 2.250 | 4.450 | 1.600 | 2.850 | 955 | 1.150 | 860 | 825 |
| 12 x R3 | 2.650 | 7.000 | 2.100 | 5.100 | 1.850 | 4.450 | 1.350 | 2.850 | 795 | 1.150 | 715 | 825 |

Max cutting depth




| | ap | ae |
|---|---|---|
| RE≤2 | 0,2xRE | 0,5D |
| 2<RE | 0,5mm | 0,5D |

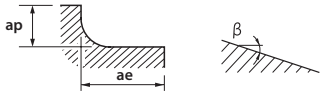
| | ap | ae |
|---|---|---|
| RE≤2 | 0,2xRE | 0,5D |
| 2<RE | 0,4mm | 0,5D |

| | ap | ae |
|---|---|---|
| RE≤2 | 0,1xRE | 0,5D |
| 2<RE | 0,2mm | 0,5D |

## High speed side milling

| | GG | | 30~38 HRC NAK55 • HPM1 • SKT • SKD | | 38~45 HRC SUS304 • SKD • HPM50 NAK80 | | 45~55 HRC | | 55~60 HRC | | 60~ HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 2 x R0,5 | 31.850 | 10.500 | 32.000 | 9.550 | 24.000 | 7.150 | 24000 | 6.450 | 16.000 | 2.850 | 14.400 | 2.050 |
| 3 x R0,75 | 21.000 | 12.500 | 21.000 | 12.000 | 16.000 | 8.400 | 16.000 | 7.850 | 10.500 | 3.300 | 9.450 | 2.370 |
| 4 x R1 | 16.000 | 13.000 | 16.000 | 12.000 | 12.000 | 9.000 | 12.000 | 8.200 | 7.950 | 3.550 | 7.150 | 2.550 |
| 6 x R1,5 | 10.600 | 14.000 | 10.600 | 12.700 | 7.950 | 9.550 | 7.950 | 8.600 | 5.300 | 3.800 | 5.300 | 3.800 |
| 8 x R2 | 7.950 | 14.000 | 7.950 | 12.700 | 5.950 | 9.550 | 5.950 | 8.600 | 4.000 | 3.800 | 4.000 | 3.800 |
| 10 x R2 | 6.350 | 14.000 | 6.350 | 12.700 | 4.750 | 9.550 | 4.750 | 8.600 | 3.200 | 3.800 | 3.200 | 3.800 |
| 12 x R3 | 5.300 | 14.000 | 5.300 | 12.700 | 4.000 | 9.550 | 4.000 | 8.600 | 2.650 | 3.800 | 2.650 | 3.800 |

Max cutting depth




| ap | ae |
|---|---|
| 0,1xR | 0,3D |

| | ap | ae |
|---|---|---|
| R<2 | 0,1xR | 0,3D |
| 2<R | 0,2mm | 0,3D |

| | ap | ae |
|---|---|---|
| R<2 | 0,05xR | 0,3D |
| 2<R | 0,1mm | 0,3D |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation much as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

# CUTTING CONDITIONS



## SX-(HS)-CRE

### Regular milling

| | | | Low carbon steel • Cast iron St-37 / GG-25 ~750N/mm2 | | Alloyed steel • Tool steel 42CrMo4 1.2379~30HRC | | Tempered steel • Hardened steel 1.2379 / 1.2344 30~45HRC | | Stainless steel 1.4301 ≤200HB | | Stainless steel, tempered '1.4542 | | Titanium alloys Ti-6Al-4V | | Ni-alloys Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | | 120 (80-140) [m/min] | | 100 (70-120) [m/min] | | 80 (60-100) [m/min] | | 70 (50-80) [m/min] | | 70 (60-80) [m/min] | | 60 (50-70) [m/min] | | 25 (20-30) [m/min] | |
| Nr. flutes | Ø | R | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 4 | 2 | 0,5 | 19.000 | 6.100 | 16.000 | 3.800 | 12.800 | 3.000 | 11.200 | 2.300 | 11.000 | 2.200 | 9.500 | 2.300 | 4.000 | 950 |
| 5 | 3 | 0,75 | 12.700 | 7.600 | 10.700 | 4.800 | 8.500 | 3.800 | 7.500 | 2.600 | 7.400 | 2.600 | 6.400 | 2.600 | 2.700 | 1.000 |
| 5 | 4 | 1 | 9.500 | 7.800 | 8.000 | 5.200 | 6.400 | 4.200 | 5.600 | 2.800 | 5.600 | 2.700 | 4.800 | 2.400 | 2.000 | 1.000 |
| 5 | 6 | 1,5 | 6.300 | 8.300 | 5.300 | 5.800 | 4.300 | 4.700 | 3.800 | 2.800 | 3.700 | 2.700 | 3.200 | 2.400 | 1.300 | 1.000 |
| 5 | 8 | 2 | 4.800 | 8.300 | 4.000 | 5.600 | 3.200 | 4.500 | 2.800 | 2.800 | 2.800 | 2.700 | 2.400 | 2.100 | 1.000 | 890 |
| 5 | 10 | 2 | 3.800 | 7.600 | 3.200 | 5.600 | 2.600 | 4.500 | 2.300 | 2.800 | 2.200 | 2.650 | 1.900 | 1.900 | 800 | 800 |
| 5 | 12 | 3 | 3.200 | 7.200 | 2.700 | 5.600 | 2.200 | 4.600 | 1.900 | 2.800 | 1.850 | 2.600 | 1.600 | 1.800 | 650 | 760 |
| Max. cutting depth | | | | | ap / ae<br>RE≤2: 0,3xRE / 0,5D<br>2<RE: 0,5mm / 0,5D | | | | ap / ae<br>RE≤2: 0,2xRE / 0,5D<br>2<RE: 0,4mm / 0,5D | | | | ap / ae<br>RE≤2: 0,1xRE / 0,5D<br>2<RE: 0,2mm / 0,5D | | | |

For full contact (ae: 1xD) Reduce Feedrate 60-70%

### Tool extension Coefficients (%)

| Overhang | Vc | ap | Feed |
|---|---|---|---|
| L/D≤4 | 100 | 100 | 100 |
| L/D=5 | 80-100 | 70-90 | 80-90 |
| L/D=6 | 60-80 | 50-70 | 60-80 |

### High speed side milling

| | | | Low carbon steel • Cast iron St-37 / GG-25 ~750N/mm2 | | Alloyed steel • Tool steel 42CrMo4 1.2379~30HRC | | Tempered steel • Hardened steel 1.2379 / 1.2344 30~45HRC | | Stainless steel 1.4301 ≤200HB | | Stainless steel, tempered '1.4542 | | Titanium alloys Ti-6Al-4V | | Ni-alloys Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | | 200 (180-220) [m/min] | | 180 (160-200) [m/min] | | 160 (140-180) [m/min] | | 140 (100-160) [m/min] | | 120 (100-140) [m/min] | | 90 (80-100) [m/min] | | 60 (40-80) [m/min] | |
| Nr. flutes | Ø | R | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 4 | 2 | 0,5 | 32.000 | 10.000 | 29.000 | 7.600 | 25.500 | 6.000 | 22.000 | 4.400 | 19.000 | 3.800 | 14.300 | 3.400 | 9.500 | 2.300 |
| 5 | 3 | 0,75 | 21.500 | 12.700 | 19.500 | 9.500 | 17.000 | 7.600 | 14.800 | 5.200 | 12.700 | 4.400 | 9.500 | 3.800 | 6.300 | 2.500 |
| 5 | 4 | 1 | 16.000 | 13.100 | 14.500 | 10.000 | 12.800 | 8.200 | 11.000 | 5.570 | 9.500 | 4.800 | 7.100 | 3.500 | 4.700 | 2.300 |
| 5 | 6 | 1,5 | 11.000 | 13.800 | 9.800 | 11.500 | 8.500 | 9.300 | 7.400 | 5.570 | 6.300 | 4.800 | 4.700 | 3.500 | 3.100 | 2.300 |
| 5 | 8 | 2 | 8.000 | 14.000 | 7.400 | 11.000 | 6.400 | 8.900 | 5.500 | 5.570 | 4.700 | 4.800 | 3.500 | 3.200 | 2.300 | 2.100 |
| 5 | 10 | 2 | 6.400 | 12.700 | 6.000 | 11.000 | 5.100 | 8.900 | 4.400 | 5.570 | 3.800 | 4.800 | 2.800 | 3.800 | 1.900 | 1.900 |
| 5 | 12 | 3 | 5.400 | 12.000 | 5.000 | 11.000 | 4.300 | 8.900 | 3.700 | 5.570 | 3.200 | 4.800 | 2.300 | 2.700 | 1.600 | 1.800 |
| Max. cutting depth | | | | | ap / ae<br>RE≤2: 0,2xRE / 0,3D | | | | ap / ae<br>RE≤2: 0,1xRE / 0,3D<br>2<RE: 0,2mm / 0,3D | | | | ap / ae<br>RE≤2: 0,1xRE / 0,3D<br>2<RE: 0,1mm / 0,3D | | | |

### Tool extension Coefficients (%)

| Overhang | Vc | ap | Feed |
|---|---|---|---|
| L/D≤4 | 100 | 100 | 100 |
| L/D=5 | 60-80 | 60-80 | 70-90 |
| L/D=6 | 40-60 | 40-60 | 60-80 |

# CUTTING CONDITIONS

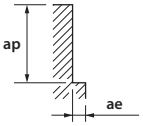
**Milling | Endmills | Cutting conditions**

## WXS-EMS

### Side milling

| | ~ 40 HRC NAK55 • HPM1 • SKT | | 40 ~ 45 HRC NAK80 • SKD11 • SKD61 | | 45~55 HRC | | 55~60 HRC | | 60~65 HRC | | 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 1 | 20.000 | 800 | 20.000 | 800 | 20.000 | 800 | 20.000 | 560 | 20.000 | 480 | 16.000 | 335 |
| 2 | 20.000 | 1.600 | 20.000 | 1.600 | 16.000 | 1.250 | 12.000 | 670 | 11.000 | 535 | 7.950 | 335 |
| 3 | 15.000 | 1.800 | 13.500 | 1.600 | 10.500 | 1.250 | 7.950 | 670 | 7.450 | 535 | 5.300 | 335 |
| 4 | 11.000 | 1.800 | 9.950 | 1.600 | 7.950 | 1.250 | 5.950 | 670 | 5.550 | 535 | 4.000 | 335 |
| 5 | 8.900 | 1.800 | 7.950 | 1.600 | 6.350 | 1.250 | 4.800 | 670 | 4.450 | 535 | 3.200 | 335 |
| 6 | 7.450 | 2.650 | 6.650 | 2.400 | 5.300 | 1.900 | 4.000 | 1.000 | 3.700 | 800 | 2.650 | 505 |
| 8 | 5.550 | 2.650 | 4.950 | 2.400 | 4.000 | 1.900 | 3.000 | 1.000 | 2.800 | 800 | 2.000 | 505 |
| 10 | 4.450 | 2.650 | 4.000 | 2.400 | 3.200 | 1.900 | 2.400 | 1.000 | 2.250 | 800 | 1.600 | 505 |
| 12 | 3.700 | 2.650 | 3.300 | 2.400 | 2.650 | 1.900 | 2.000 | 1.000 | 1.850 | 800 | 1.350 | 505 |
| 14 | 3.100 | 2.500 | 2.800 | 2.250 | 2.250 | 1.800 | 1.700 | 1.000 | 1.550 | 800 | 1.100 | 505 |
| 15 | 2.850 | 2.400 | 2.600 | 2.200 | 2.100 | 1.750 | 1.550 | 950 | 1.450 | 800 | 1.050 | 505 |
| 16 | 2.700 | 2.400 | 2.400 | 2.100 | 1.950 | 1.700 | 1.450 | 930 | 1.350 | 800 | 995 | 505 |
| 18 | 2.400 | 2.250 | 2.200 | 2.000 | 1.750 | 1.600 | 1.300 | 895 | 1.200 | 800 | 885 | 505 |
| 20 | 2.200 | 2.150 | 1.950 | 1.900 | 1.550 | 1.500 | 1.150 | 845 | 1.100 | 695 | 800 | 505 |
| 25 | 1.700 | 2.450 | 1.550 | 2.100 | 1.250 | 1.500 | 955 | 915 | 890 | 750 | 635 | 505 |
| 30 | 1.400 | 2.300 | 1.300 | 1.750 | 1.050 | 1.250 | 795 | 760 | 740 | 620 | 620 | 430 |

Max cutting depth




| D | ap | ae |
|---|---|---|
| < 1,5 | 1,5D | 0,02D |
| 1,5-2,5 | 1,5D | 0,05D |
| > 2,5 | 1,5D | 0,10D |

ae max = 1mm

| ap | ae |
|---|---|
| 1,5D | 0,05D |

ae max = 1mm

| ap | ae |
|---|---|
| 1,5D | 0,03D |

ae max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,02D |

ae max = 0,5mm

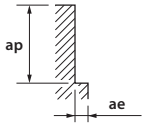
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

## WXS-EMS

### High speed side milling

| | ~ 40 HRC NAK55 • HPM1 • SKT | | 40 ~ 45 HRC NAK80 • SKD11 • SKD61 | | 45~55 HRC | | 55~60 HRC | | 60~65 HRC | | 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 1 | 50.000 | 1.600 | 50.000 | 2.000 | 50.000 | 2.000 | 50.000 | 1.600 | 47.500 | 1.350 | 32.000 | 715 |
| 2 | 47.500 | 3.250 | 47.500 | 3.800 | 40.000 | 3.200 | 25.500 | 1.650 | 24.000 | 1.350 | 16.000 | 800 |
| 3 | 32.000 | 3.450 | 32.000 | 3.800 | 26.500 | 3.200 | 17.000 | 1.650 | 16.000 | 1.350 | 10.500 | 800 |
| 4 | 24.000 | 3.900 | 24.000 | 3.800 | 20.000 | 3.200 | 12.500 | 1.650 | 12.000 | 1.350 | 7.950 | 800 |
| 5 | 19.000 | 4.100 | 19.000 | 3.800 | 16.000 | 3.200 | 10.000 | 1.650 | 9.550 | 1.350 | 6.350 | 800 |
| 6 | 16.000 | 5.750 | 16.000 | 5.750 | 13.500 | 4.800 | 8.500 | 2.450 | 7.950 | 2.000 | 5.300 | 1.200 |
| 8 | 12.000 | 5.750 | 12.000 | 5.750 | 9.950 | 4.800 | 6.350 | 2.450 | 5.950 | 2.000 | 4.000 | 1.200 |
| 10 | 9.550 | 5.750 | 9.550 | 5.750 | 7.950 | 4.800 | 5.100 | 2.450 | 4.800 | 2.000 | 3.200 | 1.200 |
| 12 | 7.950 | 5.750 | 7.950 | 5.750 | 6.650 | 4.800 | 4.250 | 2.450 | 4.000 | 2.000 | 2.650 | 1.200 |
| 14 | 6.800 | 5.400 | 6.800 | 5.400 | 5.650 | 4.500 | 3.600 | 2.400 | 3.400 | 2.000 | 2.250 | 1.200 |
| 15 | 6.350 | 5.300 | 6.350 | 5.300 | 5.250 | 4.350 | 3.350 | 2.300 | 3.150 | 1.950 | 2.100 | 1.200 |
| 16 | 5.950 | 5.150 | 5.950 | 5.150 | 4.950 | 4.250 | 3.150 | 2.250 | 2.950 | 1.850 | 1.950 | 1.200 |
| 18 | 5.300 | 4.850 | 5.300 | 4.850 | 4.400 | 4.050 | 2.800 | 2.200 | 2.650 | 1.750 | 1.750 | 1.200 |
| 20 | 4.750 | 4.600 | 4.750 | 4.600 | 3.950 | 3.650 | 2.500 | 2.050 | 2.350 | 1.550 | 1.550 | 1.100 |
| 25 | 3.800 | 5.350 | 3.800 | 5.050 | 3.150 | 3.800 | 2.000 | 2.000 | 1.900 | 1.250 | 1.250 | 1.050 |
| 30 | 3.150 | 4.950 | 3.150 | 4.250 | 2.650 | 3.150 | 1.650 | 1.800 | 1.550 | 1.050 | 1.050 | 1.000 |

Max cutting depth




| ap | ae |
|---|---|
| 1D | 0,05D |

ae max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,03D |

ae max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,02D |

ae max = 0,2mm

| ap | ae |
|---|---|
| 1D | 0,01D |

ae max = 0,2mm

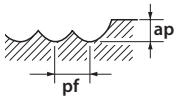
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

# WXS-HS-EBD

## High speed light milling

| | Tool Steel • Hardened Steel • Prehardened Steel ~ 45 HRC SKD • NAK80 • HPM50 | | Hardened Steel 45~55 HRC | | Hardened Steel 55~60 HRC | | Hardened Steel 60~65 HRC | | Hardened Steel 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R 0,5x1 | 50.000 | 3.700 | 50.000 | 3.700 | 50.000 | 3.100 | 50.000 | 2.600 | 47.500 | 2.400 |
| R1x2 | 50.000 | 5.600 | 47.500 | 5.350 | 40.000 | 3.650 | 32.000 | 2.800 | 24.000 | 2.100 |
| R1,5x3 | 41.500 | 6.200 | 32.000 | 4.800 | 26.500 | 3.350 | 21.000 | 2.550 | 16.000 | 1.900 |
| R2x4 | 31.000 | 5.700 | 24.000 | 4.400 | 20.000 | 3.200 | 16.000 | 2.400 | 12.000 | 1.800 |
| R2,5x5 | 25.000 | 5.450 | 19.000 | 4.000 | 16.000 | 2.850 | 13.000 | 2.150 | 9.550 | 1.600 |
| R3x6 | 20.500 | 5.200 | 16.000 | 3.450 | 13.500 | 2.550 | 10.500 | 2.050 | 7.950 | 1.550 |
| R4 x 8 | 15.500 | 4.450 | 12.000 | 3.050 | 9.950 | 2.250 | 7.950 | 1.800 | 5.950 | 1.350 |
| R5x10 | 12.500 | 3.950 | 9.550 | 2.650 | 7.950 | 1.900 | 6.350 | 1.550 | 4.800 | 1.150 |
| R6x12 | 10.500 | 3.700 | 7.950 | 2.500 | 6.650 | 1.600 | 5.300 | 1.350 | 4.000 | 995 |

Max cutting depth




| ap | pf |
|---|---|
| 0,02D | 0,05D |

| ap | pf |
|---|---|
| 0,02D | 0,05D |

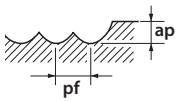
| ap | pf |
|---|---|
| 0,01D | 0,05D |

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibrationor chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holdeing condition, etc.., please adjust the speed, feed and the depth of cut. As a guideline in selecting end mills. To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS). To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

## Regular milling

| | Tool Steel • Hardened Steel • Prehardened Steel ~ 45 HRC SKD • NAK80 • HPM50 | | Hardened Steel 45~55 HRC | | Hardened Steel 55~60 HRC | | Hardened Steel 60~65 HRC | | Hardened Steel 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| R0,5 | 32.000 | 2.350 | 32.000 | 2.350 | 32.000 | 2.000 | 32.000 | 1.600 | 32.000 | 1450 |
| R0,75 | 32.000 | 3.050 | 32.000 | 3.050 | 32.000 | 2.500 | 26.500 | 1.900 | 21.000 | 1400 |
| R1 | 32.000 | 3.600 | 32.000 | 3.550 | 24.000 | 2.200 | 2.000 | 1.750 | 16.000 | 1250 |
| R1,5 | 26.500 | 4.000 | 21.000 | 3.200 | 16.000 | 2.000 | 13.500 | 1.600 | 10.500 | 1200 |
| R2 | 20.000 | 3.650 | 16.000 | 2.950 | 12.000 | 1.900 | 9.950 | 1.500 | 7.950 | 1150 |
| R2,5 | 16.000 | 3.500 | 12.500 | 2.650 | 9.550 | 1.700 | 7.950 | 1.350 | 6.350 | 1000 |
| R3 | 13.500 | 3.350 | 10.500 | 2.300 | 7.950 | 1.550 | 6.650 | 1.250 | 5.300 | 955 |
| R4 | 9.950 | 2.850 | 7.950 | 2.050 | 5.950 | 1.350 | 4.950 | 1.050 | 4.000 | 830 |
| R5 | 7.950 | 2.550 | 6.350 | 1.800 | 4.800 | 1.150 | 4.000 | 875 | 3.200 | 700 |
| R6 | 6.650 | 2.400 | 5.300 | 1.650 | 4.000 | 955 | 3.300 | 795 | 2.650 | 635 |
| R8 | 4.950 | 1.800 | 4.000 | 1.250 | 3.000 | 775 | 2.500 | 595 | 2.000 | 475 |
| R10 | 4.000 | 1.450 | 3.200 | 1.000 | 2.400 | 620 | 2.000 | 475 | 1.600 | 380 |
| R12,5 | 3.200 | 1.150 | 2.550 | 815 | 1.900 | 495 | 1.600 | 380 | 1.250 | 305 |

Max cutting depth




| ap | pf |
|---|---|
| 0,05D | 0,1D |

ap max = 0,5mm

| ap | pf |
|---|---|
| 0,03D | 0,1D |

ap max = 0,5mm

| ap | pf |
|---|---|
| 0,02D | 0,05D |

ap max = 0,3mm

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibrationor chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holdeing condition, etc.., please adjust the speed, feed and the depth of cut. As a guideline in selecting end mills. To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS). To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

## WXS-LN-EBD

### High speed milling

| | | C≤0,2% - GG | | | | ~30 HRC | | | | 30~38 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,1 | 0,3 | 50,000 | 70 | 0,003 | 0,003 | 50,000 | 70 | 0,003 | 0,003 | 50.000 | 70 | 0,003 | 0,003 |
| 0,1 | 0,5 | 50,000 | 50 | 0,003 | 0,003 | 50.000 | 50 | 0,003 | 0,003 | 50.000 | 50 | 0,003 | 0,003 |
| 0,2 | 0,5 | 50,000 | 400 | 0,005 | 0,005 | 50.000 | 400 | 0,005 | 0,005 | 50.000 | 380 | 0,005 | 0,005 |
| 0,2 | 0,75 | 50,000 | 360 | 0,005 | 0,005 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,2 | 1 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,2 | 1,25 | 47.000 | 320 | 0,005 | 0,005 | 47.000 | 320 | 0,005 | 0,005 | 47.000 | 300 | 0,005 | 0,005 |
| 0,2 | 1,5 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 |
| 0,2 | 1,75 | 42.000 | 260 | 0,005 | 0,005 | 42.000 | 260 | 0,005 | 0,005 | 42.000 | 240 | 0,005 | 0,005 |
| 0,2 | 2 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 210 | 0,005 | 0,005 |
| 0,2 | 2,5 | 32.000 | 170 | 0,004 | 0,005 | 32.000 | 170 | 0,005 | 0,004 | 32.000 | 160 | 0,004 | 0,005 |
| 0,2 | 3 | 32.000 | 150 | 0,004 | 0,005 | 32.000 | 150 | 0,005 | 0,004 | 32.000 | 140 | 0,004 | 0,005 |
| 0,3 | 1,2 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,3 | 2 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,3 | 2,5 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,3 | 3 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,3 | 3,5 | 47.000 | 510 | 0,005 | 0,010 | 47.000 | 510 | 0,005 | 0,010 | 47.000 | 480 | 0,005 | 0,010 |
| 0,3 | 4 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 |
| 0,3 | 4,5 | 45.000 | 400 | 0,005 | 0,005 | 45.000 | 400 | 0,005 | 0,005 | 45.000 | 380 | 0,005 | 0,005 |
| 0,3 | 5 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 280 | 0,005 | 0,005 |
| 0,3 | 6 | 38.000 | 250 | 0,005 | 0,005 | 38.000 | 250 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 |
| 0,3 | 7 | 34.000 | 200 | 0,004 | 0,005 | 34.000 | 200 | 0,004 | 0,005 | 34.000 | 190 | 0,005 | 0,004 |
| 0,3 | 8 | 32.000 | 150 | 0,004 | 0,005 | 32.000 | 150 | 0,004 | 0,005 | 32.000 | 140 | 0,005 | 0,004 |
| 0,3 | 9 | 32.000 | 130 | 0,004 | 0,005 | 32.000 | 130 | 0,004 | 0,005 | 32.000 | 120 | 0,005 | 0,004 |
| 0,3 | 10 | 29.000 | 100 | 0,004 | 0,005 | 29.000 | 100 | 0,004 | 0,005 | 29.000 | 95 | 0,005 | 0,004 |
| 0,4 | 0,8 | 50.000 | 900 | 0,010 | 0,020 | 50.000 | 900 | 0,010 | 0,020 | 50.000 | 850 | 0,010 | 0,020 |
| 0,4 | 1 | 50.000 | 900 | 0,010 | 0,020 | 50.000 | 900 | 0,010 | 0,020 | 50.000 | 850 | 0,010 | 0,020 |
| 0,4 | 1,5 | 50.000 | 800 | 0,010 | 0,020 | 50.000 | 800 | 0,010 | 0,020 | 50.000 | 760 | 0,010 | 0,020 |
| 0,4 | 2 | 50.000 | 700 | 0,010 | 0,020 | 50.000 | 700 | 0,010 | 0,020 | 50.000 | 660 | 0,010 | 0,020 |
| 0,4 | 2,5 | 45.000 | 550 | 0,008 | 0,015 | 45.000 | 550 | 0,008 | 0,015 | 45.000 | 520 | 0,008 | 0,015 |
| 0,4 | 3 | 43.000 | 500 | 0,005 | 0,010 | 43.000 | 500 | 0,005 | 0,010 | 43.000 | 470 | 0,005 | 0,010 |
| 0,4 | 3,5 | 40.000 | 420 | 0,005 | 0,010 | 40.000 | 420 | 0,005 | 0,010 | 40.000 | 400 | 0,005 | 0,010 |
| 0,4 | 4 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 350 | 0,005 | 0,005 |
| 0,4 | 4,5 | 32.000 | 290 | 0,004 | 0,005 | 32.000 | 290 | 0,004 | 0,005 | 32.000 | 270 | 0,004 | 0,005 |
| 0,4 | 5 | 32.000 | 280 | 0,004 | 0,005 | 32.000 | 280 | 0,004 | 0,005 | 32.000 | 260 | 0,004 | 0,005 |
| 0,4 | 5,5 | 30.000 | 230 | 0,004 | 0,005 | 30.000 | 230 | 0,004 | 0,005 | 30.000 | 210 | 0,004 | 0,005 |
| 0,4 | 6 | 30.000 | 200 | 0,004 | 0,005 | 30.000 | 200 | 0,004 | 0,005 | 30.000 | 190 | 0,004 | 0,005 |
| 0,5 | 1 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.050 | 0,015 | 0,030 |
| 0,5 | 1,5 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.050 | 0,015 | 0,030 |
| 0,5 | 2 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 950 | 0,015 | 0,030 |
| 0,5 | 2,5 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 950 | 0,015 | 0,030 |
| 0,5 | 3 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 |
| 0,5 | 3,5 | 45.000 | 700 | 0,010 | 0,020 | 45.000 | 700 | 0,010 | 0,020 | 45.000 | 650 | 0,010 | 0,020 |
| 0,5 | 4 | 43.000 | 600 | 0,010 | 0,010 | 43.000 | 600 | 0,010 | 0,010 | 43.000 | 570 | 0,010 | 0,010 |
| 0,5 | 4,5 | 38.000 | 500 | 0,010 | 0,010 | 38.000 | 500 | 0,010 | 0,010 | 38.000 | 470 | 0,010 | 0,010 |
| 0,5 | 5 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 380 | 0,005 | 0,010 |
| 0,5 | 5,5 | 28.000 | 300 | 0,004 | 0,005 | 28.000 | 300 | 0,004 | 0,005 | 28.000 | 280 | 0,004 | 0,005 |
| 0,5 | 6 | 26.000 | 250 | 0,004 | 0,005 | 26.000 | 250 | 0,004 | 0,005 | 26.000 | 230 | 0,004 | 0,005 |
| 0,5 | 7 | 24.000 | 200 | 0,004 | 0,005 | 24.000 | 200 | 0,004 | 0,005 | 24.000 | 190 | 0,004 | 0,005 |
| 0,5 | 8 | 22.000 | 160 | 0,004 | 0,005 | 22.000 | 160 | 0,004 | 0,005 | 22.000 | 150 | 0,004 | 0,005 |
| 0,5 | 9 | 20.000 | 120 | 0,004 | 0,005 | 20.000 | 120 | 0,004 | 0,005 | 20.000 | 110 | 0,004 | 0,005 |
| 0,5 | 10 | 20.000 | 100 | 0,004 | 0,005 | 20.000 | 100 | 0,004 | 0,005 | 20.000 | 95 | 0,004 | 0,005 |
| 0,6 | 1,2 | 50.000 | 1.350 | 0,030 | 0,050 | 50.000 | 1.350 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 |
| 0,6 | 2 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 |
| 0,6 | 2,5 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.100 | 0,030 | 0,050 |
| 0,6 | 3 | 50.000 | 1.200 | 0,020 | 0,030 | 50.000 | 1.200 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 |
| 0,6 | 3,5 | 45.000 | 1.000 | 0,020 | 0,030 | 45.000 | 1.000 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 |
| 0,6 | 4 | 40.000 | 900 | 0,010 | 0,020 | 40.000 | 900 | 0,010 | 0,020 | 40.000 | 850 | 0,010 | 0,020 |
| 0,6 | 4,5 | 34.000 | 780 | 0,010 | 0,020 | 34.000 | 780 | 0,010 | 0,020 | 34.000 | 740 | 0,010 | 0,020 |
| 0,6 | 5 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 |
| 0,6 | 5,5 | 28.000 | 650 | 0,010 | 0,020 | 28.000 | 650 | 0,010 | 0,020 | 28.000 | 610 | 0,010 | 0,020 |
| 0,6 | 6 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 |
| 0,6 | 6,5 | 24.000 | 550 | 0,010 | 0,010 | 24.000 | 550 | 0,010 | 0,010 | 24.000 | 520 | 0,010 | 0,010 |
| 0,6 | 7 | 23.000 | 450 | 0,010 | 0,010 | 23.000 | 450 | 0,010 | 0,010 | 23.000 | 420 | 0,010 | 0,010 |
| 0,6 | 7,5 | 23.000 | 400 | 0,010 | 0,010 | 23.000 | 400 | 0,010 | 0,010 | 23.000 | 380 | 0,010 | 0,010 |
| 0,6 | 8 | 20.000 | 320 | 0,005 | 0,010 | 20.000 | 320 | 0,005 | 0,010 | 20.000 | 300 | 0,005 | 0,010 |
| 0,6 | 8,5 | 20.000 | 300 | 0,005 | 0,010 | 20.000 | 300 | 0,005 | 0,010 | 20.000 | 280 | 0,005 | 0,010 |
| 0,6 | 9 | 20.000 | 280 | 0,005 | 0,010 | 20.000 | 280 | 0,005 | 0,010 | 20.000 | 260 | 0,005 | 0,010 |
| 0,6 | 9,5 | 20.000 | 240 | 0,005 | 0,008 | 20.000 | 240 | 0,005 | 0,008 | 20.000 | 220 | 0,005 | 0,008 |
| 0,6 | 10 | 20.000 | 200 | 0,005 | 0,008 | 20.000 | 200 | 0,005 | 0,008 | 20.000 | 190 | 0,005 | 0,008 |
| 0,6 | 11 | 18.000 | 150 | 0,005 | 0,008 | 18.000 | 150 | 0,005 | 0,008 | 18.000 | 140 | 0,005 | 0,008 |
| 0,6 | 12 | 18.000 | 120 | 0,005 | 0,005 | 18.000 | 120 | 0,005 | 0,005 | 18.000 | 110 | 0,005 | 0,005 |
| 0,8 | 2 | 50.000 | 2.000 | 0,040 | 0,080 | 50.000 | 2.000 | 0,040 | 0,080 | 50.000 | 1.900 | 0,040 | 0,080 |
| 0,8 | 3 | 48.000 | 1.600 | 0,040 | 0,080 | 48.000 | 1.600 | 0,040 | 0,080 | 48.000 | 1.500 | 0,040 | 0,080 |
| 0,8 | 4 | 40.000 | 1.200 | 0,040 | 0,080 | 40.000 | 1.200 | 0,040 | 0,080 | 40.000 | 1.100 | 0,040 | 0,080 |
| 0,8 | 5 | 34.000 | 950 | 0,030 | 0,050 | 34.000 | 950 | 0,030 | 0,050 | 34.000 | 900 | 0,030 | 0,050 |
| 0,8 | 6 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 |
| 0,8 | 7 | 25.000 | 600 | 0,010 | 0,020 | 25.000 | 600 | 0,010 | 0,020 | 25.000 | 570 | 0,010 | 0,020 |
| 0,8 | 8 | 23.000 | 450 | 0,005 | 0,010 | 23.000 | 450 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,010 |
| 0,8 | 10 | 18.000 | 320 | 0,005 | 0,008 | 18.000 | 320 | 0,005 | 0,008 | 18.000 | 300 | 0,005 | 0,008 |

## WXS-LN-EBD

### High speed milling

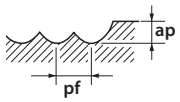
| | | C≤0,2% - GG | | | | ~30 HRC | | | | 30~38 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,8 | 12 | 17.000 | 250 | 0,005 | 0,005 | 17.000 | 250 | 0,005 | 0,005 | 17.000 | 230 | 0,005 | 0,005 |
| 1 | 2 | 50.000 | 3.700 | 0,050 | 0,100 | 50.000 | 3.700 | 0,050 | 0,100 | 50.000 | 3.700 | 0,050 | 0,100 |
| 1 | 3 | 45.000 | 3.200 | 0,050 | 0,100 | 45.000 | 3.200 | 0,050 | 0,100 | 45.000 | 3.000 | 0,050 | 0,100 |
| 1 | 4 | 40.000 | 3.000 | 0,050 | 0,100 | 40.000 | 3.000 | 0,050 | 0,100 | 40.000 | 2.850 | 0,050 | 0,100 |
| 1 | 5 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,100 |
| 1 | 6 | 30.000 | 2.000 | 0,050 | 0,100 | 30,000 | 2.000 | 0,050 | 0,100 | 30,000 | 1,900 | 0,050 | 0,100 |
| 1 | 7 | 27,000 | 1,700 | 0,050 | 0,100 | 27,000 | 1,700 | 0,050 | 0,100 | 27,000 | 1,600 | 0,050 | 0,100 |
| 1 | 8 | 26.000 | 1.600 | 0,050 | 0,100 | 26.000 | 1.600 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,100 |
| 1 | 9 | 24.000 | 1.200 | 0,030 | 0,050 | 24.000 | 1.200 | 0,030 | 0,050 | 24.000 | 1.100 | 0,030 | 0,050 |
| 1 | 10 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 |
| 1 | 12 | 20.000 | 800 | 0,010 | 0,010 | 20.000 | 800 | 0,010 | 0,010 | 20.000 | 760 | 0,010 | 0,010 |
| 1 | 14 | 18.000 | 600 | 0,005 | 0,010 | 18.000 | 600 | 0,005 | 0,010 | 18.000 | 570 | 0,005 | 0,010 |
| 1 | 16 | 16.000 | 420 | 0,005 | 0,010 | 16.000 | 420 | 0,005 | 0,010 | 16.000 | 400 | 0,005 | 0,010 |
| 1 | 18 | 14.000 | 320 | 0,005 | 0,005 | 14.000 | 320 | 0,005 | 0,005 | 14.000 | 300 | 0,005 | 0,005 |
| 1 | 20 | 13.000 | 300 | 0,005 | 0,005 | 13.000 | 300 | 0,005 | 0,005 | 13.000 | 285 | 0,005 | 0,005 |
| 1 | 22 | 12.000 | 200 | 0,005 | 0,005 | 12.000 | 200 | 0,005 | 0,005 | 12.000 | 190 | 0,005 | 0,005 |
| 1,2 | 2,4 | 50.000 | 3.800 | 0,060 | 0,120 | 50.000 | 3.800 | 0,060 | 0,120 | 50.000 | 3.600 | 0,060 | 0,120 |
| 1,2 | 4 | 40.000 | 3.000 | 0,060 | 0,120 | 40.000 | 3.000 | 0,060 | 0,120 | 40.000 | 2.850 | 0,060 | 0,120 |
| 1,2 | 6 | 32.000 | 2.100 | 0,060 | 0,120 | 32.000 | 2.100 | 0,060 | 0,120 | 32.000 | 2.000 | 0,060 | 0,120 |
| 1,2 | 8 | 25.000 | 1.700 | 0,060 | 0,120 | 25.000 | 1.700 | 0,060 | 0,120 | 25.000 | 1.600 | 0,060 | 0,120 |
| 1,2 | 10 | 20.000 | 1.200 | 0,050 | 0,100 | 20.000 | 1.200 | 0,050 | 0,100 | 20.000 | 1.100 | 0,050 | 0,100 |
| 1,2 | 12 | 19.000 | 900 | 0,030 | 0,050 | 19.000 | 900 | 0,030 | 0,050 | 19.000 | 850 | 0,030 | 0,050 |
| 1,2 | 14 | 18.000 | 650 | 0,030 | 0,050 | 18.000 | 650 | 0,030 | 0,050 | 18.000 | 610 | 0,030 | 0,050 |
| 1,2 | 16 | 16.000 | 450 | 0,020 | 0,050 | 16.000 | 450 | 0,020 | 0,050 | 16.000 | 420 | 0,020 | 0,050 |
| 1,2 | 18 | 16.000 | 350 | 0,005 | 0,005 | 16.000 | 350 | 0,005 | 0,005 | 16.000 | 330 | 0,005 | 0,005 |
| 1,2 | 20 | 14.000 | 320 | 0,005 | 0,005 | 14.000 | 320 | 0,005 | 0,005 | 14.000 | 300 | 0,005 | 0,005 |
| 1,4 | 8 | 25.000 | 1.700 | 0,070 | 0,140 | 25.000 | 1.700 | 0,07 | 0,140 | 25.000 | 1.600 | 0,070 | 0,140 |
| 1,4 | 12 | 19.000 | 1.000 | 0,030 | 0,070 | 19.000 | 1.000 | 0,03 | 0,070 | 19.000 | 950 | 0,030 | 0,070 |
| 1,4 | 16 | 14.000 | 500 | 0,020 | 0,050 | 14.000 | 500 | 0,02 | 0,050 | 14.000 | 470 | 0,020 | 0,050 |
| 1,5 | 3 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 4.800 | 0,075 | 0,150 |
| 1,5 | 4 | 40.000 | 3.900 | 0,075 | 0,150 | 40.000 | 3.900 | 0,075 | 0,150 | 40.000 | 3.700 | 0,075 | 0,150 |
| 1,5 | 6 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0,150 |
| 1,5 | 8 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0,150 |
| 1,5 | 10 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0,150 |
| 1,5 | 12 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0,100 |
| 1,5 | 14 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0,100 |
| 1,5 | 16 | 16.000 | 800 | 0,050 | 0,100 | 16.000 | 800 | 0,050 | 0,100 | 16.000 | 760 | 0,050 | 0,100 |
| 1,5 | 18 | 14.000 | 500 | 0,030 | 0,050 | 14.000 | 500 | 0,030 | 0,050 | 14.000 | 470 | 0,030 | 0,050 |
| 1,5 | 20 | 13.000 | 360 | 0,020 | 0,050 | 13.000 | 360 | 0,020 | 0,050 | 13.000 | 340 | 0,020 | 0,050 |
| 1,5 | 22 | 13.000 | 320 | 0,020 | 0,050 | 13.000 | 320 | 0,020 | 0,050 | 13.000 | 300 | 0,020 | 0,050 |
| 1,5 | 30 | 12.000 | 200 | 0,005 | 0,010 | 12.000 | 200 | 0,005 | 0,010 | 12.000 | 190 | 0,005 | 0,010 |
| 1,6 | 8 | 24.000 | 3.000 | 0,080 | 0,160 | 24.000 | 3.000 | 0,080 | 0,160 | 24.000 | 2.800 | 0,080 | 0,160 |
| 1,6 | 12 | 21.000 | 1.800 | 0,050 | 0,100 | 21.000 | 1.800 | 0,050 | 0,100 | 21.000 | 1.700 | 0,050 | 0,100 |
| 1,6 | 16 | 16.000 | 800 | 0,050 | 0,100 | 16.000 | 800 | 0,050 | 0,100 | 16.000 | 760 | 0,050 | 0,100 |
| 1,6 | 20 | 13.000 | 380 | 0,030 | 0,050 | 13.000 | 380 | 0,030 | 0,050 | 13.000 | 360 | 0,030 | 0,050 |
| 1,8 | 8 | 21.000 | 3.000 | 0,090 | 0,270 | 21.000 | 3.000 | 0,090 | 0,270 | 21.000 | 2.800 | 0,090 | 0,270 |
| 1,8 | 12 | 18.000 | 1.800 | 0,090 | 0,180 | 18.000 | 1.800 | 0,090 | 0,180 | 18.000 | 1.700 | 0,090 | 0,180 |
| 1,8 | 16 | 16.000 | 900 | 0,050 | 0,120 | 16.000 | 900 | 0,050 | 0,120 | 16.000 | 850 | 0,050 | 0,120 |
| 1,8 | 20 | 12.000 | 380 | 0,040 | 0,050 | 12.000 | 380 | 0,040 | 0,050 | 12.000 | 360 | 0,040 | 0,050 |
| 2 | 4 | 50.000 | 5.600 | 0,100 | 0,200 | 50.000 | 5.600 | 0,100 | 0,200 | 50.000 | 5.600 | 0,100 | 0,200 |
| 2 | 6 | 36.000 | 3.000 | 0,100 | 0,200 | 36.000 | 3.000 | 0,100 | 0,200 | 36.000 | 2.800 | 0,100 | 0,200 |
| 2 | 8 | 25.000 | 2.600 | 0,100 | 0,200 | 25.000 | 2.600 | 0,100 | 0,200 | 25.000 | 2.400 | 0,100 | 0,200 |
| 2 | 10 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 |
| 2 | 12 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 |
| 2 | 14 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 |
| 2 | 16 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 |
| 2 | 18 | 13.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.500 | 0,100 | 0,100 |
| 2 | 20 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 |
| 2 | 22 | 10.000 | 1.000 | 0,050 | 0,100 | 10.000 | 1.000 | 0,050 | 0,100 | 10.000 | 950 | 0,050 | 0,100 |
| 2 | 25 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 760 | 0,030 | 0,050 |
| 2 | 30 | 10.000 | 500 | 0,020 | 0,050 | 10.000 | 500 | 0,020 | 0,050 | 10.000 | 470 | 0,020 | 0,050 |
| 2 | 35 | 8.000 | 250 | 0,020 | 0,030 | 8.000 | 250 | 0,020 | 0,030 | 8.000 | 230 | 0,020 | 0,030 |
| 2 | 40 | 7.000 | 150 | 0,020 | 0,030 | 7.000 | 150 | 0,020 | 0,030 | 7.000 | 140 | 0,020 | 0,030 |
| 2,5 | 10 | 20.000 | 3.300 | 0,100 | 0,200 | 20.000 | 3.300 | 0,100 | 0,200 | 20.000 | 3.100 | 0,100 | 0,200 |
| 2,5 | 15 | 17.000 | 2.800 | 0,100 | 0,200 | 17.000 | 2.800 | 0,100 | 0,200 | 17.000 | 2.600 | 0,100 | 0,200 |
| 2,5 | 20 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 |
| 2,5 | 25 | 12.000 | 1.000 | 0,030 | 0,050 | 12.000 | 1.000 | 0,030 | 0,050 | 12.000 | 950 | 0,030 | 0,050 |
| 2,5 | 30 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 760 | 0,030 | 0,050 |
| 2,5 | 35 | 8.000 | 500 | 0,020 | 0,030 | 8.000 | 500 | 0,020 | 0,030 | 8.000 | 470 | 0,020 | 0,030 |
| 3 | 6 | 41.500 | 6.200 | 0,150 | 0,300 | 41.500 | 6.200 | 0,150 | 0,300 | 41.500 | 6.200 | 0,150 | 0,300 |
| 3 | 8 | 30.000 | 4.500 | 0,150 | 0,300 | 30.000 | 4.500 | 0,150 | 0,300 | 30.000 | 4.200 | 0,150 | 0,300 |
| 3 | 10 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.600 | 0,150 | 0,300 |
| 3 | 12 | 20.000 | 3.000 | 0,150 | 0,300 | 20.000 | 3.000 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 |
| 3 | 14 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 |
| 3 | 15 | 16.000 | 2.400 | 0,100 | 0,300 | 16.000 | 2.400 | 0,100 | 0,300 | 16.000 | 2.200 | 0,100 | 0,300 |
| 3 | 16 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 |
| 3 | 20 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 |
| 3 | 25 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 |
| 3 | 30 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 800 | 0,030 | 0,050 | 10.000 | 760 | 0,030 | 0,050 |

## WXS-LN-EBD

### High speed milling

| | | C≤0,2% - GG | | | | ~30 HRC | | | | 30~38 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 3 | 35 | 8.000 | 600 | 0,020 | 0,050 | 8.000 | 600 | 0,020 | 0,050 | 8.000 | 570 | 0,020 | 0,050 |
| 3 | 40 | 7.000 | 500 | 0,020 | 0,030 | 7.000 | 500 | 0,020 | 0,030 | 7.000 | 470 | 0,020 | 0,030 |
| 3,5 | 15 | 18.000 | 3.000 | 0,100 | 0,300 | 18.000 | 3.000 | 0,100 | 0,300 | 18.000 | 2.800 | 0,100 | 0,300 |
| 3,5 | 20 | 16.000 | 2.700 | 0,100 | 0,200 | 16.000 | 2.700 | 0,100 | 0,200 | 16.000 | 2.500 | 0,100 | 0,200 |
| 3,5 | 25 | 12.000 | 2.000 | 0,100 | 0,100 | 12.000 | 2.000 | 0,100 | 0,100 | 12.000 | 1.900 | 0,100 | 0,100 |
| 3,5 | 30 | 10.000 | 1.600 | 0,050 | 0,100 | 10.000 | 1.600 | 0,050 | 0,100 | 10.000 | 1.500 | 0,050 | 0,100 |
| 3,5 | 35 | 10.000 | 1.000 | 0,050 | 0,050 | 10.000 | 1.000 | 0,050 | 0,050 | 10.000 | 950 | 0,050 | 0,050 |
| 3,5 | 40 | 8.000 | 800 | 0,050 | 0,050 | 8.000 | 800 | 0,050 | 0,050 | 8.000 | 760 | 0,050 | 0,050 |
| 3,5 | 45 | 7.000 | 600 | 0,030 | 0,030 | 7.000 | 600 | 0,030 | 0,030 | 7.000 | 570 | 0,030 | 0,030 |
| 4 | 8 | 31.000 | 5.700 | 0,200 | 0,500 | 31.000 | 5.700 | 0,200 | 0,500 | 31.000 | 5.700 | 0,200 | 0,500 |
| 4 | 10 | 25.000 | 4.500 | 0,200 | 0,500 | 25.000 | 4.500 | 0,200 | 0,500 | 25.000 | 4.200 | 0,200 | 0,500 |
| 4 | 12 | 20,000 | 3,600 | 0,200 | 0,500 | 20,000 | 3,600 | 0,200 | 0,500 | 20,000 | 3,400 | 0,200 | 0,500 |
| 4 | 15 | 20.000 | 3.600 | 0,200 | 0,500 | 20,000 | 3,600 | 0,200 | 0,500 | 20,000 | 3,400 | 0,200 | 0,500 |
| 4 | 16 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.000 | 0,200 | 0,500 |
| 4 | 20 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.600 | 0,200 | 0,400 |
| 4 | 25 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 |
| 4 | 30 | 14.000 | 2.400 | 0,100 | 0,200 | 14.000 | 2.400 | 0,100 | 0,200 | 14.000 | 2.200 | 0,100 | 0,200 |
| 4 | 35 | 12.000 | 1.800 | 0,100 | 0,200 | 12.000 | 1.800 | 0,100 | 0,200 | 12.000 | 1.700 | 0,100 | 0,200 |
| 4 | 40 | 10.000 | 1.300 | 0,050 | 0,100 | 10.000 | 1.300 | 0,050 | 0,100 | 10.000 | 1.200 | 0,050 | 0,100 |
| 4 | 45 | 8.000 | 1.000 | 0,050 | 0,050 | 8.000 | 1.000 | 0,050 | 0,050 | 8.000 | 950 | 0,050 | 0,050 |
| 4 | 50 | 7.000 | 700 | 0,020 | 0,050 | 7.000 | 700 | 0,020 | 0,050 | 7.000 | 660 | 0,020 | 0,050 |
| 5 | 10 | 25.000 | 5.400 | 0,250 | 0,500 | 25.000 | 5.400 | 0,250 | 0,500 | 25.000 | 5.400 | 0,250 | 0,500 |
| 5 | 15 | 20.000 | 4.200 | 0,250 | 0,500 | 20.000 | 4.200 | 0,250 | 0,500 | 20.000 | 3.900 | 0,250 | 0,500 |
| 5 | 20 | 16.000 | 3.500 | 0,250 | 0,500 | 16.000 | 3.500 | 0,250 | 0,500 | 16.000 | 3.300 | 0,250 | 0,500 |
| 5 | 25 | 15.000 | 3.200 | 0,200 | 0,300 | 15.000 | 3.200 | 0,200 | 0,300 | 15.000 | 3.000 | 0,200 | 0,300 |
| 5 | 30 | 14.000 | 2.500 | 0,100 | 0,300 | 14.000 | 2.500 | 0,100 | 0,300 | 14.000 | 2.300 | 0,100 | 0,300 |
| 5 | 35 | 12.000 | 1.600 | 0,100 | 0,300 | 12.000 | 1.600 | 0,100 | 0,300 | 12.000 | 1.500 | 0,100 | 0,300 |
| 5 | 40 | 10.000 | 1.200 | 0,100 | 0,200 | 10.000 | 1.200 | 0,100 | 0,200 | 10.000 | 1.100 | 0,100 | 0,200 |
| 5 | 45 | 9.000 | 900 | 0,100 | 0,100 | 9.000 | 900 | 0,100 | 0,100 | 9.000 | 850 | 0,100 | 0,100 |
| 5 | 50 | 8.000 | 800 | 0,100 | 0,100 | 8.000 | 800 | 0,100 | 0,100 | 8.000 | 760 | 0,100 | 0,100 |
| 6 | 12 | 20.000 | 5.200 | 0,300 | 0,500 | 20.000 | 5.200 | 0,300 | 0,500 | 20.000 | 5.200 | 0,300 | 0,500 |
| 6 | 20 | 16.000 | 4.200 | 0,300 | 0,500 | 16.000 | 4.200 | 0,300 | 0,500 | 16.000 | 3.900 | 0,300 | 0,500 |
| 6 | 25 | 12.000 | 3.200 | 0,300 | 0,500 | 12.000 | 3.200 | 0,300 | 0,500 | 12.000 | 3.000 | 0,300 | 0,500 |
| 6 | 30 | 10.000 | 2.600 | 0,300 | 0,500 | 10.000 | 2.600 | 0,300 | 0,500 | 10.000 | 2.400 | 0,300 | 0,500 |
| 6 | 35 | 9.000 | 2.300 | 0,200 | 0,400 | 9.000 | 2.300 | 0,200 | 0,400 | 9.000 | 2.100 | 0,200 | 0,400 |
| 6 | 40 | 9.000 | 2.000 | 0,200 | 0,300 | 9.000 | 2.000 | 0,200 | 0,300 | 9.000 | 1.900 | 0,200 | 0,300 |
| 6 | 45 | 8.000 | 1.800 | 0,200 | 0,300 | 8.000 | 1.800 | 0,200 | 0,300 | 8.000 | 1.700 | 0,200 | 0,300 |
| 6 | 50 | 7.000 | 1.600 | 0,200 | 0,300 | 7.000 | 1.600 | 0,200 | 0,300 | 7.000 | 1.500 | 0,200 | 0,300 |

Max cutting depth




Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.
* Modified parameters

## WXS-LN-EBD

### High speed milling

| | | 38 ~ 45 HRC | | | | 45 ~ 55 HRC | | | | 55 ~ 60 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,1 | 0,3 | 50.000 | 70 | 0,003 | 0,003 | 50.000 | 60 | 0,003 | 0,003 | - | - | - | - |
| 0,1 | 0,5 | 50.000 | 50 | 0,003 | 0,003 | 50.000 | 40 | 0,003 | 0,003 | - | - | - | - |
| 0,2 | 0,5 | 50.000 | 380 | 0,005 | 0,005 | 50.000 | 260 | 0,005 | 0,005 | 50.000 | 200 | 0,004 | 0,005 |
| 0,2 | 0,75 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 230 | 0,005 | 0,005 | 50.000 | 180 | 0,004 | 0,005 |
| 0,2 | 1 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 230 | 0,005 | 0,005 | 50.000 | 180 | 0,004 | 0,005 |
| 0,2 | 1,25 | 47.000 | 300 | 0,005 | 0,005 | 47.000 | 210 | 0,005 | 0,005 | 43.000 | 150 | 0,004 | 0,005 |
| 0,2 | 1,5 | 45.000 | 280 | 0,005 | 0,005 | 45.000 | 190 | 0,005 | 0,005 | 41.000 | 130 | 0,004 | 0,005 |
| 0,2 | 1,75 | 42.000 | 240 | 0,005 | 0,005 | 42.000 | 170 | 0,005 | 0,005 | 38.000 | 120 | 0,004 | 0,005 |
| 0,2 | 2 | 38.000 | 210 | 0,005 | 0,005 | 37.000 | 140 | 0,005 | 0,005 | 33.000 | 100 | 0,004 | 0,005 |
| 0,2 | 2,5 | 32.000 | 160 | 0,004 | 0,005 | 31.000 | 100 | 0,004 | 0,005 | 31.000 | 80 | 0,004 | 0,005 |
| 0,2 | 3 | 32.000 | 140 | 0,004 | 0,005 | 31.000 | 90 | 0,004 | 0,005 | 31.000 | 70 | 0,004 | 0,005 |
| 0,3 | 1,2 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 390 | 0,005 | 0,010 | 50.000 | 300 | 0,005 | 0,010 |
| 0,3 | 2 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 390 | 0,005 | 0,010 | 50.000 | 310 | 0,005 | 0,010 |
| 0,3 | 2,5 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 380 | 0,005 | 0,010 | 50.000 | 300 | 0,005 | 0,010 |
| 0,3 | 3 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 370 | 0,005 | 0,010 | 50.000 | 290 | 0,005 | 0,010 |
| 0,3 | 3,5 | 47.000 | 480 | 0,005 | 0,010 | 47.000 | 310 | 0,005 | 0,010 | 43.000 | 220 | 0,005 | 0,010 |
| 0,3 | 4 | 45.000 | 450 | 0,005 | 0,005 | 45.000 | 290 | 0,005 | 0,005 | 41.000 | 210 | 0,004 | 0,005 |
| 0,3 | 4,5 | 45.000 | 380 | 0,005 | 0,005 | 45.000 | 250 | 0,005 | 0,005 | 41.000 | 180 | 0,004 | 0,005 |
| 0,3 | 5 | 40.000 | 280 | 0,005 | 0,005 | 40.000 | 190 | 0,005 | 0,005 | 36.000 | 130 | 0,004 | 0,005 |
| 0,3 | 6 | 38.000 | 230 | 0,005 | 0,005 | 37.000 | 150 | 0,005 | 0,005 | 33.000 | 100 | 0,004 | 0,005 |
| 0,3 | 7 | 34.000 | 190 | 0,004 | 0,005 | 33.000 | 120 | 0,004 | 0,005 | 33.000 | 95 | 0,004 | 0,005 |
| 0,3 | 8 | 32.000 | 140 | 0,004 | 0,005 | 31.000 | 90 | 0,004 | 0,005 | 31.000 | 70 | 0,004 | 0,005 |
| 0,3 | 9 | 32.000 | 120 | 0,004 | 0,005 | 31.000 | 80 | 0,004 | 0,005 | 31.000 | 60 | 0,004 | 0,005 |
| 0,3 | 10 | 29.000 | 95 | 0,004 | 0,005 | 28.000 | 60 | 0,004 | 0,005 | 28.000 | 50 | 0,004 | 0,005 |
| 0,4 | 0,8 | 50.000 | 850 | 0,010 | 0,020 | 50.000 | 590 | 0,010 | 0,020 | 50.000 | 470 | 0,008 | 0,015 |
| 0,4 | 1 | 50.000 | 850 | 0,010 | 0,020 | 50.000 | 550 | 0,010 | 0,020 | 50.000 | 440 | 0,008 | 0,015 |
| 0,4 | 1,5 | 50.000 | 760 | 0,010 | 0,020 | 50.000 | 520 | 0,010 | 0,020 | 50.000 | 410 | 0,008 | 0,015 |
| 0,4 | 2 | 50.000 | 660 | 0,010 | 0,020 | 50.000 | 460 | 0,010 | 0,020 | 45.000 | 330 | 0,008 | 0,015 |
| 0,4 | 2,5 | 45.000 | 520 | 0,008 | 0,015 | 45.000 | 360 | 0,008 | 0,015 | 41.000 | 260 | 0,008 | 0,015 |
| 0,4 | 3 | 43.000 | 470 | 0,005 | 0,010 | 43.000 | 320 | 0,005 | 0,010 | 38.000 | 220 | 0,005 | 0,010 |
| 0,4 | 3,5 | 40.000 | 400 | 0,005 | 0,010 | 40.000 | 280 | 0,005 | 0,010 | 36.000 | 200 | 0,005 | 0,010 |
| 0,4 | 4 | 36.000 | 350 | 0,005 | 0,005 | 35.000 | 230 | 0,005 | 0,005 | 31.000 | 160 | 0,005 | 0,005 |
| 0,4 | 4,5 | 32.000 | 270 | 0,004 | 0,005 | 31.000 | 180 | 0,004 | 0,005 | 28.000 | 130 | 0,004 | 0,005 |
| 0,4 | 5 | 32.000 | 260 | 0,004 | 0,005 | 31.000 | 170 | 0,004 | 0,005 | 28.000 | 120 | 0,004 | 0,005 |
| 0,4 | 5,5 | 30.000 | 210 | 0,004 | 0,005 | 29.000 | 140 | 0,004 | 0,005 | 26.000 | 100 | 0,004 | 0,005 |
| 0,4 | 6 | 30.000 | 190 | 0,004 | 0,005 | 29.000 | 120 | 0,004 | 0,005 | 26.000 | 100 | 0,004 | 0,005 |
| 0,5 | 1 | 50.000 | 1.050 | 0,015 | 0,030 | 50.000 | 730 | 0,015 | 0,030 | 50.000 | 580 | 0,010 | 0,020 |
| 0,5 | 1,5 | 50.000 | 1.050 | 0,015 | 0,030 | 50.000 | 700 | 0,015 | 0,030 | 50.000 | 560 | 0,010 | 0,020 |
| 0,5 | 2 | 50.000 | 950 | 0,015 | 0,030 | 50.000 | 650 | 0,015 | 0,030 | 50.000 | 520 | 0,010 | 0,020 |
| 0,5 | 2,5 | 50.000 | 950 | 0,015 | 0,030 | 50.000 | 600 | 0,015 | 0,030 | 45.000 | 430 | 0,010 | 0,020 |
| 0,5 | 3 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 550 | 0,010 | 0,020 | 43.000 | 390 | 0,010 | 0,020 |
| 0,5 | 3,5 | 45.000 | 650 | 0,010 | 0,020 | 45.000 | 450 | 0,010 | 0,020 | 40.000 | 320 | 0,010 | 0,020 |
| 0,5 | 4 | 43.000 | 570 | 0,010 | 0,010 | 43.000 | 390 | 0,010 | 0,010 | 38.000 | 270 | 0,010 | 0,010 |
| 0,5 | 4,5 | 38.000 | 470 | 0,010 | 0,010 | 38.000 | 320 | 0,010 | 0,010 | 34.000 | 220 | 0,010 | 0,010 |
| 0,5 | 5 | 30.000 | 380 | 0,005 | 0,010 | 29.000 | 250 | 0,005 | 0,010 | 26.000 | 170 | 0,005 | 0,010 |
| 0,5 | 5,5 | 28.000 | 280 | 0,004 | 0,005 | 27.000 | 180 | 0,004 | 0,005 | 24.000 | 120 | 0,004 | 0,005 |
| 0,5 | 6 | 26.000 | 230 | 0,004 | 0,005 | 25.000 | 150 | 0,004 | 0,005 | 22.000 | 100 | 0,004 | 0,005 |
| 0,5 | 7 | 24.000 | 190 | 0,004 | 0,005 | 23.000 | 130 | 0,004 | 0,005 | 20.000 | 100 | 0,004 | 0,005 |
| 0,5 | 8 | 22.000 | 150 | 0,004 | 0,005 | 21.000 | 110 | 0,004 | 0,005 | 20.000 | 100 | 0,004 | 0,005 |
| 0,5 | 9 | 20.000 | 110 | 0,004 | 0,005 | 21.000 | 100 | 0,004 | 0,005 | 20.000 | 90 | 0,004 | 0,005 |
| 0,5 | 10 | 20.000 | 95 | 0,004 | 0,005 | 21.000 | 100 | 0,004 | 0,005 | 20.000 | 90 | 0,004 | 0,005 |
| 0,6 | 1,2 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 840 | 0,030 | 0,050 | 50.000 | 670 | 0,010 | 0,020 |
| 0,6 | 2 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 820 | 0,030 | 0,050 | 50.000 | 650 | 0,010 | 0,020 |
| 0,6 | 2,5 | 50.000 | 1.100 | 0,030 | 0,050 | 50.000 | 770 | 0,030 | 0,050 | 50.000 | 610 | 0,010 | 0,020 |
| 0,6 | 3 | 50.000 | 1.100 | 0,020 | 0,030 | 50.000 | 750 | 0,020 | 0,030 | 45.000 | 540 | 0,010 | 0,020 |
| 0,6 | 3,5 | 45.000 | 950 | 0,020 | 0,030 | 45.000 | 660 | 0,020 | 0,030 | 41.000 | 480 | 0,010 | 0,020 |
| 0,6 | 4 | 40.000 | 850 | 0,010 | 0,020 | 40.000 | 590 | 0,010 | 0,020 | 36.000 | 420 | 0,010 | 0,020 |
| 0,6 | 4,5 | 34.000 | 740 | 0,010 | 0,020 | 34.000 | 510 | 0,010 | 0,020 | 31.000 | 370 | 0,010 | 0,020 |
| 0,6 | 5 | 30.000 | 640 | 0,010 | 0,020 | 30.000 | 440 | 0,010 | 0,020 | 27.000 | 310 | 0,010 | 0,020 |
| 0,6 | 5,5 | 28.000 | 610 | 0,010 | 0,020 | 28.000 | 420 | 0,010 | 0,020 | 25.000 | 300 | 0,010 | 0,020 |
| 0,6 | 6 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 380 | 0,010 | 0,020 | 22.000 | 260 | 0,010 | 0,020 |
| 0,6 | 6,5 | 24.000 | 520 | 0,010 | 0,010 | 23.000 | 340 | 0,010 | 0,010 | 20.000 | 230 | 0,010 | 0,010 |
| 0,6 | 7 | 23.000 | 420 | 0,010 | 0,010 | 22.000 | 280 | 0,010 | 0,010 | 19.000 | 190 | 0,010 | 0,010 |
| 0,6 | 7,5 | 23.000 | 380 | 0,010 | 0,010 | 22.000 | 250 | 0,010 | 0,010 | 19.000 | 170 | 0,010 | 0,010 |
| 0,6 | 8 | 20.000 | 300 | 0,005 | 0,010 | 19.000 | 200 | 0,005 | 0,010 | 17.000 | 140 | 0,005 | 0,010 |
| 0,6 | 8,5 | 20.000 | 280 | 0,005 | 0,010 | 19.000 | 180 | 0,005 | 0,010 | 17.000 | 130 | 0,005 | 0,010 |
| 0,6 | 9 | 20.000 | 260 | 0,005 | 0,010 | 19.000 | 170 | 0,005 | 0,010 | 17.000 | 120 | 0,005 | 0,010 |
| 0,6 | 9,5 | 20.000 | 220 | 0,005 | 0,008 | 19.000 | 140 | 0,005 | 0,008 | 17.000 | 110 | 0,005 | 0,008 |
| 0,6 | 10 | 20.000 | 190 | 0,005 | 0,008 | 19.000 | 120 | 0,005 | 0,008 | 17.000 | 100 | 0,005 | 0,008 |
| 0,6 | 11 | 18.000 | 140 | 0,005 | 0,008 | 17.000 | 90 | 0,005 | 0,008 | 17.000 | 80 | 0,005 | 0,008 |
| 0,6 | 12 | 18.000 | 110 | 0,005 | 0,005 | 17.000 | 80 | 0,005 | 0,005 | 17.000 | 70 | 0,004 | 0,005 |
| 0,8 | 2 | 50.000 | 1.900 | 0,040 | 0,080 | 50.000 | 1.600 | 0,040 | 0,080 | 50.000 | 1.200 | 0,015 | 0,030 |
| 0,8 | 3 | 48.000 | 1.500 | 0,040 | 0,080 | 48.000 | 1.100 | 0,040 | 0,080 | 45.000 | 820 | 0,015 | 0,030 |
| 0,8 | 4 | 40.000 | 1.100 | 0,040 | 0,080 | 40.000 | 1.000 | 0,040 | 0,080 | 38.000 | 760 | 0,015 | 0,030 |
| 0,8 | 5 | 34.000 | 900 | 0,030 | 0,050 | 34.000 | 800 | 0,030 | 0,050 | 31.000 | 580 | 0,015 | 0,030 |
| 0,8 | 6 | 30.000 | 760 | 0,030 | 0,050 | 30.000 | 650 | 0,030 | 0,050 | 27.000 | 460 | 0,015 | 0,030 |
| 0,8 | 7 | 25.000 | 570 | 0,010 | 0,020 | 25.000 | 450 | 0,010 | 0,020 | 22.000 | 310 | 0,010 | 0,020 |
| 0,8 | 8 | 23.000 | 420 | 0,005 | 0,010 | 23.000 | 300 | 0,005 | 0,010 | 20.000 | 200 | 0,005 | 0,010 |
| 0,8 | 10 | 18.000 | 300 | 0,005 | 0,008 | 17.000 | 200 | 0,005 | 0,008 | 17.000 | 170 | 0,005 | 0,008 |

# WXS-LN-EBD

## High speed milling

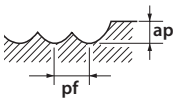
| | | 38 ~ 45 HRC | | | | 45 ~ 55 HRC | | | | 55 ~ 60 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,8 | 12 | 17.000 | 230 | 0,005 | 0,005 | 16.000 | 160 | 0,005 | 0,005 | 16.000 | 110 | 0,005 | 0,005 |
| 1 | 2 | 50.000 | 3.700 | 0,050 | 0,100 | 50.000 | 3.700 | 0,050 | 0,100 | 50.000 | 3.000 | 0,020 | 0,050 |
| 1 | 3 | 45.000 | 3.000 | 0,050 | 0,100 | 45.000 | 2.400 | 0,050 | 0,100 | 45.000 | 1.900 | 0,020 | 0,050 |
| 1 | 4 | 40.000 | 2.850 | 0,050 | 0,100 | 40.000 | 2.200 | 0,050 | 0,100 | 40.000 | 1.700 | 0,020 | 0,050 |
| 1 | 5 | 36.000 | 2.100 | 0,050 | 0,100 | 36.000 | 1.600 | 0,050 | 0,100 | 36.000 | 1.200 | 0,020 | 0,050 |
| 1 | 6 | 30.000 | 1.900 | 0,050 | 0,100 | 30,000 | 1.500 | 0,050 | 0,100 | 30,000 | 1.200 | 0,020 | 0,050 |
| 1 | 7 | 27,000 | 1,600 | 0,050 | 0,100 | 27,000 | 1.300 | 0,050 | 0,100 | 27,000 | 1,000 | 0,020 | 0,050 |
| 1 | 8 | 26.000 | 1.500 | 0,050 | 0,100 | 26.000 | 1.200 | 0,050 | 0,100 | 26.000 | 960 | 0,020 | 0,050 |
| 1 | 9 | 24.000 | 1.100 | 0,030 | 0,050 | 24.000 | 880 | 0,030 | 0,050 | 24.000 | 700 | 0,020 | 0,050 |
| 1 | 10 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 760 | 0,010 | 0,020 | 18.000 | 520 | 0,010 | 0,020 |
| 1 | 12 | 20.000 | 760 | 0,010 | 0,010 | 19.000 | 570 | 0,010 | 0,010 | 17.000 | 400 | 0,010 | 0,010 |
| 1 | 14 | 18.000 | 570 | 0,005 | 0,010 | 17.000 | 430 | 0,005 | 0,010 | 15.000 | 300 | 0,005 | 0,010 |
| 1 | 16 | 16.000 | 400 | 0,005 | 0,010 | 15.000 | 300 | 0,005 | 0,010 | 13.000 | 200 | 0,005 | 0,010 |
| 1 | 18 | 14.000 | 300 | 0,005 | 0,005 | 13.000 | 220 | 0,005 | 0,005 | 12.000 | 160 | 0,004 | 0,005 |
| 1 | 20 | 13.000 | 285 | 0,005 | 0,005 | 12.000 | 180 | 0,005 | 0,005 | 12.000 | 140 | 0,004 | 0,005 |
| 1 | 22 | 12.000 | 190 | 0,005 | 0,005 | 12.000 | 110 | 0,005 | 0,005 | 12.000 | 100 | 0,004 | 0,005 |
| 1,2 | 2,4 | 50.000 | 3.600 | 0,060 | 0,120 | 50.000 | 3.600 | 0,060 | 0,120 | 50.000 | 3.000 | 0,020 | 0,050 |
| 1,2 | 4 | 40.000 | 2.850 | 0,060 | 0,120 | 40.000 | 2.300 | 0,060 | 0,120 | 38.000 | 1.750 | 0,020 | 0,050 |
| 1,2 | 6 | 32.000 | 2.000 | 0,060 | 0,120 | 32.000 | 1.600 | 0,060 | 0,120 | 30.000 | 1.200 | 0,020 | 0,050 |
| 1,2 | 8 | 25.000 | 1.600 | 0,060 | 0,120 | 25.000 | 1.200 | 0,060 | 0,120 | 25.000 | 960 | 0,020 | 0,050 |
| 1,2 | 10 | 20.000 | 1.100 | 0,050 | 0,100 | 18.000 | 800 | 0,050 | 0,100 | 16.000 | 560 | 0,020 | 0,050 |
| 1,2 | 12 | 17.000 | 850 | 0,030 | 0,050 | 16.000 | 640 | 0,030 | 0,050 | 14.000 | 440 | 0,020 | 0,050 |
| 1,2 | 14 | 16.000 | 610 | 0,030 | 0,050 | 15.000 | 450 | 0,030 | 0,050 | 13.000 | 310 | 0,020 | 0,050 |
| 1,2 | 16 | 15.000 | 420 | 0,020 | 0,050 | 14.000 | 300 | 0,020 | 0,050 | 12.000 | 200 | 0,020 | 0,050 |
| 1,2 | 18 | 15.000 | 330 | 0,005 | 0,005 | 14.000 | 200 | 0,005 | 0,005 | 12.000 | 130 | 0,004 | 0,005 |
| 1,2 | 20 | 13.000 | 300 | 0,005 | 0,005 | 12.000 | 180 | 0,005 | 0,005 | 10.000 | 120 | 0,004 | 0,005 |
| 1,4 | 8 | 25.000 | 1.600 | 0,070 | 0,140 | 25.000 | 1.200 | 0,070 | 0,140 | 25.000 | 960 | 0,030 | 0,070 |
| 1,4 | 12 | 19.000 | 950 | 0,030 | 0,070 | 19.000 | 760 | 0,030 | 0,070 | 17.000 | 540 | 0,030 | 0,070 |
| 1,4 | 16 | 13.000 | 470 | 0,020 | 0,050 | 12.000 | 340 | 0,020 | 0,050 | 10.000 | 220 | 0,020 | 0,050 |
| 1,5 | 3 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 3.900 | 0,030 | 0,060 |
| 1,5 | 4 | 40.000 | 3.700 | 0,075 | 0,150 | 40.000 | 2.900 | 0,075 | 0,150 | 38.000 | 2.200 | 0,030 | 0,060 |
| 1,5 | 6 | 30.000 | 2.700 | 0,075 | 0,150 | 30.000 | 2.200 | 0,075 | 0,150 | 27.000 | 1.500 | 0,030 | 0,060 |
| 1,5 | 8 | 24.000 | 2.100 | 0,075 | 0,150 | 24.000 | 1.700 | 0,075 | 0,150 | 21.000 | 1.100 | 0,030 | 0,060 |
| 1,5 | 10 | 24.000 | 1.900 | 0,075 | 0,150 | 24.000 | 1.500 | 0,075 | 0,150 | 21.000 | 1.000 | 0,030 | 0,060 |
| 1,5 | 12 | 21.000 | 1.300 | 0,075 | 0,100 | 21.000 | 1.000 | 0,075 | 0,100 | 18.000 | 680 | 0,030 | 0,060 |
| 1,5 | 14 | 17.000 | 1.100 | 0,050 | 0,100 | 17.000 | 900 | 0,050 | 0,100 | 15.000 | 630 | 0,030 | 0,060 |
| 1,5 | 16 | 14.000 | 760 | 0,050 | 0,100 | 13.000 | 560 | 0,050 | 0,100 | 10.000 | 340 | 0,030 | 0,050 |
| 1,5 | 18 | 13.000 | 470 | 0,030 | 0,050 | 12.000 | 350 | 0,030 | 0,050 | 10.000 | 230 | 0,030 | 0,050 |
| 1,5 | 20 | 12.000 | 340 | 0,020 | 0,050 | 11.000 | 240 | 0,020 | 0,050 | 9.000 | 150 | 0,020 | 0,050 |
| 1,5 | 22 | 12.000 | 300 | 0,020 | 0,050 | 11.000 | 220 | 0,020 | 0,050 | 9.000 | 140 | 0,020 | 0,050 |
| 1,5 | 30 | 11.000 | 190 | 0,005 | 0,010 | 10.000 | 120 | 0,005 | 0,010 | 9.000 | 90 | 0,005 | 0,010 |
| 1,6 | 8 | 24.000 | 2.800 | 0,080 | 0,160 | 23.000 | 2.100 | 0,080 | 0,160 | 20.000 | 1.400 | 0,030 | 0,080 |
| 1,6 | 12 | 21.000 | 1.700 | 0,050 | 0,100 | 20.000 | 1.380 | 0,050 | 0,100 | 18.000 | 990 | 0,030 | 0,080 |
| 1,6 | 16 | 14.000 | 760 | 0,050 | 0,100 | 13.000 | 600 | 0,050 | 0,100 | 11.000 | 400 | 0,030 | 0,080 |
| 1,6 | 20 | 12.000 | 360 | 0,030 | 0,050 | 11.000 | 280 | 0,030 | 0,050 | 10.000 | 200 | 0,030 | 0,050 |
| 1,8 | 8 | 24.000 | 2.800 | 0,090 | 0,270 | 23.000 | 2.280 | 0,090 | 0,270 | 20.000 | 1.500 | 0,030 | 0,080 |
| 1,8 | 12 | 21.000 | 1.700 | 0,090 | 0,180 | 20.000 | 1.380 | 0,090 | 0,180 | 18.000 | 990 | 0,030 | 0,080 |
| 1,8 | 16 | 14.000 | 850 | 0,050 | 0,120 | 13.000 | 670 | 0,050 | 0,120 | 11.000 | 450 | 0,030 | 0,080 |
| 1,8 | 20 | 11.000 | 360 | 0,040 | 0,050 | 10.000 | 280 | 0,040 | 0,050 | 9.000 | 200 | 0,030 | 0,050 |
| 2 | 4 | 50.000 | 5.600 | 0,100 | 0,200 | 47.000 | 5.300 | 0,100 | 0,200 | 40.000 | 3.600 | 0,050 | 0,100 |
| 2 | 6 | 36.000 | 2.800 | 0,100 | 0,200 | 35.000 | 2.700 | 0,100 | 0,200 | 30.000 | 1.800 | 0,050 | 0,100 |
| 2 | 8 | 25.000 | 2.400 | 0,100 | 0,200 | 24.000 | 2.300 | 0,100 | 0,200 | 20.000 | 1.500 | 0,050 | 0,100 |
| 2 | 10 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 | 17.000 | 1.400 | 0,050 | 0,100 |
| 2 | 12 | 16.000 | 1.900 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 13.000 | 1.100 | 0,050 | 0,100 |
| 2 | 14 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 | 12.000 | 1.000 | 0,050 | 0,100 |
| 2 | 16 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 | 11.000 | 950 | 0,050 | 0,100 |
| 2 | 18 | 13.000 | 1.500 | 0,100 | 0,100 | 12.000 | 1.200 | 0,100 | 0,100 | 10.000 | 800 | 0,050 | 0,100 |
| 2 | 20 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 890 | 0,050 | 0,100 | 9.000 | 640 | 0,050 | 0,100 |
| 2 | 22 | 9.000 | 950 | 0,050 | 0,100 | 9.000 | 860 | 0,050 | 0,100 | 7.500 | 570 | 0,050 | 0,100 |
| 2 | 25 | 9.000 | 760 | 0,030 | 0,050 | 9.000 | 680 | 0,030 | 0,050 | 7.500 | 450 | 0,030 | 0,050 |
| 2 | 30 | 9.000 | 470 | 0,020 | 0,050 | 9.000 | 360 | 0,020 | 0,050 | 7.500 | 240 | 0,020 | 0,050 |
| 2 | 35 | 7.500 | 230 | 0,020 | 0,030 | 7.000 | 130 | 0,020 | 0,030 | 6.000 | 100 | 0,020 | 0,030 |
| 2 | 40 | 6.000 | 140 | 0,020 | 0,030 | 6.000 | 100 | 0,020 | 0,030 | 6.000 | 90 | 0,020 | 0,030 |
| 2,5 | 10 | 20.000 | 3.100 | 0,100 | 0,200 | 19.000 | 2.900 | 0,100 | 0,200 | 16.000 | 1.900 | 0,050 | 0,100 |
| 2,5 | 15 | 17.000 | 2.600 | 0,100 | 0,200 | 16.000 | 2.400 | 0,100 | 0,200 | 14.000 | 1.600 | 0,050 | 0,100 |
| 2,5 | 20 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.600 | 0,100 | 0,200 | 12.000 | 1.000 | 0,050 | 0,100 |
| 2,5 | 25 | 11.000 | 950 | 0,030 | 0,050 | 10.000 | 830 | 0,030 | 0,050 | 9.000 | 590 | 0,030 | 0,050 |
| 2,5 | 30 | 9.000 | 760 | 0,030 | 0,050 | 8.000 | 650 | 0,030 | 0,050 | 7.000 | 450 | 0,030 | 0,050 |
| 2,5 | 35 | 7.500 | 470 | 0,020 | 0,030 | 7.000 | 430 | 0,020 | 0,030 | 6.000 | 290 | 0,020 | 0,030 |
| 3 | 6 | 41.500 | 6.200 | 0,150 | 0,300 | 32.000 | 4.800 | 0,150 | 0,300 | 26.500 | 3.300 | 0,060 | 0,150 |
| 3 | 8 | 30.000 | 4.200 | 0,150 | 0,300 | 25.000 | 3.500 | 0,150 | 0,300 | 22.000 | 2.400 | 0,060 | 0,150 |
| 3 | 10 | 25.000 | 3.600 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 | 18.000 | 2.000 | 0,060 | 0,150 |
| 3 | 12 | 20.000 | 2.800 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 16.000 | 1.700 | 0,060 | 0,150 |
| 3 | 14 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 | 13.000 | 1.300 | 0,060 | 0,150 |
| 3 | 15 | 16.000 | 2.200 | 0,100 | 0,300 | 13.000 | 1.800 | 0,100 | 0,300 | 11.000 | 1.200 | 0,060 | 0,150 |
| 3 | 16 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 | 11.000 | 1.100 | 0,060 | 0,150 |
| 3 | 20 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.600 | 0,100 | 0,200 | 10.000 | 1.000 | 0,060 | 0,150 |
| 3 | 25 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 | 8.000 | 580 | 0,050 | 0,100 |
| 3 | 30 | 9.000 | 760 | 0,030 | 0,050 | 7.000 | 590 | 0,030 | 0,050 | 6.000 | 400 | 0,030 | 0,050 |

## WXS-LN-EBD

### High speed milling

| | | 38 ~ 45 HRC | | | | 45 ~ 55 HRC | | | | 55 ~ 60 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 3 | 35 | 7.500 | 570 | 0,020 | 0,050 | 6.000 | 460 | 0,020 | 0,050 | 5.000 | 300 | 0,020 | 0,050 |
| 3 | 40 | 6.500 | 470 | 0,020 | 0,030 | 5.000 | 360 | 0,020 | 0,030 | 4.000 | 230 | 0,020 | 0,030 |
| 3,5 | 15 | 18.000 | 2.800 | 0,100 | 0,300 | 14.000 | 2.000 | 0,100 | 0,300 | 12.000 | 1.300 | 0,070 | 0,150 |
| 3,5 | 20 | 16.000 | 2.500 | 0,100 | 0,200 | 12.000 | 1.800 | 0,100 | 0,200 | 10.000 | 1.200 | 0,070 | 0,150 |
| 3,5 | 25 | 12.000 | 1.900 | 0,100 | 0,100 | 9.000 | 1.300 | 0,100 | 0,100 | 8.000 | 920 | 0,070 | 0,150 |
| 3,5 | 30 | 10.000 | 1.500 | 0,050 | 0,100 | 8.000 | 1.100 | 0,050 | 0,100 | 7.000 | 770 | 0,050 | 0,100 |
| 3,5 | 35 | 9.000 | 950 | 0,050 | 0,050 | 7.000 | 700 | 0,050 | 0,050 | 5.000 | 400 | 0,050 | 0,050 |
| 3,5 | 40 | 7.500 | 760 | 0,050 | 0,050 | 6.000 | 580 | 0,050 | 0,050 | 4.000 | 300 | 0,050 | 0,050 |
| 3,5 | 45 | 6.500 | 570 | 0,030 | 0,030 | 5.000 | 420 | 0,030 | 0,030 | 4.000 | 260 | 0,030 | 0,030 |
| 4 | 8 | 31.000 | 5.700 | 0,200 | 0,500 | 24.000 | 4.400 | 0,200 | 0,500 | 20.000 | 3.200 | 0,080 | 0,200 |
| 4 | 10 | 25.000 | 4.200 | 0,200 | 0,500 | 20.000 | 3.300 | 0,200 | 0,500 | 18.000 | 2.300 | 0,080 | 0,200 |
| 4 | 12 | 20.000 | 3.400 | 0,200 | 0,500 | 17.000 | 2.900 | 0,200 | 0,500 | 14.000 | 1.900 | 0,080 | 0,200 |
| 4 | 15 | 20.000 | 3.400 | 0,200 | 0,500 | 16.000 | 2.700 | 0,200 | 0,500 | 12.000 | 1.600 | 0,080 | 0,200 |
| 4 | 16 | 18.000 | 3.000 | 0,200 | 0,500 | 15.000 | 2.500 | 0,200 | 0,500 | 10.000 | 1.300 | 0,080 | 0,200 |
| 4 | 20 | 16.000 | 2.600 | 0,200 | 0,400 | 14.000 | 2.300 | 0,200 | 0,400 | 8.000 | 1.000 | 0,080 | 0,200 |
| 4 | 25 | 16.000 | 2.600 | 0,100 | 0,300 | 13.000 | 2.200 | 0,100 | 0,300 | 6.000 | 810 | 0,080 | 0,200 |
| 4 | 30 | 14.000 | 2.200 | 0,100 | 0,200 | 12.000 | 1.900 | 0,100 | 0,200 | 5.000 | 630 | 0,080 | 0,200 |
| 4 | 35 | 12.000 | 1.700 | 0,100 | 0,200 | 9.000 | 1.200 | 0,100 | 0,200 | 4.000 | 420 | 0,080 | 0,200 |
| 4 | 40 | 9.000 | 1.200 | 0,050 | 0,100 | 8.000 | 1.000 | 0,050 | 0,100 | 4.000 | 400 | 0,050 | 0,100 |
| 4 | 45 | 7.500 | 950 | 0,050 | 0,050 | 7.000 | 890 | 0,050 | 0,050 | 3.600 | 360 | 0,050 | 0,050 |
| 4 | 50 | 6.500 | 660 | 0,020 | 0,050 | 6.000 | 600 | 0,020 | 0,050 | 3.600 | 280 | 0,020 | 0,050 |
| 5 | 10 | 25.000 | 5.400 | 0,250 | 0,500 | 19.000 | 4.000 | 0,250 | 0,500 | 16.000 | 2.800 | 0,100 | 0,250 |
| 5 | 15 | 20.000 | 3.900 | 0,250 | 0,500 | 17.000 | 3.300 | 0,250 | 0,500 | 13.000 | 2.000 | 0,100 | 0,250 |
| 5 | 20 | 16.000 | 3.300 | 0,250 | 0,500 | 13.000 | 2.700 | 0,250 | 0,500 | 8.000 | 1.300 | 0,100 | 0,250 |
| 5 | 25 | 15.000 | 3.000 | 0,200 | 0,300 | 12.000 | 2.400 | 0,200 | 0,300 | 6.000 | 960 | 0,100 | 0,250 |
| 5 | 30 | 14.000 | 2.300 | 0,100 | 0,300 | 11.000 | 1.800 | 0,100 | 0,300 | 4.000 | 520 | 0,100 | 0,250 |
| 5 | 35 | 12.000 | 1.500 | 0,100 | 0,300 | 10.000 | 1.100 | 0,100 | 0,300 | 3.200 | 280 | 0,100 | 0,250 |
| 5 | 40 | 10.000 | 1.100 | 0,100 | 0,200 | 9.000 | 990 | 0,100 | 0,200 | 3.000 | 260 | 0,100 | 0,200 |
| 5 | 45 | 9.000 | 850 | 0,100 | 0,100 | 8.000 | 660 | 0,100 | 0,100 | 3.000 | 200 | 0,100 | 0,100 |
| 5 | 50 | 7.500 | 760 | 0,100 | 0,100 | 7.000 | 610 | 0,100 | 0,100 | 2.800 | 190 | 0,100 | 0,100 |
| 6 | 12 | 20.000 | 5.200 | 0,300 | 0,500 | 16.000 | 3.400 | 0,300 | 0,500 | 13.500 | 2.500 | 0,100 | 0,200 |
| 6 | 20 | 16.000 | 3.900 | 0,300 | 0,500 | 12.000 | 3.000 | 0,300 | 0,500 | 8.000 | 1.600 | 0,100 | 0,200 |
| 6 | 25 | 12.000 | 3.000 | 0,300 | 0,500 | 10.000 | 2.500 | 0,300 | 0,500 | 6.000 | 1.200 | 0,100 | 0,200 |
| 6 | 30 | 10.000 | 2.400 | 0,300 | 0,500 | 9.000 | 2.100 | 0,300 | 0,500 | 4.000 | 740 | 0,100 | 0,200 |
| 6 | 35 | 9.000 | 2.100 | 0,200 | 0,400 | 9.000 | 2.000 | 0,200 | 0,400 | 3.500 | 620 | 0,100 | 0,200 |
| 6 | 40 | 9.000 | 1.900 | 0,200 | 0,300 | 9.000 | 1.800 | 0,200 | 0,300 | 3.000 | 480 | 0,100 | 0,200 |
| 6 | 45 | 8.000 | 1.700 | 0,200 | 0,300 | 8.000 | 1.600 | 0,200 | 0,300 | 2.800 | 440 | 0,100 | 0,200 |
| 6 | 50 | 7.000 | 1.500 | 0,200 | 0,300 | 7.000 | 1.400 | 0,200 | 0,300 | 2.500 | 400 | 0,100 | 0,200 |

Max cutting depth




Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.
* Modified parameters

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## WXS-CPR

### Regular milling

Max. cutting depth ap, ae

| | | | ap | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ap = 120% | ae = 120% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| Ø | α° | l1 (mm) | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 0,2 | 0° | 0,5 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 36.000 | 460 | 31.500 | 380 |
| 0,2 | 0° | 1 | 0,004 | - | - | - | - | - | 0,060 | 38.000 | 530 | 34.000 | 435 | 30.000 | 355 |
| 0,2 | 1° | 1 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 40.000 | 510 | 35.000 | 420 |
| 0,2 | 1° | 2 | 0,004 | - | - | - | - | - | 0,054 | 40.000 | 505 | 36.000 | 415 | 31.500 | 340 |
| 0,2 | 3° | 1 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 40.000 | 510 | 35.000 | 420 |
| 0,2 | 3° | 2 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 36.000 | 460 | 31.500 | 380 |
| 0,2 | 5° | 1 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 40.000 | 510 | 35.000 | 420 |
| 0,2 | 5° | 2 | 0,005 | - | - | - | - | - | 0,060 | 40.000 | 560 | 36.000 | 460 | 31.500 | 380 |
| 0,3 | 0° | 1 | 0,005 | - | - | - | - | - | 0,090 | 36.500 | 720 | 32.500 | 545 | 30.500 | 475 |
| 0,3 | 0° | 2 | 0,002 | - | - | - | - | - | 0,061 | 30.000 | 510 | 27.000 | 385 | 25.500 | 340 |
| 0,3 | 1° | 2 | 0,005 | - | - | - | - | - | 0,090 | 38.500 | 720 | 34.500 | 545 | 32.500 | 480 |
| 0,3 | 1° | 3 | 0,004 | - | - | - | - | - | 0,081 | 36.500 | 645 | 32.500 | 490 | 30.500 | 430 |
| 0,3 | 3° | 2 | 0,005 | - | - | - | - | - | 0,090 | 38.500 | 765 | 34.500 | 580 | 32.500 | 510 |
| 0,3 | 3° | 3 | 0,005 | - | - | - | - | - | 0,090 | 36.500 | 720 | 32.500 | 545 | 30.500 | 475 |
| 0,3 | 5° | 2 | 0,005 | - | - | - | - | - | 0,090 | 38.500 | 765 | 32.500 | 580 | 32.500 | 510 |
| 0,3 | 5° | 3 | 0,005 | - | - | - | - | - | 0,090 | 38.500 | 720 | 32.500 | 545 | 30.500 | 475 |
| 0,4 | 0° | 1 | 0,007 | - | - | - | - | - | 0,120 | 29.500 | 750 | 26.000 | 580 | 24.500 | 470 |
| 0,4 | 0° | 1,5 | 0,007 | - | - | - | - | - | 0,120 | 29.500 | 750 | 26.000 | 580 | 24.500 | 470 |
| 0,4 | 0° | 2 | 0,005 | 0,008 | - | - | - | - | 0,102 | 27.500 | 675 | 24.500 | 520 | 23.000 | 420 |
| 0,4 | 0° | 3 | 0,002 | 0,003 | - | - | - | - | 0,075 | 23.000 | 470 | 20.000 | 360 | 19.000 | 290 |
| 0,4 | 0° | 4 | 0,001 | 0,002 | - | - | - | - | 0,036 | 21.000 | 380 | 18.500 | 290 | 17.500 | 235 |
| 0,4 | 1° | 3 | 0,006 | 0,009 | - | - | - | - | 0,120 | 31.000 | 755 | 27.000 | 580 | 25.500 | 470 |
| 0,4 | 1° | 4 | 0,005 | 0,007 | - | - | - | - | 0,108 | 29.500 | 680 | 26.000 | 520 | 24.500 | 420 |
| 0,4 | 3° | 3 | 0,007 | 0,01 | - | - | - | - | 0,120 | 31.000 | 795 | 27.000 | 610 | 25.500 | 495 |
| 0,4 | 3° | 4 | 0,007 | 0,01 | - | - | - | - | 0,120 | 29.500 | 750 | 26.000 | 580 | 24.500 | 470 |
| 0,4 | 5° | 3 | 0,007 | 0,01 | - | - | - | - | 0,120 | 31.000 | 795 | 27.000 | 610 | 25.500 | 495 |
| 0,4 | 5° | 4 | 0,007 | 0,01 | - | - | - | - | 0,120 | 29.500 | 750 | 26.000 | 580 | 24.500 | 470 |
| 0,5 | 0° | 1 | 0,007 | 0,01 | - | - | - | - | 0,150 | 29.000 | 820 | 26.000 | 670 | 26.000 | 620 |
| 0,5 | 0° | 2 | 0,007 | 0,01 | - | - | - | - | 0,150 | 29.000 | 820 | 26.000 | 670 | 26.000 | 620 |
| 0,5 | 0° | 3 | 0,003 | 0,005 | - | - | - | - | 0,105 | 27.500 | 695 | 24.500 | 570 | 24.500 | 525 |
| 0,5 | 0° | 4 | 0,002 | 0,003 | - | - | - | - | 0,090 | 22.500 | 510 | 20.000 | 420 | 20.000 | 385 |
| 0,5 | 0° | 5 | 0,001 | 0,002 | - | - | - | - | 0,045 | 21.000 | 415 | 18.500 | 340 | 18.500 | 315 |
| 0,5 | 0° | 6 | 0,001 | 0,001 | - | - | - | - | 0,030 | 19.500 | 360 | 17.000 | 295 | 17.000 | 270 |
| 0,5 | 1° | 3 | 0,007 | 0,01 | - | - | - | - | 0,150 | 32.500 | 910 | 28.500 | 745 | 28.500 | 690 |
| 0,5 | 1° | 5 | 0,005 | 0,007 | - | - | - | - | 0,150 | 29.000 | 735 | 26.000 | 605 | 26.000 | 560 |
| 0,5 | 1° | 8 | 0,003 | 0,004 | - | - | - | - | 0,052 | 25.500 | 560 | 22.500 | 460 | 22.500 | 425 |
| 0,5 | 1° | 10 | 0,002 | 0,003 | - | - | - | - | 0,022 | 22.500 | 475 | 20.000 | 390 | 20.000 | 360 |
| 0,5 | 1° | 12 | 0,001 | 0,002 | - | - | - | - | 0,016 | 21.000 | 415 | 18.500 | 340 | 18.500 | 315 |
| 0,5 | 3° | 3 | 0,007 | 0,01 | - | - | - | - | 0,150 | 32.500 | 910 | 28.500 | 745 | 28.500 | 690 |
| 0,5 | 3° | 5 | 0,007 | 0,01 | - | - | - | - | 0,150 | 29.000 | 820 | 26.000 | 670 | 26.000 | 620 |
| 0,5 | 3° | 8 | 0,006 | 0,009 | - | - | - | - | 0,067 | 25.500 | 710 | 22.500 | 580 | 22.500 | 535 |
| 0,5 | 3° | 10 | 0,001 | 0,002 | - | - | - | - | 0,037 | 22.500 | 575 | 20.000 | 470 | 20.000 | 435 |
| 0,5 | 3° | 12 | 0,001 | 0,002 | - | - | - | - | 0,031 | 21.000 | 475 | 18.500 | 390 | 18.500 | 360 |
| 0,5 | 5° | 3 | 0,007 | 0,01 | - | - | - | - | 0,150 | 32.500 | 910 | 28.500 | 745 | 28.500 | 690 |
| 0,5 | 5° | 5 | 0,007 | 0,01 | - | - | - | - | 0,150 | 29.000 | 820 | 26.000 | 670 | 26.000 | 620 |
| 0,5 | 5° | 8 | 0,006 | 0,009 | - | - | - | - | 0,142 | 25.500 | 710 | 22.500 | 580 | 22.500 | 535 |
| 0,5 | 5° | 10 | 0,005 | 0,007 | - | - | - | - | 0,112 | 22.500 | 635 | 20.000 | 520 | 20.000 | 480 |
| 0,6 | 0° | 2 | - | 0,012 | - | - | - | - | 0,180 | 29.000 | 980 | 26.000 | 805 | 21.500 | 620 |
| 0,6 | 0° | 4 | - | 0,005 | - | - | - | - | 0,122 | 24.500 | 695 | 21.500 | 570 | 18.000 | 440 |
| 0,6 | 0° | 6 | - | 0,002 | - | - | - | - | 0,054 | 21.000 | 495 | 18.500 | 410 | 15.500 | 315 |
| 0,8 | 0° | 4 | - | 0,016 | 0,032 | - | - | - | 0,240 | 23.500 | 1.000 | 20.500 | 800 | 17.000 | 565 |
| 0,8 | 0° | 6 | - | 0,007 | 0,014 | - | - | - | 0,240 | 19.500 | 700 | 16.500 | 555 | 14.000 | 390 |
| 0,8 | 0° | 8 | - | - | 0,008 | - | - | - | 0,216 | 18.000 | 570 | 15.500 | 450 | 13.000 | 320 |
| 0,8 | 1° | 5 | 0,01 | 0,02 | 0,04 | - | - | - | 0,240 | 26.500 | 1.150 | 26.500 | 1.050 | 26.500 | 905 |
| 0,8 | 1° | 8 | 0,007 | 0,015 | 0,03 | - | - | - | 0,240 | 25.000 | 1.000 | 25.000 | 940 | 25.000 | 795 |
| 0,8 | 3° | 5 | 0,01 | 0,02 | 0,04 | - | - | - | 0,240 | 26.500 | 1.200 | 26.500 | 1.100 | 26.500 | 940 |
| 0,8 | 3° | 8 | 0,01 | 0,02 | 0,04 | - | - | - | 0,240 | 25.000 | 1.100 | 25.000 | 1.050 | 25.000 | 880 |
| 1 | 0° | 4 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 23.000 | 1.300 | 20.000 | 1.050 | 17.000 | 755 |
| 1 | 0° | 6 | 0,005 | 0,01 | 0,02 | 0,025 | - | - | 0,210 | 20.500 | 1.050 | 18.000 | 835 | 15.500 | 605 |
| 1 | 0° | 8 | 0,003 | 0,006 | 0,012 | 0,015 | - | - | 0,180 | 18.000 | 800 | 15.500 | 650 | 13.500 | 470 |
| 1 | 0° | 10 | 0,002 | 0,004 | 0,008 | 0,01 | - | - | 0,090 | 16.500 | 650 | 14.500 | 530 | 12.500 | 380 |
| 1 | 0° | 12 | 0,001 | 0,003 | 0,006 | 0,007 | - | - | 0,060 | 15.500 | 565 | 13.500 | 460 | 11.500 | 335 |
| 1 | 0° | 16 | - | - | 0,004 | - | - | - | 0,030 | 12.000 | 400 | 10.500 | 325 | 9.150 | 235 |
| 1 | 0° | 20 | - | - | 0,003 | - | - | - | 0,024 | 10.000 | 285 | 8.900 | 230 | 7.650 | 170 |
| 1 | 1° | 6 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 25.500 | 1.250 | 22.500 | 1.150 | 19.000 | 840 |
| 1 | 1° | 10 | 0,007 | 0,015 | 0,03 | 0,037 | - | - | 0,270 | 23.000 | 1.150 | 20.000 | 940 | 17.000 | 680 |
| 1 | 1° | 15 | 0,005 | 0,01 | 0,02 | 0,025 | - | - | 0,120 | 20.500 | 915 | 18.000 | 740 | 15.500 | 540 |
| 1 | 1° | 20 | 0,003 | 0,006 | 0,012 | 0,015 | - | - | 0,045 | 18.000 | 750 | 15.500 | 610 | 13.500 | 440 |
| 1 | 1° | 25 | 0,002 | 0,002 | 0,004 | 0,005 | - | - | 0,030 | 16.500 | 650 | 14.500 | 530 | 12.500 | 380 |
| 1 | 1° | 30 | 0,002 | 0,001 | 0,002 | 0,003 | - | - | 0,021 | 12.500 | 465 | 11.000 | 380 | 9.550 | 275 |
| 1 | 1° | 35 | 0,002 | 0,001 | 0,002 | 0,002 | - | - | 0,015 | 11.500 | 385 | 10.000 | 315 | 8.600 | 230 |
| 1 | 3° | 6 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 25.500 | 1.450 | 22.500 | 1.150 | 19.000 | 840 |
| 1 | 3° | 10 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 23.000 | 1.300 | 20.000 | 1.050 | 17.000 | 755 |
| 1,2 | 0° | 6 | - | - | 0,032 | 0,04 | - | - | 0,360 | 19.000 | 1.200 | 18.000 | 1.050 | 14.500 | 735 |
| 1,2 | 0° | 8 | - | - | 0,018 | 0,022 | - | - | 0,252 | 17.000 | 965 | 16.000 | 845 | 13.000 | 580 |
| 1,2 | 0° | 10 | - | - | 0,011 | 0,014 | - | - | 0,216 | 16.000 | 850 | 15.000 | 740 | 12.000 | 510 |
| 1,5 | 0° | 6 | - | - | 0,04 | 0,06 | - | - | 0,450 | 17.000 | 1.450 | 16.000 | 1.250 | 13.500 | 880 |
| 1,5 | 0° | 8 | - | - | 0,026 | 0,039 | - | - | 0,382 | 16.000 | 1.250 | 15.500 | 1.100 | 12.500 | 750 |
| 1,5 | 0° | 10 | - | - | 0,018 | 0,027 | - | - | 0,292 | 14.500 | 1.000 | 13.500 | 900 | 11.000 | 625 |

# CUTTING CONDITIONS



## WXS-CPR

### Regular milling

Max. cutting depth ap / ae

| | | | ap | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ap = 120% | ae = 120% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| Ø | α° | l1 (mm) | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1,5 | 0° | 12 | - | - | 0,012 | 0,018 | - | - | 0,270 | 13.500 | 900 | 12.500 | 790 | 10.500 | 550 |
| 1,5 | 0° | 16 | - | - | 0,007 | 0,01 | - | - | 0,112 | 9.150 | 525 | 8.650 | 460 | 7.150 | 320 |
| 1,5 | 1° | 10 | - | 0,019 | 0,039 | 0,049 | - | - | 0,450 | 18.500 | 1.500 | 17.500 | 1.300 | 14.500 | 905 |
| 1,5 | 1° | 15 | - | 0,015 | 0,03 | 0,037 | - | - | 0,405 | 17.000 | 1.150 | 16.000 | 1.000 | 13.500 | 705 |
| 1,5 | 1° | 20 | - | 0,01 | 0,02 | 0,025 | - | - | 0,270 | 15.500 | 1.100 | 15.000 | 970 | 12.000 | 675 |
| 1,5 | 1° | 25 | - | 0,008 | 0,008 | 0,01 | - | - | 0,135 | 14.500 | 950 | 13.500 | 835 | 11.500 | 580 |
| 1,5 | 1° | 30 | - | 0,003 | 0,006 | 0,007 | - | - | 0,067 | 13.500 | 840 | 12.500 | 740 | 10.500 | 515 |
| 1,5 | 3° | 10 | - | 0,02 | 0,04 | 0,05 | - | - | 0,450 | 18.500 | 1.550 | 17.500 | 1.350 | 14.500 | 940 |
| 1,5 | 3° | 15 | - | 0,02 | 0,04 | 0,05 | - | - | 0,450 | 17.000 | 1.450 | 16.000 | 1.250 | 13.500 | 880 |
| 2 | 0° | 8 | - | 0,02 | 0,04 | 0,06 | 0,075 | - | 0,600 | 13.000 | 1.450 | 13.000 | 1.300 | 11.500 | 1.000 |
| 2 | 0° | 10 | - | 0,016 | 0,032 | 0,048 | 0,06 | - | 0,510 | 12.000 | 1.300 | 12.000 | 1.150 | 11.000 | 905 |
| 2 | 0° | 12 | - | 0,01 | 0,02 | 0,03 | 0,037 | - | 0,420 | 11.500 | 1.150 | 11.500 | 1.050 | 10.000 | 810 |
| 2 | 0° | 16 | - | 0,006 | 0,012 | 0,018 | 0,022 | - | 0,360 | 10.000 | 900 | 10.000 | 800 | 8.900 | 630 |
| 2 | 0° | 20 | - | 0,004 | 0,008 | 0,012 | 0,015 | - | 0,180 | 9.300 | 730 | 9.300 | 650 | 8.250 | 510 |
| 2 | 0° | 25 | - | 0,002 | 0,004 | 0,007 | 0,009 | - | 0,120 | 8.600 | 625 | 8.600 | 560 | 7.650 | 440 |
| 2 | 1° | 15 | - | 0,018 | 0,036 | 0,046 | 0,064 | - | 0,600 | 13.500 | 1.450 | 13.500 | 1.300 | 12.000 | 1.000 |
| 2 | 1° | 20 | - | 0,015 | 0,03 | 0,037 | 0,052 | - | 0,540 | 13.000 | 1.300 | 13.000 | 1.150 | 11.500 | 910 |
| 2 | 1° | 25 | - | 0,012 | 0,024 | 0,03 | 0,04 | - | 0,390 | 12.000 | 1.150 | 12.000 | 1.050 | 11.000 | 810 |
| 2 | 1° | 30 | - | 0,01 | 0,02 | 0,025 | 0,03 | - | 0,240 | 11.500 | 1.050 | 11.500 | 920 | 10.000 | 720 |
| 2 | 1° | 40 | - | 0,006 | 0,012 | 0,015 | 0,02 | - | 0,090 | 10.000 | 840 | 10.000 | 750 | 8.900 | 590 |
| 2 | 1° | 50 | - | 0,005 | 0,01 | 0,01 | 0,01 | - | 0,060 | 9.300 | 730 | 9.300 | 650 | 8.250 | 510 |
| 2 | 3° | 15 | - | 0,02 | 0,04 | 0,06 | 0,075 | - | 0,600 | 13.500 | 1.500 | 13.500 | 1.350 | 12.000 | 1.050 |
| 2 | 3° | 20 | - | 0,02 | 0,04 | 0,06 | 0,075 | - | 0,600 | 13.000 | 1.450 | 13..000 | 1.300 | 11.500 | 1.000 |
| 2,5 | 0° | 10 | - | - | 0,04 | - | 0,075 | - | 0,750 | 11.500 | 1.600 | 10.500 | 1.200 | 9.150 | 1.000 |
| 2,5 | 0° | 20 | - | - | 0,02 | - | 0,037 | - | 0,450 | 8.900 | 1.000 | 8.000 | 740 | 7.150 | 630 |
| 2,5 | 0° | 30 | - | - | 0,006 | - | 0,011 | - | 0,150 | 7.650 | 700 | 6.850 | 520 | 6.100 | 445 |
| 3 | 0° | 8 | - | - | 0,04 | - | - | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 12 | - | - | 0,04 | 0,06 | 0,075 | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 16 | - | - | 0,028 | 0,042 | 0,052 | - | 0,720 | 8.500 | 1.200 | 7.650 | 910 | 6.800 | 660 |
| 3 | 0° | 20 | - | - | 0,018 | 0,027 | 0,033 | - | 0,612 | 7.400 | 985 | 6.700 | 750 | 5.950 | 545 |
| 3 | 0° | 25 | - | - | 0,012 | 0,018 | 0,022 | - | 0,540 | 7.100 | 830 | 6.400 | 635 | 5.700 | 460 |
| 3 | 0° | 30 | - | - | 0,008 | 0,012 | 0,015 | - | 0,270 | 6.900 | 755 | 6.200 | 575 | 5.500 | 420 |
| 3 | 0° | 35 | - | - | 0,006 | 0,009 | 0,011 | - | 0,180 | 6.350 | 655 | 5.700 | 500 | 5.100 | 365 |
| 3 | 1° | 15 | - | - | 0,04 | - | 0,075 | - | 0,900 | 10.500 | 1.650 | 9.550 | 1.250 | 8.500 | 920 |
| 3 | 1° | 20 | - | - | 0,039 | - | 0,07 | - | 0,900 | 9.950 | 1.500 | 8.950 | 1.150 | 7.950 | 830 |
| 3 | 1° | 30 | - | - | 0,03 | - | 0,05 | - | 0,810 | 9.550 | 1.350 | 8.600 | 1.000 | 7.650 | 745 |
| 3 | 1° | 40 | - | - | 0,022 | - | 0,04 | - | 0,522 | 8.900 | 1.150 | 8.000 | 890 | 7.150 | 650 |
| 3 | 1° | 50 | - | - | 0,016 | - | 0,03 | - | 0,297 | 8.050 | 980 | 7.250 | 750 | 6.450 | 545 |
| 3 | 1° | 60 | - | - | 0,012 | - | 0,02 | - | 0,135 | 7.400 | 870 | 6.700 | 660 | 5.950 | 480 |
| 4 | 0° | 16 | - | - | 0,04 | 0,06 | 0,075 | 0,12 | 1,200 | 7.150 | 2.050 | 6.450 | 1.550 | 5.000 | 965 |
| 4 | 0° | 20 | - | - | 0,032 | 0,048 | 0,06 | 0,2 | 1,020 | 6.750 | 1.950 | 6.100 | 1.450 | 4.750 | 910 |
| 4 | 0° | 25 | - | - | 0,02 | 0,03 | 0,037 | 0,06 | 0,816 | 5.950 | 1.700 | 5.350 | 1.300 | 4.150 | 800 |
| 4 | 0° | 30 | - | - | 0,014 | 0,021 | 0,026 | 0,04 | 0,744 | 5.550 | 1.600 | 5.000 | 1.200 | 3.900 | 750 |
| 4 | 0° | 40 | - | - | 0,008 | 0,012 | 0,015 | 0,024 | 0,360 | 5.150 | 1.500 | 4.650 | 1.100 | 3.600 | 695 |
| 4 | 0° | 50 | - | - | 0,004 | 0,007 | 0,009 | 0,014 | 0,216 | 4.550 | 1.300 | 4.100 | 980 | 3.150 | 610 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication/mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machineshape, cutting amount, rigidity of the machine or work holding condition etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommanded during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

# CUTTING CONDITIONS



## WXS-CPR

### Side milling (Contour line finish)

Max. cutting depth ap

| | | | ap | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ap = 100% | ae = 100% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| Ø | α° | l1 (mm) | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 0,2 | 0° | 0,5 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 43.000 | 550 | 43.000 | 515 |
| 0,2 | 0° | 1 | 0,005 | - | - | - | - | - | 0,006 | 47.500 | 665 | 40.500 | 520 | 40.500 | 485 |
| 0,2 | 1° | 1 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 47.500 | 610 | 47.500 | 575 |
| 0,2 | 1° | 2 | 0,005 | - | - | - | - | - | 0,005 | 50.000 | 630 | 43.000 | 495 | 43.000 | 465 |
| 0,2 | 3° | 1 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 47.500 | 610 | 47.500 | 575 |
| 0,2 | 3° | 2 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 43.000 | 550 | 43.000 | 515 |
| 0,2 | 5° | 1 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 47.500 | 610 | 47.500 | 575 |
| 0,2 | 5° | 2 | 0,005 | - | - | - | - | - | 0,006 | 50.000 | 700 | 43.000 | 550 | 43.000 | 515 |
| 0,3 | 0° | 1 | 0,005 | - | - | - | - | - | 0,009 | 43.000 | 850 | 38.000 | 690 | 33.500 | 520 |
| 0,3 | 0° | 2 | 0,004 | - | - | - | - | - | 0,008 | 36.000 | 605 | 32.000 | 485 | 28.000 | 370 |
| 0,3 | 1° | 2 | 0,005 | - | - | - | - | - | 0,009 | 46.000 | 855 | 40.500 | 690 | 35.500 | 525 |
| 0,3 | 1° | 3 | 0,005 | - | - | - | - | - | 0,009 | 43.000 | 765 | 38.000 | 620 | 33.500 | 470 |
| 0,3 | 3° | 2 | 0,005 | - | - | - | - | - | 0,009 | 46.000 | 910 | 40.500 | 735 | 35.500 | 555 |
| 0,3 | 3° | 3 | 0,005 | - | - | - | - | - | 0,009 | 43.000 | 850 | 38.000 | 690 | 33.500 | 520 |
| 0,3 | 5° | 2 | 0,005 | - | - | - | - | - | 0,009 | 46.000 | 910 | 40.500 | 735 | 35.500 | 555 |
| 0,3 | 5° | 3 | 0,005 | - | - | - | - | - | 0,009 | 43.000 | 850 | 38.000 | 690 | 33.500 | 520 |
| 0,4 | 0° | 1 | 0,006 | - | - | - | - | - | 0,012 | 39.500 | 1.000 | 32.000 | 775 | 28.500 | 550 |
| 0,4 | 0° | 1,5 | 0,006 | - | - | - | - | - | 0,012 | 39.500 | 1.000 | 32.000 | 775 | 28.500 | 550 |
| 0,4 | 0° | 2 | 0,006 | 0,01 | - | - | - | - | 0,012 | 37.000 | 905 | 30.500 | 695 | 27.000 | 495 |
| 0,4 | 0° | 3 | 0,004 | 0,007 | - | - | - | - | 0,008 | 30.500 | 630 | 25.500 | 480 | 22.500 | 340 |
| 0,4 | 0° | 4 | 0,002 | 0,004 | - | - | - | - | 0,006 | 28.500 | 510 | 23.500 | 390 | 20.500 | 280 |
| 0,4 | 1° | 3 | 0,006 | 0,01 | - | - | - | - | 0,012 | 41.500 | 1.000 | 34.000 | 775 | 30.000 | 550 |
| 0,4 | 1° | 4 | 0,006 | 0,01 | - | - | - | - | 0,012 | 39.500 | 910 | 32.000 | 695 | 28.500 | 495 |
| 0,4 | 3° | 3 | 0,006 | 0,01 | - | - | - | - | 0,012 | 41.500 | 1.050 | 34.000 | 815 | 30.000 | 580 |
| 0,4 | 3° | 4 | 0,006 | 0,01 | - | - | - | - | 0,012 | 39.500 | 1.000 | 32.000 | 775 | 28.500 | 550 |
| 0,4 | 5° | 3 | 0,006 | 0,01 | - | - | - | - | 0,012 | 41.500 | 1.050 | 34.000 | 815 | 30.000 | 580 |
| 0,4 | 5° | 4 | 0,006 | 0,01 | - | - | - | - | 0,012 | 39.500 | 1.000 | 32.000 | 775 | 28.500 | 550 |
| 0,5 | 0° | 1 | 0,006 | 0,01 | - | - | - | - | 0,015 | 34.500 | 965 | 28.500 | 775 | 24.000 | 580 |
| 0,5 | 0° | 2 | 0,006 | 0,01 | - | - | - | - | 0,015 | 34.500 | 965 | 28.500 | 775 | 24.000 | 580 |
| 0,5 | 0° | 3 | 0,006 | 0,01 | - | - | - | - | 0,013 | 32.500 | 820 | 27.000 | 660 | 22.500 | 490 |
| 0,5 | 0° | 4 | 0,003 | 0,006 | - | - | - | - | 0,010 | 26.500 | 600 | 22.500 | 480 | 18.500 | 360 |
| 0,5 | 0° | 5 | 0,002 | 0,004 | - | - | - | - | 0,007 | 25.000 | 490 | 20.500 | 390 | 17.500 | 290 |
| 0,5 | 0° | 6 | 0,001 | 0,003 | - | - | - | - | 0,006 | 23.000 | 425 | 19.000 | 340 | 16.000 | 255 |
| 0,5 | 1° | 3 | 0,006 | 0,01 | - | - | - | - | 0,015 | 38.000 | 1.050 | 32.000 | 860 | 26.500 | 640 |
| 0,5 | 1° | 5 | 0,006 | 0,01 | - | - | - | - | 0,015 | 34.500 | 865 | 28.500 | 695 | 24.000 | 520 |
| 0,5 | 1° | 8 | 0,004 | 0,007 | - | - | - | - | 0,010 | 30.000 | 660 | 25.000 | 530 | 21.000 | 395 |
| 0,5 | 1° | 10 | 0,003 | 0,005 | - | - | - | - | 0,009 | 26.500 | 560 | 22.500 | 450 | 18.500 | 340 |
| 0,5 | 1° | 12 | 0,002 | 0,004 | - | - | - | - | 0,006 | 25.000 | 490 | 20.500 | 390 | 17.500 | 290 |
| 0,5 | 3° | 3 | 0,006 | 0,01 | - | - | - | - | 0,015 | 38.000 | 1.050 | 32.000 | 860 | 26.500 | 640 |
| 0,5 | 3° | 5 | 0,006 | 0,01 | - | - | - | - | 0,015 | 34.500 | 965 | 28.500 | 775 | 24.000 | 580 |
| 0,5 | 3° | 8 | 0,004 | 0,008 | - | - | - | - | 0,015 | 30.000 | 835 | 25.000 | 670 | 21.000 | 500 |
| 0,5 | 3° | 10 | 0,003 | 0,005 | - | - | - | - | 0,012 | 26.500 | 675 | 22.500 | 540 | 18.500 | 400 |
| 0,5 | 3° | 12 | 0,002 | 0,004 | - | - | - | - | 0,010 | 25.000 | 555 | 20.500 | 450 | 17.500 | 335 |
| 0,5 | 5° | 3 | 0,006 | 0,01 | - | - | - | - | 0,015 | 38.000 | 1.050 | 32.000 | 860 | 26.500 | 640 |
| 0,5 | 5° | 5 | 0,006 | 0,01 | - | - | - | - | 0,015 | 34.500 | 965 | 28.500 | 775 | 24.000 | 580 |
| 0,5 | 5° | 8 | 0,006 | 0,01 | - | - | - | - | 0,015 | 30.000 | 835 | 25.000 | 670 | 21.000 | 500 |
| 0,5 | 5° | 10 | 0,004 | 0,008 | - | - | - | - | 0,012 | 26.500 | 750 | 22.500 | 600 | 18.500 | 450 |
| 0,6 | 0° | 2 | - | 0,012 | - | - | - | - | 0,018 | 31.000 | 1.050 | 26.500 | 850 | 24.000 | 690 |
| 0,6 | 0° | 4 | - | 0,009 | - | - | - | - | 0,012 | 26.000 | 740 | 22.000 | 600 | 20.000 | 490 |
| 0,6 | 0° | 6 | - | 0,004 | - | - | - | - | 0,009 | 22.500 | 530 | 19.000 | 430 | 17.000 | 350 |
| 0,8 | 0° | 4 | - | 0,015 | 0,02 | - | - | - | 0,020 | 29.000 | 1.200 | 25.500 | 1.050 | 23.500 | 790 |
| 0,8 | 0° | 6 | - | 0,012 | 0,016 | - | - | - | 0,014 | 23.500 | 850 | 21.000 | 720 | 19.500 | 550 |
| 0,8 | 0° | 8 | - | - | 0,008 | - | - | - | 0,010 | 22.000 | 690 | 19.500 | 590 | 18.000 | 445 |
| 0,8 | 1° | 5 | 0,006 | 0,015 | 0,02 | - | - | - | 0,020 | 26.500 | 1.150 | 26.500 | 1.100 | 26.500 | 905 |
| 0,8 | 1° | 8 | 0,006 | 0,015 | 0,02 | - | - | - | 0,020 | 25.000 | 1.000 | 25.000 | 975 | 25.000 | 795 |
| 0,8 | 3° | 5 | 0,006 | 0,015 | 0,02 | - | - | - | 0,020 | 26.500 | 1.200 | 26.500 | 1.150 | 26.500 | 940 |
| 0,8 | 3° | 8 | 0,006 | 0,015 | 0,02 | - | - | - | 0,020 | 25.000 | 1.100 | 25.000 | 1.100 | 25.000 | 880 |
| 1 | 0° | 4 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,030 | 27.000 | 1.500 | 24.500 | 1.250 | 22.500 | 995 |
| 1 | 0° | 6 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,027 | 24.000 | 1.200 | 21.500 | 1.000 | 20.000 | 800 |
| 1 | 0° | 8 | 0,003 | 0,009 | 0,012 | 0,018 | - | - | 0,021 | 21.000 | 950 | 19.000 | 790 | 17.500 | 620 |
| 1 | 0° | 10 | 0,003 | 0,006 | 0,008 | 0,012 | - | - | 0,015 | 19.500 | 770 | 17.500 | 640 | 16.500 | 505 |
| 1 | 0° | 12 | 0,003 | 0,004 | 0,006 | 0,009 | - | - | 0,013 | 18.000 | 670 | 16.000 | 560 | 15.000 | 440 |
| 1 | 0° | 16 | - | - | 0,004 | - | - | - | 0,010 | 14.500 | 470 | 13.000 | 390 | 12.000 | 310 |
| 1 | 0° | 20 | - | - | 0,003 | - | - | - | 0,009 | 12.000 | 340 | 11.000 | 280 | 10.000 | 220 |
| 1 | 1° | 6 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,030 | 30.000 | 1.700 | 27.000 | 1.400 | 25.000 | 1.100 |
| 1 | 1° | 10 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,030 | 27.000 | 1.350 | 24.500 | 1.150 | 22.500 | 895 |
| 1 | 1° | 15 | 0,004 | 0,01 | 0,014 | 0,021 | - | - | 0,021 | 24.000 | 1.100 | 21.500 | 900 | 20.000 | 710 |
| 1 | 1° | 20 | 0,003 | 0,007 | 0,01 | 0,015 | - | - | 0,018 | 21.000 | 890 | 19.000 | 740 | 17.500 | 580 |
| 1 | 1° | 25 | 0,002 | 0,006 | 0,008 | 0,012 | - | - | 0,012 | 19.500 | 770 | 17.500 | 640 | 16.500 | 505 |
| 1 | 1° | 30 | 0,002 | 0,003 | 0,004 | 0,006 | - | - | 0,009 | 15.000 | 550 | 13.500 | 460 | 12.500 | 360 |
| 1 | 1° | 35 | 0,002 | 0,001 | 0,002 | 0,003 | - | - | 0,007 | 13.500 | 460 | 12.000 | 380 | 11.500 | 300 |
| 1 | 3° | 6 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,030 | 30.000 | 1.700 | 27.000 | 1.400 | 25.000 | 1.100 |
| 1 | 3° | 10 | 0,006 | 0,015 | 0,2 | 0,3 | - | - | 0,015 | 27.000 | 1.500 | 24.500 | 1.250 | 22.500 | 995 |
| 1,2 | 0° | 6 | - | - | 0,016 | 0,024 | - | - | 0,036 | 22.500 | 1.450 | 21.000 | 1.250 | 19.000 | 960 |
| 1,2 | 0° | 8 | - | - | 0,009 | 0,013 | - | - | 0,028 | 20.000 | 1.150 | 18.500 | 980 | 17.000 | 760 |
| 1,2 | 0° | 10 | - | - | 0,005 | 0,008 | - | - | 0,021 | 18.500 | 1.000 | 17.500 | 860 | 16.000 | 670 |
| 1,5 | 0° | 6 | - | - | 0,02 | 0,03 | - | - | 0,045 | 21.000 | 1.750 | 18.500 | 1.450 | 16.000 | 1.050 |
| 1,5 | 0° | 8 | - | - | 0,02 | 0,03 | - | - | 0,045 | 20.000 | 1.500 | 17.500 | 1.250 | 15.500 | 910 |
| 1,5 | 0° | 10 | - | - | 0,018 | 0,027 | - | - | 0,036 | 17.500 | 1.250 | 15.500 | 1.050 | 13.500 | 760 |

# CUTTING CONDITIONS



## WXS-CPR

### Side milling (Contour line finish)

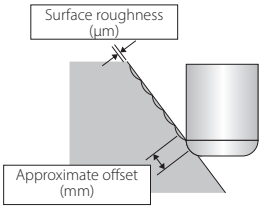
Max. cutting depth ap, ae

| | | | ap | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ap = 100% | ae = 100% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| Ø | α° | l1 (mm) | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1,5 | 0° | 12 | - | - | 0,012 | 0,018 | - | - | 0,031 | 16.500 | 1.100 | 14.500 | 910 | 12.500 | 670 |
| 1,5 | 0° | 16 | - | - | 0,008 | 0,012 | - | - | 0,022 | 11.000 | 640 | 10.000 | 530 | 8.650 | 390 |
| 1,5 | 1° | 10 | - | 0,015 | 0,02 | 0,03 | - | - | 0,045 | 22.500 | 1.800 | 20.000 | 1.500 | 17.500 | 1.100 |
| 1,5 | 1° | 15 | - | 0,015 | 0,02 | 0,03 | - | - | 0,045 | 21.000 | 1.400 | 18.500 | 1.150 | 16.000 | 860 |
| 1,5 | 1° | 20 | - | 0,012 | 0,016 | 0,024 | - | - | 0,036 | 19.000 | 1.350 | 17.000 | 1.100 | 15.000 | 820 |
| 1,5 | 1° | 25 | - | 0,01 | 0,014 | 0,021 | - | - | 0,031 | 17.500 | 1.150 | 16.000 | 960 | 13.500 | 705 |
| 1,5 | 1° | 30 | - | 0,007 | 0,01 | 0,015 | - | - | 0,027 | 16.500 | 1.050 | 14.500 | 850 | 12.500 | 625 |
| 1,5 | 3° | 10 | - | 0,015 | 0,02 | 0,03 | - | - | 0,045 | 22.500 | 1.900 | 20.000 | 1.550 | 17.500 | 1.150 |
| 1,5 | 3° | 15 | - | 0,015 | 0,02 | 0,03 | - | - | 0,045 | 21.000 | 1.750 | 18.500 | 1.450 | 16.000 | 1.050 |
| 2 | 0° | 8 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 16.500 | 1.850 | 16.000 | 1.600 | 15.000 | 1.350 |
| 2 | 0° | 10 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 15.500 | 1.650 | 15.500 | 1.450 | 14.500 | 1.200 |
| 2 | 0° | 12 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,054 | 14.500 | 1.500 | 14.500 | 1.300 | 13.500 | 1.050 |
| 2 | 0° | 16 | - | 0,009 | 0,012 | 0,018 | 0,03 | - | 0,042 | 13.000 | 1.150 | 12.500 | 1.000 | 12.000 | 830 |
| 2 | 0° | 20 | - | 0,006 | 0,008 | 0,012 | 0,02 | - | 0,030 | 12.000 | 935 | 11.500 | 820 | 11.000 | 675 |
| 2 | 0° | 25 | - | 0,004 | 0,006 | 0,009 | 0,015 | - | 0,027 | 11.000 | 800 | 11.000 | 700 | 10.000 | 580 |
| 2 | 1° | 15 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 17.500 | 1.850 | 17.000 | 1.600 | 16.000 | 1.350 |
| 2 | 1° | 20 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 16.500 | 1.650 | 16.000 | 1.450 | 15.000 | 1.200 |
| 2 | 1° | 25 | - | 0,012 | 0,017 | 0,025 | 0,042 | - | 0,054 | 15.500 | 1.500 | 15.500 | 1.300 | 14.500 | 1.050 |
| 2 | 1° | 30 | - | 0,012 | 0,016 | 0,024 | 0,04 | - | 0,048 | 14.500 | 1.300 | 14.500 | 1.150 | 13.500 | 950 |
| 2 | 1° | 40 | - | 0,007 | 0,01 | 0,015 | 0,025 | - | 0,036 | 13.000 | 1.100 | 12.500 | 945 | 12.000 | 780 |
| 2 | 1° | 50 | - | 0,006 | 0,008 | 0,012 | 0,02 | - | 0,024 | 12.000 | 935 | 11.500 | 820 | 11.000 | 675 |
| 2 | 3° | 15 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 17.500 | 1.950 | 17.000 | 1.700 | 16.000 | 1.400 |
| 2 | 3° | 20 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 16.500 | 1.850 | 16..000 | 1.600 | 15.000 | 1.350 |
| 2,5 | 0° | 10 | - | - | 0,02 | - | 0,05 | - | 0,075 | 13.000 | 1.850 | 13.000 | 1.400 | 12.000 | 1.350 |
| 2,5 | 0° | 20 | - | - | 0,012 | - | 0,03 | - | 0,052 | 10.000 | 1.150 | 10.000 | 885 | 9.450 | 830 |
| 2,5 | 0° | 30 | - | - | 0,006 | - | 0,015 | - | 0,033 | 8.800 | 800 | 8.650 | 630 | 8.100 | 590 |
| 3 | 0° | 8 | - | - | 0,02 | - | - | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 12 | - | - | 0,02 | 0,03 | 0,05 | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 16 | - | - | 0,02 | 0,03 | 0,05 | - | 0,080 | 10.500 | 1.600 | 9.600 | 1.150 | 9.000 | 875 |
| 3 | 0° | 20 | - | - | 0,02 | 0,03 | 0,05 | - | 0,064 | 9.300 | 1.350 | 8.400 | 940 | 7.850 | 725 |
| 3 | 0° | 25 | - | - | 0,012 | 0,018 | 0,03 | - | 0,048 | 8.900 | 1.100 | 8.050 | 795 | 7.550 | 610 |
| 3 | 0° | 30 | - | - | 0,008 | 0,012 | 0,02 | - | 0,040 | 8.600 | 1.000 | 7.800 | 720 | 7.300 | 555 |
| 3 | 0° | 35 | - | - | 0,006 | 0,009 | 0,015 | - | 0,036 | 7.950 | 880 | 7.200 | 630 | 6.750 | 480 |
| 3 | 1° | 15 | - | - | 0,02 | - | 0,05 | - | 0,080 | 13.500 | 2.250 | 12.000 | 1.600 | 11.000 | 1.200 |
| 3 | 1° | 20 | - | - | 0,02 | - | 0,05 | - | 0,080 | 12.500 | 2.000 | 11.500 | 1.450 | 10.500 | 1.100 |
| 3 | 1° | 30 | - | - | 0,02 | - | 0,05 | - | 0,080 | 12.000 | 1.800 | 11.000 | 1.300 | 10.000 | 985 |
| 3 | 1° | 40 | - | - | 0,018 | - | 0,045 | - | 0,064 | 11.000 | 1.550 | 10.000 | 1.100 | 9.450 | 860 |
| 3 | 1° | 50 | - | - | 0,014 | - | 0,035 | - | 0,056 | 10.000 | 1.300 | 9.100 | 940 | 8.550 | 720 |
| 3 | 1° | 60 | - | - | 0,01 | - | 0,025 | - | 0,048 | 9.300 | 1.150 | 8.400 | 830 | 7.850 | 640 |
| 4 | 0° | 16 | - | - | 0,02 | 0,03 | 0,05 | 0,08 | 0,080 | 7.900 | 2.500 | 7.150 | 2.050 | 6.450 | 1.450 |
| 4 | 0° | 20 | - | - | 0,02 | 0,03 | 0,05 | 0,08 | 0,080 | 7.450 | 2.400 | 6.750 | 1.950 | 6.100 | 1.350 |
| 4 | 0° | 25 | - | - | 0,02 | 0,03 | 0,05 | 0,08 | 0,072 | 6.550 | 2.000 | 5.950 | 1.650 | 5.350 | 1.150 |
| 4 | 0° | 30 | - | - | 0,014 | 0,021 | 0,035 | 0,056 | 0,056 | 6.100 | 1.650 | 5.550 | 1.350 | 5.000 | 955 |
| 4 | 0° | 40 | - | - | 0,008 | 0,012 | 0,02 | 0,032 | 0,040 | 5.700 | 1.300 | 5.150 | 1.050 | 4.650 | 730 |
| 4 | 0° | 50 | - | - | 0,006 | 0,009 | 0,015 | 0,024 | 0,036 | 5.000 | 960 | 4.450 | 785 | 4.100 | 550 |

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication/mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machineshape, cutting amount, rigidity of the machine or work holding condition etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommanded during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

### Approximate offset (mm)

| | Target surface roughness (µm) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | 0,1 | 0,25 | 0,5 | 0,75 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2,5 | 3 | 3,5 | 4 | 5 |
| R 0,05 | 0,006 | 0,01 | 0,014 | 0,017 | 0,02 | 0,022 | 0,024 | 0,026 | 0,028 | - | - | - | - | - |
| R 0,1 | 0,009 | 0,014 | 0,02 | 0,024 | 0,028 | 0,032 | 0,035 | 0,037 | 0,04 | 0,045 | 0,049 | - | - | - |
| R 0,2 | 0,012 | 0,02 | 0,028 | 0,035 | 0,04 | 0,045 | 0,049 | 0,053 | 0,057 | 0,063 | 0,07 | 0,075 | 0,08 | 0,9 |
| R 0,3 | 0,015 | 0,025 | 0,035 | 0,042 | 0,049 | 0,055 | 0,06 | 0,065 | 0,07 | 0,077 | 0,085 | 0,092 | 0,098 | 0,11 |
| R 0,5 | 0,02 | 0,032 | 0,045 | 0,055 | 0,065 | 0,07 | 0,078 | 0,084 | 0,09 | 0,1 | 0,11 | 0,118 | 0,125 | 0,141 |
| R 1 | 0,028 | 0,045 | 0,063 | 0,078 | 0,09 | 0,1 | 0,11 | 0,118 | 0,125 | 0,142 | 0,155 | 0,168 | 0,18 | 0,2 |

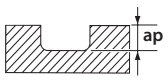


## WXL-1,5D-DE

### Slotting

| Ø | Cu | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,1 | 50.000 | 120 | 40.000 | 80 | 40.000 | 75 | 40.000 | 38 |
| 0,2 | 50.000 | 170 | 40.000 | 110 | 40.000 | 90 | 40.000 | 45 |
| 0,3 | 50.000 | 210 | 40.000 | 140 | 40.000 | 100 | 40.000 | 70 |
| 0,4 | 50.000 | 230 | 40.000 | 150 | 40.000 | 110 | 34.500 | 75 |
| 0,5 | 50.000 | 250 | 38.500 | 150 | 31.000 | 110 | 27.500 | 75 |
| 0,6 | 50.000 | 280 | 33.500 | 150 | 24.500 | 110 | 21.000 | 75 |
| 0,7 | 50.000 | 310 | 30.000 | 150 | 21.500 | 110 | 18.500 | 75 |
| 0,8 | 50.000 | 360 | 27.000 | 150 | 19.500 | 110 | 17.000 | 80 |
| 0,9 | 50.000 | 400 | 23.500 | 150 | 17.000 | 110 | 15.000 | 80 |
| 1 | 50.000 | 430 | 22.000 | 150 | 15.500 | 110 | 13.500 | 80 |
| 1,1 | 50.000 | 420 | 20.000 | 150 | 14.000 | 110 | 12.500 | 80 |
| 1,2 | 50.000 | 420 | 18.500 | 150 | 13.500 | 110 | 11.500 | 80 |
| 1,3 | 47.000 | 410 | 17.500 | 150 | 12.500 | 110 | 11.000 | 80 |
| 1,4 | 44.000 | 410 | 16.000 | 150 | 11.500 | 110 | 10.000 | 80 |
| 1,5 | 40.000 | 400 | 15.500 | 150 | 11.000 | 110 | 9.900 | 80 |
| 1,6 | 39.000 | 400 | 15.000 | 150 | 10.500 | 110 | 9.400 | 80 |
| 1,7 | 36.500 | 400 | 14.000 | 150 | 9.900 | 110 | 8.800 | 80 |
| 1,8 | 34.500 | 400 | 13.500 | 160 | 9.400 | 110 | 8.500 | 80 |
| 1,9 | 32.500 | 400 | 12.500 | 160 | 8.800 | 110 | 7.900 | 85 |
| 2 | 30.000 | 380 | 12.000 | 160 | 8.700 | 110 | 7.900 | 90 |
| 2,1 | 29.000 | 410 | 11.500 | 170 | 8.300 | 110 | 7.400 | 90 |
| 2,2 | 28.000 | 410 | 11.000 | 170 | 8.200 | 110 | 7.200 | 90 |
| 2,3 | 27.500 | 410 | 11.000 | 180 | 8.000 | 110 | 7.000 | 90 |
| 2,4 | 26.000 | 430 | 10.500 | 180 | 7.900 | 110 | 6.900 | 90 |
| 2,5 | 24.500 | 430 | 10.500 | 200 | 7.600 | 110 | 6.600 | 90 |
| 2,6 | 23.500 | 470 | 9.800 | 200 | 7.400 | 125 | 6.300 | 90 |
| 2,7 | 23.000 | 470 | 9.500 | 200 | 7.100 | 125 | 6.100 | 90 |
| 2,8 | 22.000 | 470 | 9.100 | 210 | 6.900 | 125 | 5.800 | 95 |
| 2,9 | 21.500 | 470 | 8.800 | 210 | 6.700 | 125 | 5.700 | 95 |
| 3 | 21.000 | 540 | 8.900 | 230 | 6.800 | 130 | 5.700 | 100 |
| 3,1 | 20.000 | 550 | 8.700 | 240 | 6.700 | 130 | 5.600 | 100 |
| 3,2 | 19.500 | 560 | 8.400 | 240 | 6.500 | 145 | 5.400 | 105 |
| 3,3 | 19.000 | 560 | 8.100 | 250 | 6.300 | 145 | 5.200 | 105 |
| 3,4 | 18.000 | 560 | 7.900 | 250 | 6.100 | 145 | 5.100 | 105 |
| 3,5 | 18.000 | 560 | 7.800 | 250 | 6.000 | 155 | 5.000 | 105 |
| 3,6 | 17.500 | 580 | 7.600 | 270 | 5.900 | 155 | 4.900 | 110 |
| 3,7 | 16.500 | 580 | 7.400 | 270 | 5.700 | 155 | 4.700 | 110 |
| 3,8 | 16.000 | 590 | 7.300 | 280 | 5.700 | 155 | 4.600 | 110 |
| 3,9 | 15.500 | 590 | 7.100 | 280 | 5.500 | 160 | 4.500 | 110 |
| 4 | 15.500 | 600 | 7.000 | 280 | 5.500 | 160 | 4.500 | 115 |
| 4,1 | 15.500 | 640 | 6.900 | 290 | 5.400 | 160 | 4.400 | 115 |
| 4,2 | 15.000 | 640 | 6.800 | 290 | 5.300 | 160 | 4.400 | 115 |
| 4,3 | 14.000 | 640 | 6.700 | 310 | 5.200 | 160 | 4.300 | 115 |
| 4,4 | 14.000 | 670 | 6.600 | 320 | 5.100 | 170 | 4.200 | 125 |
| 4,5 | 14.000 | 670 | 6.600 | 320 | 5.100 | 170 | 4.200 | 125 |
| 4,6 | 13.500 | 700 | 6.500 | 330 | 4.900 | 170 | 4.100 | 125 |
| 4,7 | 13.500 | 700 | 6.500 | 350 | 4.900 | 170 | 4.100 | 125 |
| 4,8 | 13.500 | 710 | 6.400 | 350 | 4.800 | 170 | 4.100 | 125 |
| 4,9 | 13.500 | 710 | 6.300 | 360 | 4.700 | 170 | 4.000 | 125 |
| 5 | 12.500 | 720 | 6.200 | 370 | 4.600 | 170 | 3.900 | 130 |
| 5,1 | 12.500 | 720 | 6.100 | 370 | 4.500 | 170 | 3.900 | 130 |
| 5,2 | 12.000 | 720 | 6.000 | 370 | 4.400 | 170 | 3.800 | 130 |
| 5,3 | 12.000 | 720 | 5.900 | 370 | 4.400 | 170 | 3.800 | 130 |
| 5,4 | 11.500 | 720 | 5.800 | 370 | 4.300 | 170 | 3.600 | 130 |
| 5,5 | 11.500 | 720 | 5.700 | 370 | 4.200 | 170 | 3.500 | 130 |
| 5,6 | 11.500 | 720 | 5.600 | 370 | 4.100 | 170 | 3.500 | 130 |
| 5,7 | 11.000 | 720 | 5.500 | 370 | 4.000 | 170 | 3.400 | 130 |
| 5,8 | 11.000 | 710 | 5.400 | 370 | 3.900 | 170 | 3.300 | 130 |
| 5,9 | 10.500 | 710 | 5.300 | 370 | 3.800 | 170 | 3.300 | 130 |
| 6 | 10.000 | 710 | 5.200 | 370 | 3.800 | 170 | 3.200 | 130 |

Max cutting depth




| | |
|---|---|
| D<1 | 0,1D |
| 1≤D≤3 | 0,3D |
| 3≤D | 0,5D |

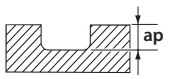
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

## WXL-2D-DE

### Slotting

| | Cu | | ~32 HRC<br>FC250 • SS400 • S55C • NAK55 | | 33~41 HRC<br>SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC<br>SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 0,1 | 50.000 | 100 | 32.000 | 70 | 32.000 | 60 | 32.000 | 30 |
| 0,2 | 50.000 | 140 | 32.000 | 90 | 32.000 | 75 | 32.000 | 35 |
| 0,3 | 50.000 | 170 | 32.000 | 110 | 32.000 | 80 | 32.000 | 55 |
| 0,4 | 50.000 | 190 | 32.000 | 120 | 32.000 | 90 | 27.500 | 60 |
| 0,5 | 50.000 | 200 | 31.000 | 120 | 25.000 | 90 | 22.000 | 60 |
| 0,6 | 50.000 | 230 | 27.000 | 120 | 19.500 | 90 | 17.000 | 60 |
| 0,7 | 50.000 | 250 | 24.000 | 120 | 17.000 | 90 | 15.000 | 60 |
| 0,8 | 50.000 | 290 | 21.500 | 120 | 15.500 | 90 | 13.500 | 65 |
| 0,9 | 49.000 | 320 | 19.000 | 120 | 13.500 | 90 | 12.000 | 65 |
| 1 | 47.500 | 350 | 17.500 | 120 | 12.500 | 90 | 11.000 | 65 |
| 1,1 | 43.000 | 340 | 16.000 | 120 | 11.500 | 90 | 9.900 | 65 |
| 1,2 | 40.500 | 340 | 15.000 | 120 | 10.500 | 90 | 9.300 | 65 |
| 1,3 | 38.000 | 330 | 14.000 | 120 | 9.900 | 90 | 8.700 | 65 |
| 1,4 | 35.000 | 330 | 13.000 | 120 | 9.200 | 90 | 8.100 | 65 |
| 1,5 | 32.000 | 320 | 12.500 | 120 | 8.900 | 90 | 7.900 | 65 |
| 1,6 | 31.000 | 320 | 12.000 | 120 | 8.500 | 90 | 7.500 | 65 |
| 1,7 | 29.000 | 320 | 11.000 | 120 | 7.900 | 90 | 7.000 | 65 |
| 1,8 | 28.000 | 320 | 10.500 | 130 | 7.500 | 90 | 6.800 | 68 |
| 1,9 | 26.000 | 320 | 10.000 | 130 | 7.100 | 90 | 6.300 | 68 |
| 2 | 24.000 | 310 | 9.700 | 130 | 7.000 | 90 | 6.300 | 70 |
| 2,1 | 23.000 | 330 | 9.300 | 140 | 6.600 | 90 | 5.900 | 70 |
| 2,2 | 22.500 | 330 | 9.000 | 140 | 6.500 | 90 | 5.700 | 70 |
| 2,3 | 22.000 | 330 | 8.800 | 150 | 6.400 | 90 | 5.600 | 70 |
| 2,4 | 20.500 | 350 | 8.600 | 150 | 6.300 | 90 | 5.500 | 70 |
| 2,5 | 20.000 | 350 | 8.200 | 160 | 6.100 | 90 | 5.300 | 70 |
| 2,6 | 19.000 | 380 | 7.900 | 160 | 5.900 | 100 | 5.000 | 70 |
| 2,7 | 18.000 | 380 | 7.600 | 160 | 5.700 | 100 | 4.900 | 70 |
| 2,8 | 17.500 | 380 | 7.300 | 170 | 5.500 | 100 | 4.700 | 75 |
| 2,9 | 17.000 | 380 | 7.100 | 170 | 5.300 | 100 | 4.500 | 75 |
| 3 | 16.000 | 400 | 6.900 | 170 | 5.300 | 100 | 4.400 | 75 |
| 3,1 | 15.500 | 410 | 6.700 | 180 | 5.100 | 100 | 4.300 | 75 |
| 3,2 | 15.000 | 420 | 6.500 | 180 | 5.000 | 110 | 4.200 | 80 |
| 3,3 | 14.500 | 420 | 6.300 | 190 | 4.800 | 110 | 4.000 | 80 |
| 3,4 | 14.000 | 420 | 6.100 | 190 | 4.600 | 110 | 3.900 | 80 |
| 3,5 | 14.000 | 420 | 6.000 | 190 | 4.600 | 120 | 3.800 | 80 |
| 3,6 | 13.500 | 430 | 5.900 | 200 | 4.500 | 120 | 3.700 | 85 |
| 3,7 | 12.500 | 430 | 5.700 | 200 | 4.400 | 120 | 3.600 | 85 |
| 3,8 | 12.500 | 440 | 5.600 | 210 | 4.400 | 120 | 3.600 | 85 |
| 3,9 | 12.000 | 440 | 5.500 | 210 | 4.200 | 125 | 3.500 | 85 |
| 4 | 12.000 | 450 | 5.400 | 210 | 4.200 | 125 | 3.500 | 90 |
| 4,1 | 11.500 | 480 | 5.300 | 220 | 4.100 | 125 | 3.400 | 90 |
| 4,2 | 11.500 | 480 | 5.300 | 220 | 4.100 | 125 | 3.300 | 90 |
| 4,3 | 11.000 | 480 | 5.200 | 230 | 4.000 | 125 | 3.300 | 90 |
| 4,4 | 11.000 | 500 | 5.100 | 240 | 3.900 | 130 | 3.200 | 95 |
| 4,5 | 10.500 | 500 | 5.100 | 240 | 3.900 | 130 | 3.200 | 95 |
| 4,6 | 10.500 | 520 | 5.000 | 250 | 3.800 | 130 | 3.200 | 95 |
| 4,7 | 10.500 | 520 | 5.000 | 260 | 3.800 | 130 | 3.100 | 95 |
| 4,8 | 10.500 | 530 | 4.900 | 260 | 3.700 | 130 | 3.100 | 95 |
| 4,9 | 10.000 | 530 | 4.900 | 270 | 3.600 | 130 | 3.100 | 95 |
| 5 | 9.500 | 540 | 4.800 | 270 | 3.500 | 130 | 3.000 | 100 |
| 5,1 | 9.500 | 540 | 4.700 | 270 | 3.500 | 130 | 3.000 | 100 |
| 5,2 | 9.300 | 540 | 4.600 | 270 | 3.400 | 130 | 2.900 | 100 |
| 5,3 | 9.200 | 540 | 4.600 | 270 | 3.400 | 130 | 2.900 | 100 |
| 5,4 | 9.000 | 540 | 4.500 | 270 | 3.300 | 130 | 2.800 | 100 |
| 5,5 | 8.800 | 540 | 4.400 | 270 | 3.200 | 130 | 2.700 | 100 |
| 5,6 | 8.700 | 540 | 4.300 | 270 | 3.100 | 130 | 2.600 | 100 |
| 5,7 | 8.500 | 540 | 4.200 | 270 | 3.100 | 130 | 2.600 | 100 |
| 5,8 | 8.400 | 530 | 4.200 | 270 | 3.000 | 130 | 2.600 | 100 |
| 5,9 | 8.200 | 530 | 4.100 | 270 | 2.900 | 130 | 2.500 | 100 |
| 6 | 7.900 | 530 | 4.000 | 270 | 2.900 | 130 | 2.500 | 100 |
| 6,5 | 7.500 | 530 | 3.700 | 270 | 2.700 | 130 | 2.300 | 100 |
| 7 | 6.900 | 530 | 3.400 | 270 | 2.500 | 130 | 2.100 | 100 |
| 7,5 | 6.400 | 530 | 3.200 | 270 | 2.300 | 130 | 2.000 | 100 |
| 8 | 5.900 | 520 | 3.000 | 260 | 2.200 | 125 | 1.900 | 100 |
| 8,5 | 5.600 | 520 | 2.800 | 260 | 2.000 | 125 | 1.700 | 100 |
| 9 | 5.300 | 510 | 2.600 | 260 | 1.900 | 125 | 1.500 | 100 |
| 9,5 | 5.100 | 510 | 2.500 | 260 | 1.800 | 125 | 1.400 | 95 |
| 10 | 4.700 | 500 | 2.400 | 250 | 1.700 | 125 | 1.500 | 95 |
| 11 | 4.400 | 500 | 2.200 | 250 | 1.600 | 125 | 1.100 | 95 |
| 12 | 4.000 | 510 | 2.000 | 250 | 1.400 | 125 | 1.200 | 95 |
| 16 | 3.000 | 400 | 1.500 | 200 | 1.100 | 115 | 800 | 80 |
| 18 | 2.700 | 360 | 1.300 | 180 | 900 | 100 | 700 | 70 |
| 20 | 2.400 | 300 | 1.200 | 150 | 800 | 90 | 600 | 60 |

Max cutting depth




| | |
|---|---|
| D<1 | 0,1D |
| 1≤D≤3 | 0,3D |
| 3≤D | 0,5D |

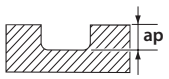
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

# WXL-3D-DE

## Slotting

| | Cu | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,1 | 50.000 | 100 | 32.000 | 70 | 32.000 | 60 | 32.000 | 30 |
| 0,2 | 50.000 | 140 | 32.000 | 90 | 32.000 | 75 | 32.000 | 35 |
| 0,3 | 50.000 | 170 | 32.000 | 110 | 32.000 | 80 | 32.000 | 55 |
| 0,4 | 50.000 | 190 | 32.000 | 120 | 32.000 | 90 | 27.500 | 60 |
| 0,5 | 50.000 | 200 | 31.000 | 120 | 25.000 | 90 | 22.000 | 60 |
| 0,6 | 50.000 | 230 | 27.000 | 120 | 19.500 | 90 | 17.000 | 60 |
| 0,7 | 50.000 | 250 | 24.000 | 120 | 17.000 | 90 | 15.000 | 60 |
| 0,8 | 50.000 | 290 | 21.500 | 120 | 15.500 | 90 | 13.500 | 65 |
| 0,9 | 49.000 | 320 | 19.000 | 120 | 13.500 | 90 | 12.000 | 65 |
| 1 | 47.500 | 350 | 17.500 | 120 | 12.500 | 90 | 11.000 | 65 |
| 1,1 | 43.000 | 340 | 16.000 | 120 | 11.500 | 90 | 9.900 | 65 |
| 1,2 | 40.500 | 340 | 15.000 | 120 | 10.500 | 90 | 9.300 | 65 |
| 1,3 | 38.000 | 330 | 14.000 | 120 | 9.900 | 90 | 8.700 | 65 |
| 1,4 | 35.000 | 330 | 13.000 | 120 | 9.200 | 90 | 8.100 | 65 |
| 1,5 | 32.000 | 320 | 12.500 | 120 | 8.900 | 90 | 7.900 | 65 |
| 1,6 | 31.000 | 320 | 12.000 | 120 | 8.500 | 90 | 7.500 | 65 |
| 1,7 | 29.000 | 320 | 11.000 | 120 | 7.900 | 90 | 7.000 | 65 |
| 1,8 | 28.000 | 320 | 10.500 | 130 | 7.500 | 90 | 6.800 | 68 |
| 1,9 | 26.000 | 320 | 10.000 | 130 | 7.100 | 90 | 6.300 | 68 |
| 2 | 24.000 | 310 | 9.700 | 130 | 7.000 | 90 | 6.300 | 70 |
| 2,1 | 23.000 | 330 | 9.300 | 140 | 6.600 | 90 | 5.900 | 70 |
| 2,2 | 22.500 | 330 | 9.000 | 140 | 6.500 | 90 | 5.700 | 70 |
| 2,3 | 22.000 | 330 | 8.800 | 150 | 6.400 | 90 | 5.600 | 70 |
| 2,4 | 20.500 | 350 | 8.600 | 150 | 6.300 | 90 | 5.500 | 70 |
| 2,5 | 20.000 | 350 | 8.200 | 160 | 6.100 | 90 | 5.300 | 70 |
| 2,6 | 19.000 | 380 | 7.900 | 160 | 5.900 | 100 | 5.000 | 70 |
| 2,7 | 18.000 | 380 | 7.600 | 160 | 5.700 | 100 | 4.900 | 70 |
| 2,8 | 17.500 | 380 | 7.300 | 170 | 5.500 | 100 | 4.700 | 75 |
| 2,9 | 17.000 | 380 | 7.100 | 170 | 5.300 | 100 | 4.500 | 75 |
| 3 | 16.000 | 400 | 6.900 | 170 | 5.300 | 100 | 4.400 | 75 |
| 3,1 | 15.500 | 410 | 6.700 | 180 | 5.100 | 100 | 4.300 | 75 |
| 3,2 | 15.000 | 420 | 6.500 | 180 | 5.000 | 110 | 4.200 | 80 |
| 3,3 | 14.500 | 420 | 6.300 | 190 | 4.800 | 110 | 4.000 | 80 |
| 3,4 | 14.000 | 420 | 6.100 | 190 | 4.600 | 110 | 3.900 | 80 |
| 3,5 | 14.000 | 420 | 6.000 | 190 | 4.600 | 120 | 3.800 | 80 |
| 3,6 | 13.500 | 430 | 5.900 | 200 | 4.500 | 120 | 3.700 | 85 |
| 3,7 | 12.500 | 430 | 5.700 | 200 | 4.400 | 120 | 3.600 | 85 |
| 3,8 | 12.500 | 440 | 5.600 | 210 | 4.400 | 120 | 3.600 | 85 |
| 3,9 | 12.000 | 440 | 5.500 | 210 | 4.200 | 125 | 3.500 | 85 |
| 4 | 12.000 | 450 | 5.400 | 210 | 4.200 | 125 | 3.500 | 90 |
| 4,1 | 11.500 | 480 | 5.300 | 220 | 4.100 | 125 | 3.400 | 90 |
| 4,2 | 11.500 | 480 | 5.300 | 220 | 4.100 | 125 | 3.300 | 90 |
| 4,3 | 11.000 | 480 | 5.200 | 230 | 4.000 | 125 | 3.300 | 90 |
| 4,4 | 11.000 | 500 | 5.100 | 240 | 3.900 | 130 | 3.200 | 95 |
| 4,5 | 10.500 | 500 | 5.100 | 240 | 3.900 | 130 | 3.200 | 95 |
| 4,6 | 10.500 | 520 | 5.000 | 250 | 3.800 | 130 | 3.200 | 95 |
| 4,7 | 10.500 | 520 | 5.000 | 260 | 3.800 | 130 | 3.100 | 95 |
| 4,8 | 10.500 | 530 | 4.900 | 260 | 3.700 | 130 | 3.100 | 95 |
| 4,9 | 10.000 | 530 | 4.900 | 270 | 3.600 | 130 | 3.100 | 95 |
| 5 | 9.500 | 540 | 4.800 | 270 | 3.500 | 130 | 3.000 | 100 |
| 5,1 | 9.500 | 540 | 4.700 | 270 | 3.500 | 130 | 3.000 | 100 |
| 5,2 | 9.300 | 540 | 4.600 | 270 | 3.400 | 130 | 2.900 | 100 |
| 5,3 | 9.200 | 540 | 4.600 | 270 | 3.400 | 130 | 2.900 | 100 |
| 5,4 | 9.000 | 540 | 4.500 | 270 | 3.300 | 130 | 2.800 | 100 |
| 5,5 | 8.800 | 540 | 4.400 | 270 | 3.200 | 130 | 2.700 | 100 |
| 5,6 | 8.700 | 540 | 4.300 | 270 | 3.100 | 130 | 2.600 | 100 |
| 5,7 | 8.500 | 540 | 4.200 | 270 | 3.100 | 130 | 2.600 | 100 |
| 5,8 | 8.400 | 530 | 4.200 | 270 | 3.000 | 130 | 2.600 | 100 |
| 5,9 | 8.200 | 530 | 4.100 | 270 | 2.900 | 130 | 2.500 | 100 |
| 6 | 7.900 | 530 | 4.000 | 270 | 2.900 | 130 | 2.500 | 100 |
| 6,5 | 7.500 | 530 | 3.700 | 270 | 2.700 | 130 | 2.300 | 100 |
| 7 | 6.900 | 530 | 3.400 | 270 | 2.500 | 130 | 2.100 | 100 |
| 7,5 | 6.400 | 530 | 3.200 | 270 | 2.300 | 130 | 2.000 | 100 |
| 8 | 5.900 | 520 | 3.000 | 260 | 2.200 | 125 | 1.900 | 100 |
| 8,5 | 5.600 | 520 | 2.800 | 260 | 2.000 | 125 | 1.700 | 100 |
| 9 | 5.300 | 510 | 2.600 | 260 | 1.900 | 125 | 1.500 | 100 |
| 9,5 | 5.100 | 510 | 2.500 | 260 | 1.800 | 125 | 1.400 | 95 |
| 10 | 4.700 | 500 | 2.400 | 250 | 1.700 | 125 | 1.500 | 95 |
| 11 | 4.400 | 500 | 2.200 | 250 | 1.600 | 125 | 1.100 | 95 |
| 12 | 4.000 | 510 | 2.000 | 250 | 1.400 | 125 | 1.200 | 95 |
| 16 | 3.000 | 400 | 1.500 | 200 | 1.100 | 115 | 800 | 80 |
| 18 | 2.700 | 360 | 1.300 | 180 | 900 | 100 | 700 | 70 |
| 20 | 2.400 | 300 | 1.200 | 150 | 800 | 90 | 600 | 60 |

Max cutting depth




| | |
|---|---|
| D<1 | 0,1D |
| 1≤D≤3 | 0,3D |
| 3≤D | 0,5D |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

## WXL-4D-DE

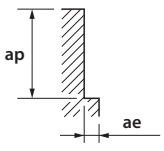
### Side milling

| | Cu | | ~32 HRC<br>FC250 • SS400 • S55C • NAK55 | | 33~41 HRC<br>SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC<br>SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 0,2 | 32.000 | 90 | 22.500 | 30 | 19.000 | 30 | — | — |
| 0,3 | 32.000 | 110 | 22.500 | 40 | 19.000 | 35 | — | — |
| 0,4 | 25.000 | 110 | 16.000 | 45 | 14.500 | 35 | — | — |
| 0,5 | 20.000 | 120 | 13.000 | 45 | 13.000 | 40 | — | — |
| 0,6 | 16.000 | 120 | 11.000 | 45 | 10.000 | 40 | — | — |
| 0,7 | 16.000 | 120 | 9.400 | 45 | 6.800 | 40 | — | — |
| 0,8 | 12.000 | 120 | 8.400 | 45 | 6.000 | 40 | — | — |
| 0,9 | 12.000 | 120 | 7.500 | 45 | 5.400 | 40 | — | — |
| 1 | 9.800 | 120 | 5.700 | 45 | 5.400 | 40 | — | — |
| 1,1 | 9.500 | 140 | 5.200 | 45 | 5.000 | 40 | — | — |
| 1,2 | 8.600 | 130 | 4.800 | 45 | 4.500 | 40 | — | — |
| 1,3 | 8.100 | 130 | 4.500 | 45 | 4.200 | 40 | — | — |
| 1,4 | 7.500 | 130 | 4.200 | 45 | 3.900 | 40 | — | — |
| 1,5 | 7.000 | 130 | 3.900 | 45 | 3.600 | 40 | — | — |
| 1,6 | 6.400 | 120 | 3.700 | 45 | 3.500 | 40 | — | — |
| 1,7 | 6.200 | 120 | 3.600 | 45 | 3.400 | 40 | — | — |
| 1,8 | 5.800 | 120 | 3.300 | 45 | 3.100 | 40 | — | — |
| 1,9 | 5.500 | 120 | 3.200 | 45 | 3.000 | 40 | — | — |
| 2 | 5.200 | 120 | 3.000 | 45 | 2.800 | 40 | — | — |
| 2,1 | 4.800 | 120 | 2.900 | 45 | 2.800 | 40 | — | — |
| 2,2 | 4.600 | 130 | 2.700 | 50 | 2.600 | 40 | — | — |
| 2,3 | 4.500 | 130 | 2.700 | 50 | 2.600 | 40 | — | — |
| 2,4 | 4.400 | 130 | 2.600 | 55 | 2.500 | 40 | — | — |
| 2,5 | 4.100 | 140 | 2.500 | 55 | 2.500 | 40 | — | — |
| 2,6 | 3.900 | 140 | 2.400 | 55 | 2.400 | 40 | — | — |
| 2,7 | 3.700 | 150 | 2.300 | 55 | 2.300 | 45 | — | — |
| 2,8 | 3.600 | 150 | 2.200 | 55 | 2.200 | 45 | — | — |
| 2,9 | 3.500 | 150 | 2.100 | 60 | 2.100 | 45 | — | — |
| 3 | 3.400 | 150 | 2.100 | 60 | 2.100 | 50 | 1.900 | 30 |
| 3,1 | 3.200 | 160 | 2.000 | 60 | 2.000 | 50 | 1.800 | 30 |
| 3,2 | 3.000 | 160 | 2.000 | 65 | 2.000 | 50 | 1.800 | 30 |
| 3,3 | 2.900 | 160 | 1.900 | 65 | 1.900 | 55 | 1.700 | 30 |
| 3,4 | 2.800 | 160 | 1.800 | 70 | 1.800 | 55 | 1.700 | 30 |
| 3,5 | 2.800 | 160 | 1.800 | 70 | 1.800 | 55 | 1.600 | 30 |
| 3,6 | 2.700 | 160 | 1.800 | 70 | 1.800 | 60 | 1.600 | 30 |
| 3,7 | 2.700 | 170 | 1.700 | 70 | 1.700 | 60 | 1.500 | 35 |
| 3,8 | 2.500 | 170 | 1.700 | 70 | 1.700 | 60 | 1.500 | 35 |
| 3,9 | 2.400 | 170 | 1.600 | 75 | 1.600 | 60 | 1.500 | 35 |
| 4 | 2.400 | 170 | 1.600 | 75 | 1.600 | 65 | 1.400 | 35 |
| 4,1 | 2.400 | 180 | 1.600 | 75 | 1.600 | 65 | 1.400 | 35 |
| 4,2 | 2.300 | 190 | 1.600 | 80 | 1.600 | 65 | 1.400 | 35 |
| 4,3 | 2.300 | 190 | 1.500 | 80 | 1.500 | 65 | 1.400 | 35 |
| 4,4 | 2.100 | 190 | 1.500 | 80 | 1.500 | 65 | 1.400 | 35 |
| 4,5 | 2.100 | 200 | 1.500 | 85 | 1.500 | 65 | 1.300 | 40 |
| 4,6 | 2.100 | 200 | 1.500 | 85 | 1.500 | 65 | 1.300 | 40 |
| 4,7 | 2.100 | 200 | 1.500 | 90 | 1.500 | 65 | 1.300 | 40 |
| 4,8 | 2.100 | 200 | 1.500 | 90 | 1.500 | 65 | 1.300 | 40 |
| 4,9 | 2.000 | 210 | 1.400 | 90 | 1.400 | 65 | 1.300 | 40 |
| 5 | 2.000 | 210 | 1.400 | 95 | 1.400 | 65 | 1.300 | 40 |
| 5,1 | 1.900 | 210 | 1.400 | 95 | 1.400 | 65 | 1.200 | 40 |
| 5,2 | 1.900 | 210 | 1.400 | 95 | 1.400 | 65 | 1.200 | 40 |
| 5,3 | 1.800 | 210 | 1.300 | 95 | 1.300 | 65 | 1.200 | 40 |
| 5,4 | 1.800 | 210 | 1.300 | 95 | 1.300 | 65 | 1.200 | 40 |
| 5,5 | 1.800 | 210 | 1.300 | 95 | 1.300 | 65 | 1.100 | 40 |
| 5,6 | 1.700 | 210 | 1.300 | 95 | 1.300 | 65 | 1.100 | 40 |
| 5,7 | 1.700 | 210 | 1.300 | 95 | 1.300 | 65 | 1.100 | 40 |
| 5,8 | 1.700 | 210 | 1.200 | 95 | 1.200 | 65 | 1.100 | 40 |
| 5,9 | 1.600 | 210 | 1.200 | 95 | 1.200 | 65 | 1.000 | 40 |
| 6 | 1.600 | 210 | 1.200 | 95 | 1.200 | 65 | 1.000 | 40 |
| 8 | 1.100 | 200 | 900 | 95 | 900 | 65 | 800 | 40 |
| 10 | 900 | 200 | 700 | 90 | 700 | 65 | 630 | 40 |
| 12 | 800 | 200 | 600 | 90 | 600 | 65 | 525 | 40 |

Max cutting depth

| | ae |
|---|---|
| D>1 | 0,05D |
| D<1 | 0,1D |

ap = 4D




| | ae |
|---|---|
| D<0,3 | 0,015D |
| D 0,3-1,0 | 0,03D |
| D 1,0-3,0 | 0,05D |
| D>3,0 | 0,1D |

ap = 4D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

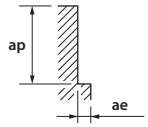
# CUTTING CONDITIONS

## WXL-EMS

### Side milling

| | Cu | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 1 | 50.000 | 440 | 24.000 | 210 | 14.000 | 78 | 12.500 | 70 |
| 1,5 | 50.000 | 975 | 16.000 | 310 | 9.250 | 115 | 8.400 | 105 |
| 2 | 47.500 | 1.100 | 12.000 | 295 | 7.000 | 110 | 6.350 | 100 |
| 2,5 | 38.000 | 1.900 | 9.600 | 480 | 6.200 | 140 | 5.550 | 125 |
| 3 | 32.000 | 1.600 | 8.150 | 430 | 5.300 | 125 | 4.750 | 110 |
| 4 | 24.000 | 1.700 | 6.050 | 450 | 4.250 | 135 | 3.700 | 115 |
| 5 | 19.000 | 2.000 | 4.900 | 520 | 3.550 | 140 | 3.150 | 125 |
| 6 | 16.000 | 2.000 | 4.100 | 520 | 2.950 | 145 | 2.650 | 130 |
| 8 | 12.000 | 1.900 | 3.050 | 505 | 2.200 | 145 | 1.950 | 130 |
| 10 | 9.500 | 1.900 | 2.450 | 505 | 1.750 | 145 | 1.550 | 130 |
| 12 | 7.900 | 1.900 | 2.050 | 505 | 1.450 | 145 | 1.300 | 130 |
| 14 | 6.800 | 1.900 | 1.750 | 495 | 1.250 | 145 | 1.100 | 125 |
| 15 | 6.300 | 1.900 | 1.600 | 490 | 1.150 | 135 | 1.050 | 120 |
| 16 | 5.900 | 1.800 | 1.500 | 480 | 1.100 | 130 | 995 | 115 |
| 18 | 5.300 | 1.800 | 1.350 | 470 | 990 | 115 | 880 | 105 |
| 20 | 4.700 | 1.700 | 1.200 | 445 | 890 | 105 | 795 | 95 |
| 25 | 3.800 | 1.400 | 970 | 360 | 710 | 85 | 635 | 75 |
| 30 | 3.100 | 1.100 | 815 | 300 | 590 | 70 | 530 | 60 |

Max cutting depth




| D | ap | ae |
|---|---|---|
| <3 | 1,5D | 0,05D |
| >3 | 1,5D | 0,1D |

| ap | ae |
|---|---|
| 1D | 0,02D |

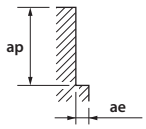
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation

## WXL-EMS

### High speed side milling

| | Cu | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | |
|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 6 | 26.000 | 2.900 | 20.000 | 2.300 | 13.000 | 1.500 | 7.950 | 795 |
| 8 | 19.500 | 3.000 | 14.500 | 2.300 | 9.900 | 1.450 | 5.950 | 795 |
| 10 | 15.500 | 2.900 | 12.000 | 2.300 | 7.950 | 1.450 | 4.750 | 795 |
| 12 | 13.000 | 3.000 | 9.900 | 2.300 | 6.600 | 1.450 | 3.950 | 790 |
| 14 | 11.000 | 2.800 | 8.500 | 2.200 | 5.650 | 1.350 | 3.400 | 740 |
| 15 | 10.500 | 2.800 | 7.950 | 2.150 | 5.250 | 1.350 | 3.150 | 730 |
| 16 | 9.700 | 2.700 | 7.450 | 2.100 | 4.950 | 1.350 | 2.950 | 715 |
| 18 | 8.600 | 2.700 | 6.600 | 2.100 | 4.400 | 1.300 | 2.650 | 705 |
| 20 | 7.800 | 2.600 | 5.950 | 2.000 | 3.950 | 1.300 | 2.350 | 665 |
| 25 | 6.200 | 2.000 | 4.750 | 1.600 | 3.150 | 1.050 | 1.900 | 560 |
| 30 | 5.200 | 1.700 | 3.950 | 1.350 | 2.650 | 890 | 1.550 | 455 |

Max cutting depth

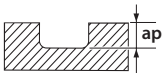



| D | ap | ae |
|---|---|---|
| D<Ø8 | 1,5D | 0,01D |
| Ø8≤D | 1,5D | 0,02D |

| D | ap | ae |
|---|---|---|
| D<Ø8 | 1D | 0,01D |
| Ø8≤D | 1D | 0,02D |

## WXL-LN-EMS-6

### Slotting

| | C≤0,2% - GG<br>SS400 • S55C • FC250<br>~750 N/mm² | | ~30 HRC<br>SCM • SKT • SKS • SKD | | 30~38 HRC<br>SKT • SKD • NAK55 • HPM1 | | 38~45 HRC-SUS<br>SUS304 • SKD | | 45~55 HRC<br>Tiall | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 100<br>(m/min) | | 78<br>(m/min) | | 66<br>(m/min) | | 62<br>(m/min) | | 60<br>(m/min) | | 30<br>(m/min) | |
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 1 | 26.500 | 1.000 | 21.500 | 700 | 17.500 | 500 | 15.000 | 400 | 9.500 | 160 | 6.350 | 60 |
| 1,5 | 17.500 | 1.000 | 14.000 | 700 | 11.500 | 500 | 10.000 | 400 | 6.350 | 160 | 4.250 | 60 |
| 2 | 13.000 | 1.050 | 10.500 | 700 | 8.900 | 590 | 7.600 | 400 | 4.750 | 160 | 3.200 | 60 |
| 2,5 | 10.400 | 1.250 | 8.400 | 700 | 7.100 | 500 | 6.100 | 400 | 3.800 | 160 | 2.550 | 60 |
| 3 | 8.900 | 1.000 | 7.200 | 700 | 5.900 | 500 | 5.050 | 400 | 3.150 | 160 | 2.100 | 60 |
| 4 | 6.650 | 1.000 | 5.400 | 700 | 4.450 | 500 | 3.800 | 400 | 2.350 | 160 | 1.550 | 60 |
| 5 | 5.300 | 1.000 | 4.300 | 700 | 3.550 | 500 | 3.050 | 400 | 1.900 | 160 | 1.250 | 60 |
| 6 | 4.450 | 1.000 | 3.600 | 700 | 2.950 | 500 | 2.500 | 400 | 1.550 | 160 | 1.050 | 60 |
| Max cutting depth |  ap 0,5D | | | | | | | | ap 0,05D | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

# WXL-LN-EDS

## Slotting

| | | Cu | | | <32 HRC FC250 • SS400 • S55C | | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | L2 | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap |
| 0,2 | 0,5 | 35.200 | 490 | 0,022 | 32.000 | 450 | 0,018 | 32.000 | 450 | 0,015 | 29.000 | 250 | 0,012 |
| 0,2 | 1 | 35.200 | 380 | 0,016 | 32.000 | 350 | 0,013 | 32.000 | 350 | 0,011 | 29.000 | 200 | 0,009 |
| 0,2 | 1,5 | 31.000 | 270 | 0,010 | 28.000 | 250 | 0,008 | 28.000 | 250 | 0,007 | 25.000 | 150 | 0,005 |
| 0,2 | 2 | 24.000 | 220 | 0,006 | 22.000 | 200 | 0,005 | 22.000 | 200 | 0,004 | 20.000 | 120 | 0,003 |
| 0,2 | 2,5 | 22.000 | 190 | 0,005 | 20.000 | 180 | 0,004 | 20.000 | 170 | 0,004 | 20.000 | 100 | 0,003 |
| 0,2 | 3 | 22.000 | 180 | 0,004 | 20.000 | 170 | 0,003 | 20.000 | 160 | 0,003 | 20.000 | 90 | 0,002 |
| 0,2 | 3,5 | 22.000 | 150 | 0,004 | 20.000 | 140 | 0,003 | 20.000 | 130 | 0,003 | 20.000 | 80 | 0,002 |
| 0,2 | 4 | 22.000 | 40 | 0,002 | 20.000 | 40 | 0,002 | 20.000 | 35 | 0,002 | 20.000 | 30 | 0,002 |
| 0,3 | 1 | 38.500 | 480 | 0,032 | 32.000 | 400 | 0,027 | 32.000 | 350 | 0,023 | 29.000 | 300 | 0,018 |
| 0,3 | 1,5 | 38.500 | 430 | 0,028 | 32.000 | 360 | 0,023 | 32.000 | 300 | 0,020 | 29.000 | 250 | 0,015 |
| 0,3 | 2 | 33.500 | 360 | 0,024 | 28.000 | 300 | 0,020 | 28.000 | 250 | 0,017 | 25.000 | 200 | 0,013 |
| 0,3 | 2,5 | 33.500 | 330 | 0,017 | 28.000 | 280 | 0,014 | 28.000 | 230 | 0,012 | 25.000 | 190 | 0,008 |
| 0,3 | 3 | 26.500 | 300 | 0,011 | 22.000 | 250 | 0,009 | 22.000 | 160 | 0,007 | 20.000 | 150 | 0,005 |
| 0,3 | 4 | 24.000 | 220 | 0,008 | 20.000 | 190 | 0,007 | 20.000 | 150 | 0,005 | 20.000 | 130 | 0,003 |
| 0,3 | 5 | 24.000 | 190 | 0,006 | 20.000 | 160 | 0,005 | 20.000 | 140 | 0,003 | 18.000 | 120 | 0,002 |
| 0,3 | 6 | 24.000 | 100 | 0,002 | 20.000 | 90 | 0,002 | 20.000 | 80 | 0,002 | 16.000 | 60 | 0,002 |
| 0,3 | 9 | 19.000 | 30 | 0,002 | 16.000 | 30 | 0,002 | 16.000 | 30 | 0,002 | 13.000 | 20 | 0,002 |
| 0,4 | 1,5 | 38.500 | 520 | 0,032 | 32.000 | 440 | 0,027 | 32.000 | 380 | 0,023 | 29.000 | 330 | 0,018 |
| 0,4 | 2 | 38.500 | 480 | 0,031 | 32.000 | 400 | 0,026 | 32.000 | 350 | 0,022 | 29.000 | 300 | 0,018 |
| 0,4 | 3 | 33.500 | 360 | 0,020 | 28.000 | 300 | 0,017 | 28.000 | 250 | 0,014 | 25.000 | 200 | 0,011 |
| 0,4 | 4 | 26.500 | 300 | 0,014 | 22.000 | 250 | 0,012 | 22.000 | 200 | 0,010 | 20.000 | 150 | 0,008 |
| 0,4 | 5 | 24.000 | 240 | 0,007 | 20.000 | 200 | 0,006 | 20.000 | 160 | 0,005 | 20.000 | 130 | 0,003 |
| 0,4 | 6 | 24.000 | 210 | 0,006 | 20.000 | 180 | 0,005 | 20.000 | 140 | 0,004 | 20.000 | 120 | 0,002 |
| 0,4 | 7 | 24.000 | 160 | 0,005 | 20.000 | 140 | 0,004 | 20.000 | 120 | 0,003 | 20.000 | 110 | 0,002 |
| 0,4 | 8 | 24.000 | 150 | 0,002 | 20.000 | 130 | 0,002 | 20.000 | 110 | 0,002 | 20.000 | 100 | 0,002 |
| 0,4 | 9 | 24.000 | 140 | 0,002 | 20.000 | 120 | 0,002 | 20.000 | 100 | 0,002 | 20.000 | 80 | 0,002 |
| 0,4 | 10 | 24.000 | 130 | 0,002 | 20.000 | 110 | 0,002 | 20.000 | 85 | 0,002 | 18.000 | 70 | 0,002 |
| 0,4 | 12 | 24.000 | 100 | 0,002 | 20.000 | 90 | 0,002 | 20.000 | 80 | 0,002 | 16.000 | 60 | 0,002 |
| 0,5 | 1,5 | 38.500 | 660 | 0,054 | 32.000 | 550 | 0,045 | 32.000 | 420 | 0,038 | 29.000 | 330 | 0,030 |
| 0,5 | 2 | 38.500 | 600 | 0,054 | 32.000 | 500 | 0,045 | 32.000 | 400 | 0,038 | 29.000 | 300 | 0,030 |
| 0,5 | 3 | 36.000 | 540 | 0,036 | 30.000 | 450 | 0,030 | 30.000 | 360 | 0,028 | 27.000 | 280 | 0,022 |
| 0,5 | 4 | 33.500 | 480 | 0,025 | 28.000 | 400 | 0,021 | 28.000 | 320 | 0,018 | 25.000 | 250 | 0,014 |
| 0,5 | 5 | 33.500 | 450 | 0,017 | 28.000 | 380 | 0,014 | 25.000 | 300 | 0,010 | 22.000 | 230 | 0,008 |
| 0,5 | 6 | 26.500 | 420 | 0,007 | 22.000 | 350 | 0,006 | 22.000 | 220 | 0,005 | 20.000 | 180 | 0,004 |
| 0,5 | 7 | 24.000 | 380 | 0,006 | 20.000 | 320 | 0,005 | 20.000 | 200 | 0,004 | 20.000 | 170 | 0,003 |
| 0,5 | 8 | 24.000 | 320 | 0,006 | 20.000 | 270 | 0,005 | 20.000 | 180 | 0,003 | 20.000 | 150 | 0,003 |
| 0,5 | 9 | 24.000 | 300 | 0,002 | 20.000 | 250 | 0,002 | 18.000 | 160 | 0,002 | 18.000 | 140 | 0,002 |
| 0,5 | 10 | 24.000 | 240 | 0,002 | 20.000 | 200 | 0,002 | 18.000 | 150 | 0,002 | 18.000 | 130 | 0,002 |
| 0,5 | 12 | 24.000 | 190 | 0,002 | 20.000 | 160 | 0,002 | 18.000 | 120 | 0,002 | 18.000 | 100 | 0,002 |
| 0,5 | 15 | 21.500 | 100 | 0,002 | 18.000 | 90 | 0,002 | 16.000 | 80 | 0,002 | 16.000 | 70 | 0,002 |
| 0,6 | 2 | 38.500 | 720 | 0,065 | 32.000 | 600 | 0,054 | 32.000 | 400 | 0,045 | 27.000 | 300 | 0,036 |
| 0,6 | 3 | 38.500 | 660 | 0,060 | 32.000 | 550 | 0,050 | 32.000 | 360 | 0,040 | 27.000 | 280 | 0,030 |
| 0,6 | 4 | 33.500 | 540 | 0,048 | 28.000 | 450 | 0,040 | 28.000 | 300 | 0,033 | 25.000 | 200 | 0,026 |
| 0,6 | 5 | 33.500 | 480 | 0,036 | 28.000 | 400 | 0,030 | 25.000 | 220 | 0,020 | 22.000 | 180 | 0,020 |
| 0,6 | 6 | 26.500 | 300 | 0,022 | 22.000 | 250 | 0,018 | 22.000 | 200 | 0,015 | 20.000 | 150 | 0,012 |
| 0,6 | 7 | 26.500 | 300 | 0,012 | 22.000 | 250 | 0,010 | 22.000 | 200 | 0,008 | 20.000 | 150 | 0,007 |
| 0,6 | 8 | 26.500 | 300 | 0,008 | 22.000 | 250 | 0,007 | 22.000 | 200 | 0,006 | 20.000 | 150 | 0,005 |
| 0,6 | 10 | 24.000 | 240 | 0,006 | 20.000 | 200 | 0,005 | 18.000 | 150 | 0,004 | 18.000 | 130 | 0,003 |
| 0,6 | 12 | 21.500 | 220 | 0,002 | 18.000 | 190 | 0,002 | 18.000 | 150 | 0,002 | 18.000 | 120 | 0,002 |
| 0,6 | 15 | 21.500 | 150 | 0,002 | 18.000 | 130 | 0,002 | 16.000 | 110 | 0,002 | 16.000 | 100 | 0,002 |
| 0,6 | 18 | 18.000 | 90 | 0,002 | 15.000 | 80 | 0,002 | 14.000 | 70 | 0,002 | 14.000 | 60 | 0,002 |
| 0,7 | 2 | 38.500 | 720 | 0,076 | 32.000 | 600 | 0,063 | 32.000 | 500 | 0,053 | 26.000 | 400 | 0,042 |
| 0,7 | 4 | 33.500 | 540 | 0,055 | 28.000 | 450 | 0,046 | 28.000 | 300 | 0,039 | 22.000 | 300 | 0,031 |
| 0,7 | 6 | 33.500 | 540 | 0,035 | 28.000 | 450 | 0,029 | 28.000 | 200 | 0,025 | 22.000 | 200 | 0,020 |
| 0,7 | 8 | 26.500 | 300 | 0,020 | 22.000 | 250 | 0,017 | 22.000 | 200 | 0,014 | 20.000 | 150 | 0,011 |
| 0,7 | 10 | 26.500 | 300 | 0,010 | 22.000 | 250 | 0,008 | 22.000 | 200 | 0,007 | 20.000 | 150 | 0,006 |
| 0,8 | 4 | 38.500 | 720 | 0,064 | 32.000 | 600 | 0,053 | 32.000 | 600 | 0,044 | 25.000 | 400 | 0,035 |
| 0,8 | 6 | 31.000 | 540 | 0,041 | 26.000 | 450 | 0,034 | 26.000 | 400 | 0,028 | 21.000 | 300 | 0,022 |
| 0,8 | 8 | 26.500 | 420 | 0,029 | 22.000 | 350 | 0,024 | 22.000 | 300 | 0,020 | 18.000 | 250 | 0,016 |
| 0,8 | 10 | 26.500 | 420 | 0,012 | 22.000 | 350 | 0,010 | 22.000 | 300 | 0,008 | 18.000 | 240 | 0,006 |
| 0,8 | 12 | 20.500 | 360 | 0,008 | 17.000 | 300 | 0,007 | 17.000 | 300 | 0,006 | 15.000 | 200 | 0,004 |
| 0,8 | 14 | 20.500 | 320 | 0,004 | 17.000 | 270 | 0,003 | 17.000 | 250 | 0,003 | 13.000 | 170 | 0,002 |
| 0,8 | 16 | 19.000 | 270 | 0,002 | 16.000 | 230 | 0,002 | 16.000 | 220 | 0,002 | 12.000 | 150 | 0,002 |
| 0,8 | 20 | 17.000 | 200 | 0,002 | 14.000 | 170 | 0,002 | 14.000 | 160 | 0,002 | 12.000 | 130 | 0,002 |
| 0,8 | 24 | 14.500 | 100 | 0,002 | 12.000 | 90 | 0,002 | 12.000 | 80 | 0,002 | 10.000 | 70 | 0,002 |
| 0,9 | 4 | 38.500 | 1.450 | 0,072 | 32.000 | 1.200 | 0,060 | 30.000 | 860 | 0,060 | 23.000 | 650 | 0,040 |
| 0,9 | 6 | 36.000 | 1.200 | 0,071 | 30.000 | 1.000 | 0,059 | 28.000 | 780 | 0,050 | 22.000 | 600 | 0,040 |
| 0,9 | 8 | 31.000 | 960 | 0,046 | 26.000 | 800 | 0,038 | 25.000 | 600 | 0,032 | 19.000 | 400 | 0,025 |
| 0,9 | 10 | 24.000 | 720 | 0,032 | 20.000 | 600 | 0,027 | 20.000 | 500 | 0,023 | 16.000 | 300 | 0,018 |
| 0,9 | 15 | 20.500 | 360 | 0,010 | 17.000 | 300 | 0,008 | 17.000 | 300 | 0,006 | 16.000 | 300 | 0,005 |
| 1 | 3 | 36.000 | 1.450 | 0,108 | 30.000 | 1.200 | 0,090 | 30.000 | 1.100 | 0,080 | 22.000 | 800 | 0,060 |
| 1 | 4 | 36.000 | 1.400 | 0,096 | 30.000 | 1.150 | 0,080 | 30.000 | 1.100 | 0,070 | 22.000 | 650 | 0,050 |
| 1 | 5 | 36.000 | 1.300 | 0,096 | 30.000 | 1.100 | 0,080 | 28.000 | 950 | 0,070 | 20.000 | 600 | 0,045 |
| 1 | 6 | 32.500 | 1.200 | 0,084 | 27.000 | 1.000 | 0,070 | 26.000 | 900 | 0,060 | 20.000 | 600 | 0,040 |
| 1 | 7 | 30.000 | 1.200 | 0,060 | 25.000 | 1.000 | 0,050 | 24.000 | 800 | 0,050 | 20.000 | 500 | 0,030 |
| 1 | 8 | 27.500 | 960 | 0,048 | 23.000 | 800 | 0,040 | 22.000 | 700 | 0,040 | 18.000 | 400 | 0,030 |
| 1 | 9 | 24.000 | 840 | 0,036 | 20.000 | 700 | 0,030 | 19.000 | 600 | 0,030 | 18.000 | 400 | 0,025 |
| 1 | 10 | 23.000 | 720 | 0,036 | 19.000 | 600 | 0,030 | 18.000 | 500 | 0,028 | 15.000 | 300 | 0,020 |
| 1 | 12 | 23.000 | 720 | 0,024 | 19.000 | 600 | 0,020 | 18.000 | 500 | 0,019 | 15.000 | 300 | 0,010 |
| 1 | 14 | 18.000 | 480 | 0,012 | 15.000 | 400 | 0,010 | 15.000 | 400 | 0,009 | 12.000 | 200 | 0,008 |
| 1 | 16 | 18.000 | 360 | 0,010 | 15.000 | 300 | 0,008 | 15.000 | 300 | 0,007 | 12.000 | 200 | 0,006 |
| 1 | 18 | 15.500 | 270 | 0,007 | 13.000 | 230 | 0,006 | 13.000 | 220 | 0,005 | 11.000 | 180 | 0,004 |

## WXL-LN-EDS

### Slotting

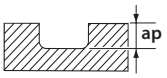
| | | Cu | | | <32 HRC FC250 • SS400 • S55C | | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | L2 | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap | S (min-1) | F (mm/min) | ap |
| 1 | 20 | 14.500 | 220 | 0,005 | 12.000 | 190 | 0,004 | 11.000 | 180 | 0,004 | 10.000 | 130 | 0,003 |
| 1 | 22 | 13.000 | 190 | 0,004 | 11.000 | 160 | 0,003 | 10.000 | 150 | 0,003 | 9.000 | 100 | 0,003 |
| 1 | 25 | 11.000 | 100 | 0,004 | 9.000 | 90 | 0,003 | 9.000 | 85 | 0,003 | 8.500 | 80 | 0,003 |
| 1 | 30 | 9.600 | 40 | 0,002 | 8.000 | 40 | 0,002 | 8.000 | 35 | 0,002 | 8.000 | 30 | 0,002 |
| 1,2 | 4 | 29.000 | 1.300 | 0,108 | 24.000 | 1.100 | 0,090 | 23.000 | 1.000 | 0,080 | 18.000 | 700 | 0,060 |
| 1,2 | 6 | 27.500 | 1.200 | 0,096 | 23.000 | 1.000 | 0,080 | 22.000 | 900 | 0,070 | 17.000 | 600 | 0,050 |
| 1,2 | 8 | 24.000 | 840 | 0,084 | 20.000 | 700 | 0,070 | 19.000 | 700 | 0,050 | 14.000 | 400 | 0,040 |
| 1,2 | 10 | 24.000 | 840 | 0,060 | 20.000 | 700 | 0,050 | 19.000 | 700 | 0,040 | 14.000 | 400 | 0,030 |
| 1,2 | 12 | 20.500 | 720 | 0,048 | 17.000 | 600 | 0,040 | 16.000 | 500 | 0,030 | 11.000 | 300 | 0,020 |
| 1,2 | 14 | 18.000 | 540 | 0,018 | 15.000 | 450 | 0,015 | 13.000 | 380 | 0,013 | 11.000 | 250 | 0,011 |
| 1,2 | 16 | 14.500 | 360 | 0,010 | 12.000 | 300 | 0,008 | 11.000 | 250 | 0,007 | 10.000 | 220 | 0,006 |
| 1,2 | 20 | 12.000 | 240 | 0,006 | 10.000 | 200 | 0,005 | 10.000 | 190 | 0,005 | 9.000 | 180 | 0,004 |
| 1,4 | 6 | 24.000 | 1.200 | 0,156 | 20.000 | 1.000 | 0,130 | 19.000 | 900 | 0,110 | 15.000 | 600 | 0,090 |
| 1,4 | 8 | 21.500 | 960 | 0,108 | 18.000 | 800 | 0,090 | 17.000 | 700 | 0,080 | 13.000 | 400 | 0,060 |
| 1,4 | 10 | 21.500 | 960 | 0,072 | 18.000 | 800 | 0,060 | 17.000 | 700 | 0,050 | 13.000 | 400 | 0,040 |
| 1,4 | 12 | 21.500 | 960 | 0,060 | 18.000 | 800 | 0,050 | 17.000 | 700 | 0,040 | 13.000 | 400 | 0,030 |
| 1,4 | 14 | 18.000 | 720 | 0,048 | 15.000 | 600 | 0,040 | 14.000 | 500 | 0,035 | 11.000 | 300 | 0,030 |
| 1,4 | 16 | 18.000 | 720 | 0,036 | 15.000 | 600 | 0,030 | 14.000 | 500 | 0,020 | 11.000 | 300 | 0,020 |
| 1,4 | 22 | 12.000 | 300 | 0,006 | 10.000 | 250 | 0,005 | 9.000 | 210 | 0,005 | 8.000 | 180 | 0,004 |
| 1,5 | 4 | 21.500 | 1.200 | 0,168 | 18.000 | 1.000 | 0,140 | 18.000 | 900 | 0,110 | 14.000 | 600 | 0,090 |
| 1,5 | 6 | 21.500 | 1.200 | 0,168 | 18.000 | 1.000 | 0,140 | 18.000 | 900 | 0,110 | 14.000 | 600 | 0,090 |
| 1,5 | 8 | 19.000 | 960 | 0,120 | 16.000 | 800 | 0,100 | 15.000 | 700 | 0,080 | 12.000 | 400 | 0,070 |
| 1,5 | 10 | 19.000 | 960 | 0,096 | 16.000 | 800 | 0,080 | 15.000 | 700 | 0,070 | 12.000 | 400 | 0,050 |
| 1,5 | 12 | 19.000 | 960 | 0,072 | 16.000 | 800 | 0,060 | 15.000 | 700 | 0,050 | 12.000 | 400 | 0,040 |
| 1,5 | 14 | 19.000 | 960 | 0,060 | 16.000 | 800 | 0,050 | 15.000 | 700 | 0,045 | 12.000 | 400 | 0,035 |
| 1,5 | 16 | 17.000 | 720 | 0,060 | 14.000 | 600 | 0,050 | 13.000 | 500 | 0,040 | 10.000 | 300 | 0,030 |
| 1,5 | 18 | 17.000 | 720 | 0,036 | 14.000 | 600 | 0,030 | 13.000 | 500 | 0,020 | 10.000 | 300 | 0,020 |
| 1,5 | 20 | 14.500 | 500 | 0,024 | 12.000 | 420 | 0,020 | 11.000 | 380 | 0,015 | 10.000 | 300 | 0,010 |
| 1,5 | 25 | 12.000 | 340 | 0,010 | 10.000 | 290 | 0,008 | 9.000 | 230 | 0,007 | 8.000 | 210 | 0,006 |
| 1,5 | 30 | 9.000 | 200 | 0,006 | 7.500 | 170 | 0,005 | 7.400 | 150 | 0,004 | 7.000 | 130 | 0,003 |
| 1,5 | 38 | 8.150 | 100 | 0,005 | 6.800 | 90 | 0,004 | 6.700 | 85 | 0,003 | 6.000 | 75 | 0,003 |
| 1,5 | 40 | 7.200 | 90 | 0,004 | 6.000 | 75 | 0,003 | 5.900 | 70 | 0,002 | 5.600 | 60 | 0,002 |
| 1,5 | 45 | 6.600 | 50 | 0,004 | 5.500 | 45 | 0,003 | 5.400 | 40 | 0,002 | 5.400 | 40 | 0,001 |
| 1,6 | 6 | 20.500 | 1.200 | 0,180 | 17.000 | 1.000 | 0,150 | 17.000 | 900 | 0,130 | 13.000 | 600 | 0,100 |
| 1,6 | 8 | 18.000 | 960 | 0,168 | 15.000 | 800 | 0,140 | 15.000 | 700 | 0,120 | 11.000 | 400 | 0,100 |
| 1,6 | 10 | 18.000 | 960 | 0,132 | 15.000 | 800 | 0,110 | 15.000 | 700 | 0,090 | 11.000 | 400 | 0,070 |
| 1,6 | 12 | 18.000 | 960 | 0,084 | 15.000 | 800 | 0,070 | 15.000 | 700 | 0,060 | 11.000 | 400 | 0,050 |
| 1,6 | 14 | 18.000 | 960 | 0,072 | 15.000 | 800 | 0,060 | 15.000 | 700 | 0,050 | 11.000 | 400 | 0,040 |
| 1,6 | 16 | 15.500 | 720 | 0,060 | 13.000 | 600 | 0,050 | 13.000 | 500 | 0,040 | 9.000 | 300 | 0,035 |
| 1,6 | 18 | 15.500 | 720 | 0,048 | 13.000 | 600 | 0,040 | 13.000 | 500 | 0,030 | 9.000 | 300 | 0,030 |
| 1,6 | 20 | 15.500 | 720 | 0,024 | 13.000 | 600 | 0,020 | 13.000 | 500 | 0,020 | 9.000 | 300 | 0,010 |
| 1,8 | 6 | 19.000 | 1.300 | 0,264 | 16.000 | 1.100 | 0,220 | 15.000 | 1.000 | 0,180 | 12.000 | 700 | 0,140 |
| 1,8 | 8 | 19.000 | 1.300 | 0,252 | 16.000 | 1.100 | 0,210 | 15.000 | 1.000 | 0,170 | 12.000 | 700 | 0,130 |
| 1,8 | 10 | 17.000 | 960 | 0,144 | 14.000 | 800 | 0,120 | 14.000 | 700 | 0,100 | 10.000 | 500 | 0,080 |
| 1,8 | 12 | 17.000 | 960 | 0,120 | 14.000 | 800 | 0,100 | 14.000 | 700 | 0,080 | 10.000 | 500 | 0,070 |
| 1,8 | 14 | 17.000 | 960 | 0,096 | 14.000 | 800 | 0,080 | 14.000 | 700 | 0,060 | 10.000 | 500 | 0,050 |
| 1,8 | 16 | 17.000 | 960 | 0,084 | 14.000 | 800 | 0,070 | 14.000 | 700 | 0,050 | 10.000 | 500 | 0,040 |
| 1,8 | 18 | 14.500 | 720 | 0,06 | 12.000 | 600 | 0,050 | 12.000 | 500 | 0,045 | 8.000 | 400 | 0,035 |
| 1,8 | 20 | 14.500 | 720 | 0,048 | 12.000 | 600 | 0,040 | 12.000 | 500 | 0,040 | 8.000 | 400 | 0,030 |
| 1,8 | 25 | 9.600 | 360 | 0,011 | 8.000 | 300 | 0,009 | 7.000 | 250 | 0,008 | 6.000 | 200 | 0,007 |
| 2 | 6 | 18.000 | 1.300 | 0,372 | 15.000 | 1.100 | 0,310 | 14.000 | 1.000 | 0,260 | 11.000 | 700 | 0,210 |
| 2 | 8 | 18.000 | 1.300 | 0,312 | 15.000 | 1.100 | 0,260 | 14.000 | 1.000 | 0,220 | 11.000 | 700 | 0,180 |
| 2 | 10 | 15.500 | 960 | 0,288 | 13.000 | 800 | 0,240 | 12.000 | 700 | 0,200 | 9.000 | 500 | 0,160 |
| 2 | 12 | 15.500 | 960 | 0,156 | 13.000 | 800 | 0,130 | 12.000 | 700 | 0,110 | 9.000 | 500 | 0,090 |
| 2 | 14 | 15.500 | 960 | 0,132 | 13.000 | 800 | 0,110 | 12.000 | 700 | 0,090 | 9.000 | 500 | 0,070 |
| 2 | 16 | 15.500 | 960 | 0,096 | 13.000 | 800 | 0,080 | 12.000 | 700 | 0,070 | 9.000 | 500 | 0,060 |
| 2 | 18 | 15.500 | 960 | 0,084 | 13.000 | 800 | 0,070 | 12.000 | 700 | 0,060 | 9.000 | 500 | 0,050 |
| 2 | 20 | 13.000 | 720 | 0,060 | 11.000 | 600 | 0,050 | 10.000 | 500 | 0,050 | 7.000 | 400 | 0,040 |
| 2 | 25 | 13.000 | 720 | 0,036 | 11.000 | 600 | 0,030 | 10.000 | 500 | 0,020 | 7.000 | 400 | 0,020 |
| 2 | 30 | 13.000 | 720 | 0,024 | 11.000 | 600 | 0,020 | 10.000 | 500 | 0,010 | 7.000 | 400 | 0,010 |
| 2 | 35 | 11.000 | 460 | 0,011 | 9.000 | 390 | 0,009 | 8.000 | 380 | 0,008 | 6.000 | 270 | 0,007 |
| 2 | 40 | 7.800 | 240 | 0,006 | 6.500 | 200 | 0,005 | 6.000 | 180 | 0,004 | 6.000 | 140 | 0,003 |
| 2 | 50 | 6.950 | 120 | 0,002 | 5.800 | 100 | 0,002 | 5.700 | 95 | 0,002 | 5.000 | 80 | 0,002 |
| 2 | 60 | 6.000 | 60 | 0,001 | 5.000 | 50 | 0,001 | 5.000 | 45 | 0,001 | 5.000 | 40 | 0,001 |
| 2,5 | 8 | 14.500 | 1.300 | 0,468 | 12.000 | 1.100 | 0,390 | 11.000 | 1.000 | 0,330 | 9.000 | 700 | 0,260 |
| 2,5 | 10 | 14.500 | 1.300 | 0,396 | 12.000 | 1.100 | 0,330 | 11.000 | 1.000 | 0,280 | 9.000 | 700 | 0,220 |
| 2,5 | 12 | 14.500 | 1.300 | 0,276 | 12.000 | 1.100 | 0,230 | 11.000 | 1.000 | 0,190 | 9.000 | 700 | 0,150 |
| 2,5 | 14 | 12.000 | 960 | 0,204 | 10.000 | 800 | 0,170 | 9.000 | 700 | 0,140 | 7.000 | 500 | 0,110 |
| 2,5 | 16 | 12.000 | 960 | 0,144 | 10.000 | 800 | 0,120 | 9.000 | 700 | 0,100 | 7.000 | 500 | 0,080 |
| 2,5 | 18 | 12.000 | 960 | 0,132 | 10.000 | 800 | 0,110 | 9.000 | 700 | 0,090 | 7.000 | 500 | 0,070 |
| 2,5 | 20 | 12.000 | 960 | 0,108 | 10.000 | 800 | 0,090 | 9.000 | 700 | 0,080 | 7.000 | 500 | 0,060 |
| 2,5 | 25 | 9.600 | 720 | 0,096 | 8.000 | 600 | 0,080 | 8.000 | 500 | 0,060 | 6.000 | 400 | 0,050 |
| 2,5 | 30 | 9.600 | 720 | 0,036 | 8.000 | 600 | 0,030 | 8.000 | 500 | 0,030 | 6.000 | 400 | 0,020 |
| 2,5 | 40 | 7.800 | 330 | 0,008 | 6.500 | 280 | 0,007 | 6.000 | 270 | 0,005 | 6.000 | 240 | 0,005 |
| 2,5 | 50 | 6.950 | 200 | 0,002 | 5.800 | 170 | 0,002 | 5.700 | 160 | 0,002 | 5.000 | 130 | 0,002 |
| 3 | 8 | 12.000 | 1.300 | 0,432 | 10.000 | 1.100 | 0,360 | 10.000 | 1.000 | 0,300 | 8.000 | 700 | 0,240 |
| 3 | 10 | 12.000 | 1.300 | 0,348 | 10.000 | 1.100 | 0,290 | 10.000 | 1.000 | 0,240 | 8.000 | 700 | 0,190 |
| 3 | 12 | 12.000 | 1.300 | 0,324 | 10.000 | 1.100 | 0,270 | 10.000 | 1.000 | 0,230 | 8.000 | 700 | 0,180 |
| 3 | 14 | 12.000 | 1.300 | 0,300 | 10.000 | 1.100 | 0,250 | 10.000 | 1.000 | 0,210 | 8.000 | 700 | 0,170 |
| 3 | 16 | 12.000 | 960 | 0,240 | 10.000 | 800 | 0,200 | 9.000 | 700 | 0,170 | 6.000 | 500 | 0,130 |
| 3 | 18 | 12.000 | 960 | 0,168 | 10.000 | 800 | 0,140 | 9.000 | 700 | 0,120 | 6.000 | 500 | 0,100 |
| 3 | 20 | 12.000 | 960 | 0,156 | 10.000 | 800 | 0,130 | 9.000 | 700 | 0,110 | 6.000 | 500 | 0,080 |

## WXL-LN-EDS

### Slotting

| | | Cu | | | <32 HRC FC250 • SS400 • S55C | | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | L2 | S (min⁻¹) | F (mm/min) | ap | S (min⁻¹) | F (mm/min) | ap | S (min⁻¹) | F (mm/min) | ap | S (min⁻¹) | F (mm/min) | ap |
| 3 | 25 | 12.000 | 960 | 0,132 | 10.000 | 800 | 0,110 | 9.000 | 700 | 0,090 | 6.000 | 500 | 0,07 |
| 3 | 30 | 9.600 | 720 | 0,108 | 8.000 | 600 | 0,090 | 7.000 | 500 | 0,080 | 5.000 | 400 | 0,06 |
| 3 | 35 | 9.600 | 720 | 0,084 | 8.000 | 600 | 0,070 | 7.000 | 500 | 0,060 | 5.000 | 400 | 0,05 |
| 3 | 40 | 9.600 | 720 | 0,048 | 8.000 | 600 | 0,040 | 7.000 | 500 | 0,030 | 5.000 | 400 | 0,02 |
| 3 | 50 | 6.950 | 320 | 0,011 | 5.800 | 270 | 0,009 | 5.700 | 240 | 0,005 | 5.000 | 200 | 0,004 |
| 4 | 12 | 8.550 | 1.350 | 0,456 | 7.000 | 1.100 | 0,380 | 7.000 | 1.000 | 0,320 | 6.000 | 700 | 0,26 |
| 4 | 16 | 8.550 | 1.350 | 0,432 | 7.000 | 1.100 | 0,360 | 7.000 | 1.000 | 0,300 | 6.000 | 700 | 0,24 |
| 4 | 20 | 8.550 | 970 | 0,408 | 7.000 | 800 | 0,340 | 6.000 | 700 | 0,280 | 5.000 | 500 | 0,22 |
| 4 | 25 | 8.550 | 970 | 0,312 | 7.000 | 800 | 0,260 | 6.000 | 700 | 0,220 | 5.000 | 500 | 0,18 |
| 4 | 30 | 8.550 | 970 | 0,228 | 7.000 | 800 | 0,190 | 6.000 | 700 | 0,160 | 5.000 | 500 | 0,13 |
| 4 | 35 | 8.550 | 970 | 0,204 | 7.000 | 800 | 0,170 | 6.000 | 700 | 0,140 | 5.000 | 500 | 0,11 |
| 4 | 40 | 7.300 | 730 | 0,168 | 6.000 | 600 | 0,140 | 5.000 | 600 | 0,120 | 4.000 | 400 | 0,1 |
| 4 | 45 | 7.300 | 730 | 0,144 | 6.000 | 600 | 0,120 | 5.000 | 600 | 0,100 | 4.000 | 400 | 0,08 |
| 4 | 50 | 7.300 | 730 | 0,060 | 6.000 | 600 | 0,050 | 5.000 | 600 | 0,040 | 4.000 | 400 | 0,03 |
| 4 | 60 | 6.100 | 340 | 0,024 | 5.000 | 280 | 0,020 | 5.000 | 270 | 0,020 | 4.000 | 250 | 0,01 |
| 5 | 16 | 7.300 | 1.350 | 0,54 | 6.000 | 1.100 | 0,450 | 5.000 | 900 | 0,380 | 5.000 | 600 | 0,3 |
| 5 | 20 | 7.300 | 1.150 | 0,516 | 6.000 | 950 | 0,430 | 5.000 | 780 | 0,360 | 5.000 | 600 | 0,29 |
| 5 | 25 | 6.100 | 970 | 0,504 | 5.000 | 800 | 0,420 | 5.000 | 700 | 0,350 | 5.000 | 600 | 0,28 |
| 5 | 30 | 6.100 | 970 | 0,456 | 5.000 | 800 | 0,380 | 5.000 | 700 | 0,300 | 5.000 | 600 | 0,25 |
| 5 | 35 | 6.100 | 970 | 0,396 | 5.000 | 800 | 0,330 | 5.000 | 700 | 0,280 | 5.000 | 600 | 0,22 |
| 5 | 40 | 6.100 | 730 | 0,340 | 5.000 | 600 | 0,280 | 4.000 | 580 | 0,200 | 4.000 | 500 | 0,18 |
| 5 | 50 | 4.900 | 610 | 0,180 | 4.000 | 500 | 0,150 | 3.000 | 400 | 0,130 | 3.000 | 400 | 0,1 |
| 5 | 60 | 4.900 | 420 | 0,072 | 4.000 | 350 | 0,060 | 3.000 | 330 | 0,060 | 3.000 | 300 | 0,04 |

Max cutting depth



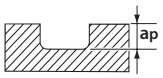

1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL (Minimum Quantity Lubrication, mist coolant) or air blow is recommended.
3. When using cutting fluid, choose based on work material and cutting conditions.
4. The cutting conditions shown for 3D milling are low-load, safe conditions for references. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a dia. of 0,5 or less, or an L/D (effective length/tool diameter) ratio of greater than 10, high loads can cause tool breakage.
7. When the available RPM are insufficient, please reduce the RPM and feed rates in proportion.

## WXL-CR-EDS-6

### Slotting

| | C≤0,2% - GG SS400 • S55C • FC250 ~750 N/mm² | | ~30 HRC SCM • SKT • SKS • SKD | | 30~38 HRC SKT • SKD • NAK55 • HPM1 | | 38~45 HRC SUS304 • SKD | | 45~55 HRC | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 0,2 | 32.000 | 125 | 32.000 | 115 | 32.000 | 100 | 32.000 | 90 | 32.000 | 60 | 24.500 | 30 |
| 0,3 | 32.000 | 190 | 32.000 | 170 | 32.000 | 150 | 32.000 | 135 | 32.000 | 90 | 18.000 | 40 |
| 0,4 | 32.000 | 250 | 32.000 | 230 | 32.000 | 200 | 32.000 | 180 | 32.000 | 120 | 14.000 | 40 |
| 0,5 | 32.000 | 320 | 32.000 | 290 | 32.000 | 250 | 32.000 | 225 | 26.000 | 130 | 12.000 | 40 |
| 0,6 | 32.000 | 380 | 32.000 | 345 | 32.000 | 310 | 27.500 | 250 | 22.000 | 130 | 10.500 | 40 |
| 0,8 | 32.000 | 512 | 32.000 | 460 | 29.000 | 370 | 22.000 | 280 | 17.500 | 130 | 8.750 | 45 |
| 1 | 30.000 | 600 | 27.000 | 480 | 25.000 | 400 | 19.000 | 300 | 14.000 | 130 | 7.600 | 50 |
| 1,2 | 26.500 | 630 | 23.500 | 510 | 21.000 | 400 | 15.500 | 300 | 11.500 | 130 | 6.600 | 55 |
| 1,4 | 22.500 | 630 | 20.000 | 510 | 18.000 | 400 | 13.500 | 300 | 10.000 | 130 | 5.900 | 55 |
| 1,5 | 21.000 | 630 | 19.000 | 510 | 16.500 | 400 | 12.500 | 300 | 9.500 | 130 | 5.700 | 60 |
| 1,6 | 19.500 | 630 | 17.500 | 510 | 15.500 | 400 | 11.500 | 300 | 8.950 | 130 | 5.550 | 60 |
| 1,8 | 17.500 | 630 | 15.500 | 510 | 14.000 | 400 | 10.500 | 300 | 7.950 | 130 | 5.300 | 65 |
| 2 | 15.500 | 630 | 14.000 | 510 | 12.500 | 400 | 9.500 | 300 | 7.150 | 130 | 4.750 | 65 |
| 2,5 | 12.500 | 630 | 11.000 | 510 | 10.000 | 400 | 7.600 | 300 | 5.700 | 130 | 3.800 | 65 |

Max cutting depth




| D | ap |
|---|---|
| < 1 | 0,1D |
| ≥ 1 | 0,3D |

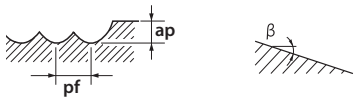
| D | ap |
|---|---|
| < 1 | 0,02D |
| ≥ 1 | 0,05D |

| D | ap |
|---|---|
| < 1 | 0,01D |
| ≥ 1 | |

## WXL-HS-EBD

| R | Copper • Copper Alloy | | | | Mild Steel • Carbon Steel FC250 • SS400 • S55C ~32HRC | | | | Hardened Steel • Prehardened Steel • Stainless Steel SKT • SKD61 • NAK55 • NAK80 • HPM1 • DH* • SUS304 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 33~41HRC | | | | 42~50HRC | | | |
| | S (min-1) | F (mm/min) | Depth of cut | | S (min-1) | F (mm/min) | Depth of cut | | S (min-1) | F (mm/min) | Depth of cut | | S (min-1) | F (mm/min) | Depth of cut | |
| | | | ap | pf | | | ap | pf | | | ap | pf | | | ap | pf |
| 0.1 | 50.000 | 540 | 0,01 | 0,02 | 50.000 | 540 | 0,01 | 0,02 | 50.000 | 540 | 0,01 | 0,02 | 50.000 | 440 | 0,01 | 0,02 |
| 0.2 | 50.000 | 880 | 0,02 | 0,04 | 50.000 | 750 | 0,02 | 0,04 | 50.000 | 750 | 0,02 | 0,04 | 50.000 | 680 | 0,02 | 0,04 |
| 0.3 | 50.000 | 1.840 | 0,02 | 0,04 | 50.000 | 910 | 0,02 | 0,04 | 50.000 | 910 | 0,02 | 0,04 | 50.000 | 840 | 0,02 | 0,04 |
| 0.4 | 50.000 | 2.210 | 0,02 | 0,05 | 50.000 | 1.850 | 0,02 | 0,05 | 50.000 | 1.850 | 0,02 | 0,05 | 50.000 | 1.250 | 0,02 | 0,05 |
| 0.5 | 50.000 | 3.350 | 0,02 | 0,05 | 50.000 | 2.800 | 0,02 | 0,05 | 50.000 | 2.500 | 0,02 | 0,05 | 47.500 | 2.250 | 0,02 | 0,05 |
| 1 | 31.500 | 3.350 | 0,04 | 0,10 | 25.000 | 2.800 | 0,04 | 0,10 | 24.500 | 2.500 | 0,04 | 0,10 | 23.500 | 2.250 | 0,04 | 0,10 |
| 1.5 | 21.000 | 3.350 | 0,06 | 0,15 | 16.500 | 2.800 | 0,06 | 0,15 | 16.000 | 2.500 | 0,06 | 0,15 | 15.500 | 2.250 | 0,06 | 0,15 |
| 2 | 15.500 | 4.080 | 0,08 | 0,20 | 15.500 | 3.400 | 0,08 | 0,20 | 15.000 | 2.750 | 0,08 | 0,20 | 13.500 | 2.450 | 0,08 | 0,20 |
| 3 | 10.500 | 5.160 | 0,12 | 0,30 | 13.500 | 4.300 | 0,30 | 0,60 | 11.500 | 2.750 | 0,30 | 0,60 | 9.500 | 2.250 | 0,12 | 0,30 |
| 4 | 7.900 | 3.840 | 0,16 | 0,40 | 10.000 | 3.200 | 0,40 | 0,80 | 8.950 | 2.100 | 0,40 | 0,80 | 7.150 | 1.700 | 0,16 | 0,40 |
| 5 | 6.300 | 3.120 | 0,20 | 0,50 | 8.250 | 2.600 | 0,50 | 1,00 | 7.150 | 1.700 | 0,50 | 1,00 | 5.700 | 1.350 | 0,20 | 0,50 |
| 6 | 5.250 | 2.580 | 0,24 | 0,60 | 6.850 | 2.150 | 0,50 | 2,40 | 5.950 | 1.400 | 0,50 | 2,40 | 4.750 | 1.100 | 0,24 | 0,60 |

Depth of cut




1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Because tools can cause sparks. do not use flammable fluids.
3. Use an air blow or a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accordance with the actual situation.

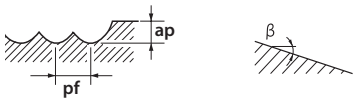
*If your machine tool does not attain the indicated speed, operate it at the highest possible speed.

# CUTTING CONDITIONS



## WXL-EBD

### Regular milling

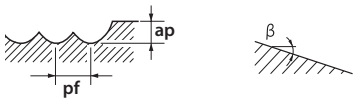
| | Cu | | | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | | | 33~41 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | | | 42~50 HRC SKT • SKD61 • NAK80 • HPM1 • DH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| R 0,05 | 40.000 | 150 | 0,003 | 0,005 | 32.000 | 75 | 0,005 | 0,005 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 170 | 0,005 | 0,005 |
| R 0,1 | 40.000 | 300 | 0,010 | 0,020 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 180 | 0,005 | 0,005 |
| R 0,2 | 40.000 | 490 | 0,020 | 0,080 | 32.000 | 410 | 0,020 | 0,080 | 32.000 | 330 | 0,020 | 0,080 | 32.000 | 205 | 0,020 | 0,040 |
| R 0,3 | 40.000 | 580 | 0,030 | 0,120 | 32.000 | 490 | 0,030 | 0,120 | 32.000 | 420 | 0,030 | 0,120 | 32.000 | 265 | 0,030 | 0,060 |
| R 0,4 | 40.000 | 660 | 0,040 | 0,160 | 32.000 | 550 | 0,040 | 0,160 | 31.500 | 420 | 0,040 | 0,160 | 27.500 | 290 | 0,040 | 0,080 |
| R 0,5 | 32.000 | 750 | 0,050 | 0,200 | 31.500 | 620 | 0,050 | 0,200 | 25.000 | 400 | 0,050 | 0,200 | 22.000 | 285 | 0,050 | 0,100 |
| R 1 | 19.000 | 750 | 0,200 | 0,400 | 15.500 | 620 | 0,200 | 0,400 | 12.500 | 400 | 0,200 | 0,400 | 11.000 | 290 | 0,100 | 0,200 |
| R 1,5 | 12.500 | 760 | 0,300 | 0,600 | 10.500 | 630 | 0,300 | 0,600 | 8.450 | 405 | 0,300 | 0,600 | 7.400 | 290 | 0,150 | 0,300 |
| R 2 | 9.500 | 760 | 0,400 | 0,800 | 7.950 | 630 | 0,400 | 0,800 | 6.350 | 445 | 0,400 | 0,800 | 5.550 | 370 | 0,200 | 0,400 |
| R 3 | 6.300 | 800 | 0,600 | 1,200 | 5.300 | 670 | 0,600 | 1,200 | 4.200 | 465 | 0,600 | 1,200 | 3.700 | 390 | 0,300 | 0,600 |
| R 4 | 4.750 | 950 | 0,800 | 1,600 | 3.950 | 790 | 0,800 | 1,600 | 3.150 | 555 | 0,800 | 1,600 | 2.750 | 455 | 0,400 | 0,800 |
| R 5 | 3.800 | 890 | 1,000 | 2,000 | 3.150 | 745 | 1,000 | 2,000 | 2.500 | 525 | 1,000 | 2,000 | 2.200 | 430 | 0,500 | 1,000 |
| R 6 | 3.750 | 840 | 1,200 | 2,400 | 2.650 | 700 | 1,200 | 2,400 | 2.100 | 490 | 1,200 | 2,400 | 1.850 | 430 | 0,600 | 1,200 |
| R 8 | 2.400 | 630 | 1,600 | 3,200 | 2.000 | 525 | 1,600 | 3,200 | 1.600 | 370 | 1,600 | 3,200 | 1.400 | 325 | 0,800 | 1,600 |
| R 10 | 1.900 | 500 | 2,000 | 4,000 | 1.600 | 420 | 2,000 | 4,000 | 1.250 | 290 | 2,000 | 4,000 | 1.100 | 260 | 1,000 | 2,000 |
| Max cutting depth |   | | | | | | | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant properties.
3. Refer to top the table above to set the milling conditions in accordance with the actual situation.

* When the length of tool extension from the machine is long, reduce the speed and feed.

** When ß is less than 15°, speed and feed in the above table can be increased 1,5 to 2 times.

### High speed milling

| | Cu | | | | ~32 HRC FC250 • SS400 • S55C • NAK55 | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| R 0,5 | 50.000 | 3.350 | 0,020 | 0,050 | 50.000 | 2.800 | 0,020 | 0,050 | 50.000 | 2.500 | 0,020 | 0,050 | 47.500 | 2.250 | 0,020 | 0,050 |
| R 1 | 31.500 | 3.350 | 0,040 | 0,100 | 25.000 | 2.800 | 0,040 | 0,100 | 24.500 | 2.500 | 0,040 | 0,100 | 23.500 | 2.250 | 0,040 | 0,100 |
| R 1,5 | 21.000 | 3.350 | 0,060 | 0,150 | 16.500 | 2.800 | 0,060 | 0,150 | 16.000 | 2.500 | 0,060 | 0,150 | 15.500 | 2.250 | 0,060 | 0,150 |
| R 2 | 15.500 | 4.080 | 0,080 | 0,200 | 15.500 | 3.400 | 0,080 | 0,200 | 15.000 | 2.750 | 0,080 | 0,200 | 13.500 | 2.450 | 0,080 | 0,200 |
| R 2,5 | 10.500 | 5.160 | 0,120 | 0,300 | 13.500 | 4.300 | 0,300 | 0,600 | 11.500 | 2.750 | 0,300 | 0,600 | 9.500 | 2.250 | 0,120 | 0,300 |
| R 3 | 7.900 | 3.840 | 0,160 | 0,400 | 10.000 | 3.200 | 0,400 | 0,800 | 8.950 | 2.100 | 0,400 | 0,800 | 7.150 | 1.700 | 0,160 | 0,400 |
| R 4 | 6.300 | 3.120 | 0,200 | 0,500 | 8.250 | 2.600 | 0,500 | 1,000 | 7.150 | 1.700 | 0,500 | 1,000 | 5.700 | 1.350 | 0,200 | 0,500 |
| R 5 | 5.250 | 2.580 | 0,240 | 0,600 | 6.850 | 2.150 | 0,500 | 2,400 | 5.950 | 1.400 | 0,500 | 2,400 | 4.750 | 1.100 | 0,240 | 0,600 |
| R 6 | 4.950 | 1.550 | 0,320 | 0,800 | 4.110 | 1.290 | 0,500 | 3,200 | 4.460 | 1.050 | 0,500 | 3,200 | 3.560 | 820 | 0,320 | 0,800 |
| R 8 | 3.950 | 1.240 | 0,400 | 1,000 | 3.250 | 1.030 | 0,500 | 4,000 | 3.570 | 840 | 0,500 | 4,000 | 2.850 | 660 | 0,320 | 1,000 |
| Max cutting depth |   | | | | | | | | | | | | | | | |

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centres.
2. We recommend using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant properties.
3. Refer to top the table above to set the milling conditions in accordance with the actual situation.
4. When ß is less than 15°, speed and feed i the above table can be increased 1.2 ~ 1.5 times

## WXL-LN-EBD

### Regular milling

| | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Lg (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,05 | 0,3 | 32.000 | 150 | 0,005 | 0,005 | 32.000 | 75 | 0,005 | 0,005 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 35 | 0,005 | 0,005 |
| 0,05 | 0,5 | 32.000 | 120 | 0,005 | 0,005 | 32.000 | 60 | 0,005 | 0,005 | 32.000 | 40 | 0,005 | 0,005 | 32.000 | 25 | 0,005 | 0,005 |
| 0,1 | 0,3 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,005 | 0,005 |
| 0,1 | 0,5 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,005 | 0,005 |
| 0,1 | 0,75 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 100 | 0,005 | 0,005 |
| 0,1 | 1 | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 1,25 | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 1,5 | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 1,75 | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 2 | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 2,5 | 32.000 | 75 | 0,010 | 0,010 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 40 | 0,003 | 0,005 |
| 0,1 | 3 | 32.000 | 75 | 0,010 | 0,010 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 50 | 0,005 | 0,005 | 32.000 | 40 | 0,003 | 0,005 |
| 0,15 | 0,5 | 32.000 | 600 | 0,020 | 0,030 | 32.000 | 400 | 0,010 | 0,015 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 300 | 0,005 | 0,005 |
| 0,15 | 0,6 | 32.000 | 600 | 0,020 | 0,030 | 32.000 | 400 | 0,010 | 0,015 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 300 | 0,005 | 0,005 |
| 0,15 | 0,75 | 32.000 | 600 | 0,020 | 0,030 | 32.000 | 400 | 0,010 | 0,015 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 300 | 0,005 | 0,005 |
| 0,15 | 1 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 1,25 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 1,5 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 1,75 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 2 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 2,25 | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 |
| 0,15 | 2,5 | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 |
| 0,15 | 2,75 | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 |
| 0,15 | 3 | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,005 | 0,010 |
| 0,15 | 3,5 | 32.000 | 270 | 0,020 | 0,020 | 32.000 | 180 | 0,010 | 0,010 | 32.000 | 120 | 0,010 | 0,010 | 32.000 | 120 | 0,005 | 0,010 |
| 0,15 | 4 | 32.000 | 270 | 0,020 | 0,020 | 32.000 | 180 | 0,010 | 0,010 | 32.000 | 120 | 0,010 | 0,010 | 32.000 | 120 | 0,005 | 0,005 |
| 0,15 | 4,5 | 32.000 | 270 | 0,020 | 0,020 | 32.000 | 180 | 0,010 | 0,010 | 32.000 | 120 | 0,010 | 0,010 | 32.000 | 120 | 0,003 | 0,005 |
| 0,15 | 5 | 32.000 | 150 | 0,010 | 0,020 | 32.000 | 100 | 0,005 | 0,010 | 32.000 | 70 | 0,005 | 0,010 | 32.000 | 70 | 0,003 | 0,005 |
| 0,2 | 0,5 | 32.000 | 750 | 0,025 | 0,050 | 32.000 | 500 | 0,015 | 0,025 | 32.000 | 400 | 0,015 | 0,020 | 32.000 | 400 | 0,010 | 0,010 |
| 0,2 | 0,75 | 32.000 | 750 | 0,025 | 0,050 | 32.000 | 500 | 0,015 | 0,025 | 32.000 | 400 | 0,015 | 0,020 | 32.000 | 400 | 0,010 | 0,010 |
| 0,2 | 1 | 32.000 | 600 | 0,025 | 0,050 | 32.000 | 400 | 0,015 | 0,025 | 32.000 | 300 | 0,015 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,2 | 1,5 | 32.000 | 600 | 0,025 | 0,050 | 32.000 | 400 | 0,015 | 0,025 | 32.000 | 300 | 0,015 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,2 | 2 | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 2,5 | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 3 | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 3,5 | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 4 | 27.000 | 450 | 0,010 | 0,030 | 27.000 | 300 | 0,005 | 0,015 | 27.000 | 200 | 0,005 | 0,012 | 27.000 | 200 | 0,005 | 0,010 |
| 0,2 | 4,5 | 24.000 | 300 | 0,010 | 0,030 | 27.000 | 200 | 0,005 | 0,015 | 27.000 | 100 | 0,005 | 0,012 | 27.000 | 100 | 0,005 | 0,010 |
| 0,2 | 5 | 24.000 | 300 | 0,010 | 0,030 | 27.000 | 200 | 0,005 | 0,015 | 27.000 | 100 | 0,005 | 0,012 | 27.000 | 100 | 0,005 | 0,010 |
| 0,2 | 5,5 | 21.000 | 300 | 0,010 | 0,020 | 27.000 | 200 | 0,005 | 0,010 | 27.000 | 100 | 0,005 | 0,008 | 27.000 | 100 | 0,005 | 0,005 |
| 0,2 | 6 | 21.000 | 150 | 0,010 | 0,015 | 27.000 | 100 | 0,005 | 0,008 | 27.000 | 80 | 0,005 | 0,006 | 27.000 | 80 | 0,003 | 0,005 |
| 0,25 | 1 | 32.000 | 750 | 0,040 | 0,050 | 32.000 | 500 | 0,020 | 0,025 | 32.000 | 400 | 0,020 | 0,020 | 32.000 | 400 | 0,010 | 0,010 |
| 0,25 | 1,5 | 32.000 | 750 | 0,040 | 0,050 | 32.000 | 500 | 0,020 | 0,025 | 32.000 | 400 | 0,020 | 0,020 | 32.000 | 400 | 0,010 | 0,010 |
| 0,25 | 2 | 32.000 | 600 | 0,040 | 0,050 | 32.000 | 400 | 0,020 | 0,025 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,25 | 2,5 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 3 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 3,5 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 4 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 4,5 | 21.000 | 300 | 0,040 | 0,050 | 20.000 | 200 | 0,020 | 0,025 | 20.000 | 200 | 0,020 | 0,020 | 20.000 | 200 | 0,010 | 0,010 |
| 0,25 | 5 | 21.000 | 300 | 0,040 | 0,050 | 20.000 | 200 | 0,020 | 0,025 | 20.000 | 150 | 0,020 | 0,020 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 5,5 | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 6 | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 7 | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 8 | 21.000 | 300 | 0,020 | 0,030 | 15.000 | 200 | 0,010 | 0,015 | 15.000 | 150 | 0,010 | 0,010 | 15.000 | 150 | 0,005 | 0,010 |
| 0,25 | 9 | 18.000 | 150 | 0,020 | 0,020 | 15.000 | 100 | 0,010 | 0,010 | 15.000 | 80 | 0,005 | 0,010 | 15.000 | 80 | 0,005 | 0,005 |
| 0,25 | 10 | 18.000 | 150 | 0,010 | 0,010 | 15.000 | 100 | 0,005 | 0,005 | 15.000 | 80 | 0,005 | 0,005 | 15.000 | 80 | 0,003 | 0,005 |
| 0,3 | 1 | 32.000 | 900 | 0,045 | 0,120 | 32.000 | 600 | 0,030 | 0,060 | 32.000 | 500 | 0,030 | 0,050 | 32.000 | 500 | 0,030 | 0,030 |
| 0,3 | 1,5 | 32.000 | 900 | 0,045 | 0,120 | 32.000 | 600 | 0,030 | 0,060 | 32.000 | 500 | 0,030 | 0,050 | 32.000 | 500 | 0,030 | 0,030 |
| 0,3 | 2 | 32.000 | 675 | 0,045 | 0,120 | 32.000 | 450 | 0,030 | 0,060 | 32.000 | 300 | 0,030 | 0,050 | 32.000 | 300 | 0,030 | 0,030 |
| 0,3 | 2,5 | 30.000 | 675 | 0,045 | 0,120 | 32.000 | 450 | 0,030 | 0,060 | 32.000 | 300 | 0,030 | 0,050 | 32.000 | 300 | 0,030 | 0,030 |
| 0,3 | 3 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,050 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 3,5 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 4 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 4,5 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 5 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,020 | 0,020 |
| 0,3 | 5,5 | 25.000 | 300 | 0,045 | 0,120 | 20.000 | 200 | 0,030 | 0,060 | 20.000 | 200 | 0,030 | 0,040 | 20.000 | 200 | 0,020 | 0,020 |
| 0,3 | 6 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 6,5 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 7 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 7,5 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 8 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 8,5 | 22.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,020 | 0,040 | 20.000 | 150 | 0,010 | 0,010 |
| 0,3 | 9 | 22.000 | 225 | 0,030 | 0,100 | 20.000 | 150 | 0,020 | 0,050 | 20.000 | 150 | 0,020 | 0,040 | 20.000 | 150 | 0,010 | 0,010 |
| 0,3 | 9,5 | 22.000 | 225 | 0,030 | 0,100 | 17.000 | 150 | 0,020 | 0,050 | 17.000 | 150 | 0,020 | 0,040 | 17.000 | 150 | 0,010 | 0,010 |
| 0,3 | 10 | 20.000 | 150 | 0,025 | 0,050 | 17.000 | 100 | 0,015 | 0,025 | 17.000 | 100 | 0,015 | 0,020 | 17.000 | 100 | 0,005 | 0,005 |
| 0,3 | 11 | 20.000 | 150 | 0,025 | 0,050 | 17.000 | 100 | 0,015 | 0,025 | 17.000 | 100 | 0,010 | 0,020 | 17.000 | 100 | 0,005 | 0,005 |
| 0,3 | 12 | 20.000 | 120 | 0,025 | 0,050 | 17.000 | 80 | 0,015 | 0,025 | 17.000 | 80 | 0,010 | 0,012 | 17.000 | 80 | 0,005 | 0,005 |
| 0,4 | 2 | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,040 |
| 0,4 | 3 | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,040 |
| 0,4 | 4 | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,040 |
| 0,4 | 5 | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,020 | 0,025 |
| 0,4 | 6 | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,020 | 0,025 |

# CUTTING CONDITIONS



## WXL-LN-EBD

### Regular milling

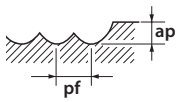
| | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Lg (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,4 | 7 | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,020 | 0,025 |
| 0,4 | 8 | 22.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,025 |
| 0,4 | 9 | 22.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,025 |
| 0,4 | 10 | 22.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,025 |
| 0,4 | 12 | 20.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,025 |
| 0,5 | 2,5 | 28.000 | 900 | 0,075 | 0,200 | 25.000 | 600 | 0,050 | 0,100 | 21.000 | 400 | 0,050 | 0,080 | 21.000 | 400 | 0,050 | 0,050 |
| 0,5 | 3 | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 4 | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 5 | 21.000 | 450 | 0,075 | 0,200 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 6 | 21.000 | 450 | 0,075 | 0,200 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 7 | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,075 | 16.000 | 200 | 0,050 | 0,060 | 16.000 | 200 | 0,030 | 0,030 |
| 0,5 | 8 | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,075 | 16.000 | 200 | 0,050 | 0,060 | 16.000 | 200 | 0,030 | 0,030 |
| 0,5 | 9 | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,075 | 16.000 | 200 | 0,050 | 0,060 | 16.000 | 200 | 0,030 | 0,030 |
| 0,5 | 10 | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 12 | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 14 | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 16 | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 18 | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 20 | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 22 | 16.000 | 225 | 0,050 | 0,050 | 13.000 | 150 | 0,020 | 0,025 | 10.000 | 100 | 0,020 | 0,020 | 10.000 | 100 | 0,005 | 0,005 |
| 0,6 | 4 | 20.000 | 750 | 0,090 | 0,240 | 17.000 | 500 | 0,060 | 0,012 | 14.000 | 300 | 0,060 | 0,100 | 14.000 | 300 | 0,060 | 0,060 |
| 0,6 | 6 | 20.000 | 450 | 0,090 | 0,240 | 17.000 | 300 | 0,060 | 0,012 | 14.000 | 200 | 0,060 | 0,100 | 14.000 | 200 | 0,060 | 0,060 |
| 0,6 | 8 | 20.000 | 450 | 0,090 | 0,240 | 17.000 | 300 | 0,060 | 0,012 | 14.000 | 200 | 0,060 | 0,100 | 14.000 | 200 | 0,060 | 0,060 |
| 0,6 | 10 | 20.000 | 450 | 0,090 | 0,180 | 17.000 | 300 | 0,060 | 0,090 | 14.000 | 200 | 0,060 | 0,070 | 14.000 | 200 | 0,030 | 0,030 |
| 0,6 | 12 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,030 | 0,030 |
| 0,6 | 14 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,010 | 0,030 |
| 0,6 | 16 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,010 | 0,030 |
| 0,6 | 18 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,010 | 0,030 |
| 0,6 | 20 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,010 | 0,030 |
| 0,6 | 24 | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,010 | 0,030 |
| 0,7 | 8 | 18.000 | 450 | 0,100 | 0,280 | 15.500 | 300 | 0,070 | 0,140 | 12.000 | 250 | 0,070 | 0,100 | 12.000 | 250 | 0,070 | 0,070 |
| 0,7 | 12 | 18.000 | 450 | 0,100 | 0,200 | 15.500 | 300 | 0,070 | 0,100 | 12.000 | 250 | 0,070 | 0,080 | 12.000 | 250 | 0,070 | 0,070 |
| 0,7 | 16 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,090 | 9.000 | 150 | 0,040 | 0,070 | 9.000 | 150 | 0,010 | 0,030 |
| 0,75 | 3 | 20.000 | 900 | 0,120 | 0,300 | 15.000 | 600 | 0,080 | 0,150 | 12.000 | 500 | 0,080 | 0,120 | 12.000 | 300 | 0,080 | 0,100 |
| 0,75 | 4 | 20.000 | 900 | 0,120 | 0,300 | 15.000 | 600 | 0,080 | 0,150 | 12.000 | 500 | 0,080 | 0,120 | 12.000 | 300 | 0,080 | 0,100 |
| 0,75 | 6 | 18.000 | 750 | 0,120 | 0,300 | 15.000 | 500 | 0,080 | 0,150 | 12.000 | 350 | 0,080 | 0,120 | 12.000 | 300 | 0,080 | 0,100 |
| 0,75 | 8 | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 |
| 0,75 | 10 | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 |
| 0,75 | 12 | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,090 | 12.000 | 250 | 0,050 | 0,060 |
| 0,75 | 14 | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,090 | 12.000 | 250 | 0,050 | 0,060 |
| 0,75 | 16 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,070 | 9.500 | 150 | 0,010 | 0,030 |
| 0,75 | 18 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,070 | 9.500 | 150 | 0,010 | 0,030 |
| 0,75 | 20 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,070 | 9.500 | 150 | 0,010 | 0,030 |
| 0,75 | 22 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,070 | 9.500 | 150 | 0,010 | 0,030 |
| 0,75 | 30 | 13.000 | 300 | 0,090 | 0,180 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,070 | 9.500 | 150 | 0,010 | 0,030 |
| 0,8 | 4 | 20.000 | 900 | 0,120 | 0,320 | 14.000 | 600 | 0,080 | 0,160 | 11.000 | 500 | 0,080 | 0,130 | 11.000 | 350 | 0,080 | 0,100 |
| 0,8 | 8 | 16.500 | 450 | 0,120 | 0,320 | 14.000 | 300 | 0,080 | 0,160 | 11.000 | 250 | 0,080 | 0,130 | 11.000 | 250 | 0,080 | 0,100 |
| 0,8 | 12 | 16.500 | 450 | 0,120 | 0,240 | 14.000 | 300 | 0,080 | 0,120 | 11.000 | 250 | 0,080 | 0,080 | 11.000 | 250 | 0,050 | 0,050 |
| 0,8 | 16 | 11.500 | 300 | 0,120 | 0,240 | 11.000 | 200 | 0,080 | 0,120 | 9.000 | 150 | 0,080 | 0,080 | 9.000 | 150 | 0,050 | 0,050 |
| 0,8 | 20 | 11.500 | 300 | 0,090 | 0,200 | 11.000 | 200 | 0,060 | 0,120 | 9.000 | 150 | 0,060 | 0,075 | 9.000 | 150 | 0,015 | 0,030 |
| 0,9 | 8 | 16.500 | 600 | 0,130 | 0,360 | 14.000 | 400 | 0,090 | 0,180 | 11.000 | 300 | 0,090 | 0,160 | 11.000 | 300 | 0,090 | 0,120 |
| 0,9 | 12 | 16.500 | 600 | 0,130 | 0,360 | 14.000 | 400 | 0,090 | 0,180 | 11.000 | 300 | 0,090 | 0,160 | 11.000 | 300 | 0,090 | 0,120 |
| 0,9 | 16 | 16.500 | 600 | 0,130 | 0,270 | 14.000 | 400 | 0,090 | 0,140 | 11.000 | 300 | 0,090 | 0,120 | 11.000 | 300 | 0,050 | 0,060 |
| 0,9 | 20 | 11.000 | 300 | 0,100 | 0,220 | 11.000 | 200 | 0,060 | 0,130 | 8.000 | 200 | 0,060 | 0,080 | 8.000 | 200 | 0,020 | 0,030 |
| 1 | 3 | 16.500 | 1.350 | 0,150 | 0,560 | 16.500 | 900 | 0,100 | 0,280 | 13.500 | 800 | 0,100 | 0,280 | 13.500 | 700 | 0,100 | 0,200 |
| 1 | 4 | 16.500 | 1.050 | 0,150 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 6 | 16.500 | 1.050 | 0,150 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 8 | 16.500 | 1.050 | 0,150 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 10 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 12 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 14 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 16 | 14.000 | 750 | 0,150 | 0,420 | 13.000 | 500 | 0,100 | 0,210 | 10.000 | 300 | 0,100 | 0,180 | 10.000 | 300 | 0,060 | 0,100 |
| 1 | 18 | 14.000 | 750 | 0,150 | 0,420 | 13.000 | 500 | 0,100 | 0,210 | 10.000 | 300 | 0,100 | 0,180 | 10.000 | 300 | 0,060 | 0,100 |
| 1 | 20 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 22 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 25 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 30 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 35 | 10.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 40 | 10.000 | 300 | 0,150 | 0,420 | 10.000 | 200 | 0,100 | 0,210 | 8.000 | 160 | 0,100 | 0,180 | 8.000 | 160 | 0,060 | 0,100 |
| 1,25 | 6 | 16.000 | 1.050 | 0,180 | 0,700 | 12.000 | 700 | 0,120 | 0,350 | 10.000 | 600 | 0,120 | 0,300 | 10.000 | 600 | 0,100 | 0,250 |
| 1,25 | 10 | 14.000 | 1.050 | 0,180 | 0,700 | 12.000 | 700 | 0,120 | 0,350 | 10.000 | 600 | 0,120 | 0,300 | 10.000 | 600 | 0,100 | 0,250 |
| 1,25 | 15 | 14.000 | 600 | 0,180 | 0,700 | 10.000 | 400 | 0,120 | 0,350 | 8.500 | 300 | 0,120 | 0,300 | 8.500 | 300 | 0,100 | 0,250 |
| 1,25 | 20 | 12.000 | 600 | 0,180 | 0,560 | 10.000 | 400 | 0,120 | 0,280 | 8.500 | 300 | 0,120 | 0,200 | 8.500 | 300 | 0,080 | 0,150 |
| 1,25 | 25 | 12.000 | 450 | 0,180 | 0,560 | 8.000 | 300 | 0,120 | 0,280 | 6.500 | 250 | 0,120 | 0,200 | 6.500 | 250 | 0,080 | 0,150 |
| 1,25 | 30 | 12.000 | 375 | 0,180 | 0,560 | 8.000 | 250 | 0,120 | 0,280 | 6.500 | 200 | 0,120 | 0,200 | 6.500 | 200 | 0,080 | 0,150 |
| 1,25 | 35 | 12.000 | 375 | 0,180 | 0,560 | 8.000 | 250 | 0,120 | 0,280 | 6.500 | 200 | 0,120 | 0,200 | 6.500 | 200 | 0,080 | 0,150 |
| 1,5 | 6 | 15.000 | 1.200 | 0,200 | 0,840 | 9.500 | 800 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,300 |
| 1,5 | 8 | 12.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 10 | 12.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 12 | 10.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 14 | 10.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |

## WXL-LN-EBD

### Regular milling

| | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Lg (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) |
| 1,5 | 15 | 10.000 | 600 | 0,200 | 0,840 | 8.500 | 400 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 16 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 20 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 25 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 30 | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 35 | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 40 | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,75 | 10 | 10.000 | 1.050 | 0,400 | 0,980 | 8.500 | 700 | 0,150 | 0,420 | 6.500 | 500 | 0,150 | 0,420 | 6.500 | 500 | 0,150 | 0,350 |
| 1,75 | 15 | 10.000 | 900 | 0,400 | 0,980 | 8.500 | 600 | 0,150 | 0,420 | 6.500 | 400 | 0,150 | 0,420 | 6.500 | 400 | 0,150 | 0,350 |
| 1,75 | 20 | 8.000 | 750 | 0,400 | 0,980 | 7.500 | 500 | 0,150 | 0,490 | 5.500 | 300 | 0,150 | 0,420 | 5.500 | 300 | 0,150 | 0,350 |
| 1,75 | 25 | 8.000 | 600 | 0,400 | 0,980 | 7.500 | 400 | 0,150 | 0,490 | 5.500 | 275 | 0,150 | 0,420 | 5.500 | 275 | 0,150 | 0,350 |
| 1,75 | 30 | 8.000 | 450 | 0,400 | 0,980 | 7.500 | 300 | 0,150 | 0,490 | 5.500 | 250 | 0,150 | 0,350 | 5.500 | 250 | 0,100 | 0,200 |
| 1,75 | 35 | 8.000 | 375 | 0,400 | 0,980 | 6.000 | 250 | 0,150 | 0,490 | 5.000 | 200 | 0,150 | 0,350 | 5.000 | 200 | 0,100 | 0,200 |
| 1,75 | 40 | 6.000 | 375 | 0,300 | 0,980 | 6.000 | 250 | 0,150 | 0,490 | 5.000 | 200 | 0,150 | 0,350 | 5.000 | 200 | 0,100 | 0,200 |
| 1,75 | 45 | 6.000 | 375 | 0,300 | 0,980 | 6.000 | 250 | 0,150 | 0,490 | 5.000 | 200 | 0,150 | 0,350 | 5.000 | 200 | 0,100 | 0,200 |
| 2 | 8 | 11.000 | 1.200 | 0,500 | 1,280 | 7.500 | 800 | 0,200 | 0,640 | 6.000 | 700 | 0,200 | 0,600 | 6.000 | 700 | 0,200 | 0,400 |
| 2 | 10 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 12 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 14 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 15 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 16 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 20 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 25 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 30 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,560 | 5.000 | 250 | 0,120 | 0,200 |
| 2 | 35 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,560 | 5.000 | 250 | 0,120 | 0,200 |
| 2 | 40 | 5.000 | 375 | 0,350 | 1,280 | 5.000 | 250 | 0,200 | 0,640 | 4.000 | 200 | 0,200 | 0,560 | 4.000 | 200 | 0,120 | 0,200 |
| 2 | 45 | 5.000 | 375 | 0,350 | 1,280 | 5.000 | 250 | 0,200 | 0,640 | 4.000 | 200 | 0,200 | 0,560 | 4.000 | 200 | 0,120 | 0,200 |
| 2 | 50 | 5.000 | 375 | 0,350 | 1,280 | 5.000 | 250 | 0,200 | 0,640 | 4.000 | 200 | 0,200 | 0,560 | 4.000 | 200 | 0,120 | 0,200 |
| 2,5 | 10 | 9.000 | 1.350 | 0,600 | 1,800 | 6.500 | 900 | 0,250 | 0,900 | 5.000 | 750 | 0,250 | 0,700 | 5.000 | 750 | 0,250 | 0,500 |
| 2,5 | 15 | 9.000 | 1.350 | 0,600 | 1,800 | 6.500 | 900 | 0,250 | 0,900 | 5.000 | 750 | 0,250 | 0,700 | 5.000 | 750 | 0,250 | 0,500 |
| 2,5 | 20 | 7.000 | 750 | 0,600 | 1,800 | 6.500 | 500 | 0,250 | 0,900 | 5.000 | 400 | 0,250 | 0,700 | 5.000 | 400 | 0,250 | 0,500 |
| 2,5 | 25 | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 2,5 | 30 | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 2,5 | 35 | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 2,5 | 40 | 5.000 | 600 | 0,400 | 1,800 | 4.000 | 400 | 0,250 | 0,900 | 4.000 | 200 | 0,250 | 0,600 | 4.000 | 200 | 0,200 | 0,250 |
| 2,5 | 45 | 5.000 | 600 | 0,400 | 1,800 | 4.000 | 400 | 0,250 | 0,900 | 4.000 | 200 | 0,250 | 0,600 | 4.000 | 200 | 0,200 | 0,250 |
| 2,5 | 50 | 5.000 | 450 | 0,400 | 1,800 | 4.000 | 300 | 0,250 | 0,900 | 4.000 | 200 | 0,250 | 0,600 | 4.000 | 200 | 0,200 | 0,250 |
| 3 | 10 | 7.000 | 1.500 | 0,750 | 2,400 | 5.500 | 1.000 | 0,300 | 1,200 | 4.500 | 800 | 0,300 | 0,960 | 4.500 | 800 | 0,300 | 0,600 |
| 3 | 20 | 7.000 | 1.200 | 0,750 | 2,400 | 5.500 | 800 | 0,300 | 1,200 | 4.500 | 600 | 0,300 | 0,960 | 4.500 | 600 | 0,300 | 0,600 |
| 3 | 25 | 6.000 | 900 | 0,750 | 2,400 | 5.500 | 600 | 0,300 | 1,200 | 4.500 | 400 | 0,300 | 0,960 | 4.500 | 400 | 0,300 | 0,600 |
| 3 | 30 | 5.000 | 600 | 0,750 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 35 | 5.000 | 600 | 0,750 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 40 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 45 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 50 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |

Max cutting depth




1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL (Minimum Quantity Lubrication / mist coolant) is recommended.
3. Please adjust conditions based on machining accuracy, machining shape and machining path.
4. When using a tool with a diameter of dia. 0.5 (R0.25) or less, or an L/D (effective length/tool diameter) ratio grater than 10, high loads can cause tool breakage. Therefore, adjust the cutting contions based on the machining situation.
5. When the available RPM is insufficient, reduce the RPM and feed rates in proportion

## WXL-LN-EBD

### High speed milling

| | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Lg (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,05 | 0,3 | 50.000 | 280 | 0,003 | 0,005 | 50.000 | 150 | 0,003 | 0,003 | 50.000 | 100 | 0,003 | 0,003 | 50.000 | 70 | 0,003 | 0,003 |
| 0,05 | 0,5 | 50.000 | 220 | 0,003 | 0,005 | 50.000 | 120 | 0,003 | 0,003 | 50.000 | 80 | 0,003 | 0,003 | 50.000 | 50 | 0,003 | 0,003 |
| 0,1 | 0,3 | 50.000 | 490 | 0,008 | 0,010 | 50.000 | 400 | 0,005 | 0,005 | 50.000 | 380 | 0,005 | 0,005 | 50.000 | 380 | 0,005 | 0,005 |
| 0,1 | 0,5 | 50.000 | 490 | 0,008 | 0,010 | 50.000 | 400 | 0,005 | 0,005 | 50.000 | 380 | 0,005 | 0,005 | 50.000 | 380 | 0,005 | 0,005 |
| 0,1 | 0,75 | 50.000 | 440 | 0,008 | 0,010 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,1 | 1 | 50.000 | 440 | 0,008 | 0,010 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,1 | 1,25 | 50.000 | 390 | 0,008 | 0,010 | 47.000 | 320 | 0,005 | 0,005 | 47.000 | 300 | 0,005 | 0,005 | 47.000 | 300 | 0,005 | 0,005 |
| 0,1 | 1,5 | 50.000 | 360 | 0,008 | 0,010 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 |
| 0,1 | 1,75 | 50.000 | 350 | 0,008 | 0,010 | 42.000 | 260 | 0,005 | 0,005 | 42.000 | 240 | 0,005 | 0,005 | 42.000 | 240 | 0,005 | 0,005 |
| 0,1 | 2 | 50.000 | 320 | 0,008 | 0,010 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 210 | 0,005 | 0,005 | 37.000 | 200 | 0,005 | 0,005 |
| 0,15 | 0,5 | 50.000 | 750 | 0,008 | 0,020 | 50.000 | 620 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 |
| 0,15 | 0,6 | 50.000 | 730 | 0,008 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,15 | 0,75 | 50.000 | 730 | 0,008 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,15 | 1 | 50.000 | 730 | 0,008 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,15 | 1,25 | 50.000 | 730 | 0,008 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,15 | 1,5 | 50.000 | 730 | 0,008 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,15 | 1,75 | 50.000 | 610 | 0,008 | 0,020 | 47.000 | 510 | 0,005 | 0,010 | 47.000 | 480 | 0,005 | 0,010 | 47.000 | 480 | 0,005 | 0,010 |
| 0,15 | 2 | 50.000 | 580 | 0,008 | 0,010 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 |
| 0,15 | 2,25 | 50.000 | 490 | 0,008 | 0,010 | 45.000 | 400 | 0,005 | 0,005 | 45.000 | 380 | 0,005 | 0,005 | 45.000 | 380 | 0,005 | 0,005 |
| 0,15 | 2,5 | 50.000 | 360 | 0,008 | 0,010 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 280 | 0,005 | 0,005 | 40.000 | 280 | 0,005 | 0,005 |
| 0,15 | 2,75 | 50.000 | 320 | 0,008 | 0,010 | 38.000 | 250 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 |
| 0,15 | 3 | 50.000 | 290 | 0,008 | 0,010 | 38.000 | 250 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 | 37.000 | 230 | 0,005 | 0,005 |
| 0,2 | 0,5 | 50.000 | 1.100 | 0,015 | 0,040 | 50.000 | 920 | 0,020 | 0,010 | 50.000 | 870 | 0,010 | 0,020 | 50.000 | 870 | 0,010 | 0,020 |
| 0,2 | 0,75 | 50.000 | 1.090 | 0,015 | 0,040 | 50.000 | 900 | 0,020 | 0,010 | 50.000 | 850 | 0,010 | 0,020 | 50.000 | 850 | 0,010 | 0,020 |
| 0,2 | 1 | 50.000 | 1.090 | 0,015 | 0,040 | 50.000 | 900 | 0,020 | 0,010 | 50.000 | 850 | 0,010 | 0,020 | 50.000 | 850 | 0,010 | 0,020 |
| 0,2 | 1,5 | 50.000 | 970 | 0,015 | 0,040 | 50.000 | 800 | 0,020 | 0,010 | 50.000 | 760 | 0,010 | 0,020 | 50.000 | 760 | 0,010 | 0,020 |
| 0,2 | 2 | 50.000 | 850 | 0,015 | 0,040 | 50.000 | 700 | 0,020 | 0,010 | 50.000 | 660 | 0,010 | 0,020 | 50.000 | 660 | 0,010 | 0,020 |
| 0,2 | 2,5 | 50.000 | 670 | 0,012 | 0,030 | 45.000 | 550 | 0,015 | 0,008 | 45.000 | 520 | 0,010 | 0,015 | 45.000 | 520 | 0,008 | 0,015 |
| 0,2 | 3 | 48.000 | 540 | 0,008 | 0,020 | 43.000 | 500 | 0,005 | 0,010 | 43.000 | 470 | 0,010 | 0,010 | 43.000 | 470 | 0,005 | 0,010 |
| 0,2 | 3,5 | 45.000 | 460 | 0,008 | 0,020 | 40.000 | 420 | 0,005 | 0,010 | 40.000 | 400 | 0,010 | 0,010 | 40.000 | 400 | 0,005 | 0,010 |
| 0,2 | 4 | 40.000 | 400 | 0,008 | 0,010 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 350 | 0,010 | 0,005 | 35.000 | 340 | 0,005 | 0,005 |
| 0,25 | 1 | 50.000 | 1.420 | 0,023 | 0,045 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.050 | 0,010 | 0,030 | 50.000 | 1.050 | 0,015 | 0,030 |
| 0,25 | 1,5 | 50.000 | 1.420 | 0,023 | 0,045 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.050 | 0,010 | 0,030 | 50.000 | 1.050 | 0,015 | 0,030 |
| 0,25 | 2 | 50.000 | 1.400 | 0,023 | 0,045 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 950 | 0,010 | 0,030 | 50.000 | 950 | 0,015 | 0,030 |
| 0,25 | 2,5 | 50.000 | 1.380 | 0,023 | 0,045 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 950 | 0,010 | 0,030 | 50.000 | 950 | 0,015 | 0,030 |
| 0,25 | 3 | 50.000 | 1.190 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 |
| 0,25 | 3,5 | 50.000 | 1.140 | 0,015 | 0,040 | 45.000 | 700 | 0,010 | 0,020 | 45.000 | 650 | 0,010 | 0,020 | 45.000 | 650 | 0,010 | 0,020 |
| 0,25 | 4 | 45.000 | 1.000 | 0,015 | 0,020 | 43.000 | 600 | 0,010 | 0,010 | 43.000 | 570 | 0,010 | 0,010 | 43.000 | 570 | 0,010 | 0,010 |
| 0,25 | 4,5 | 38.000 | 940 | 0,015 | 0,020 | 38.000 | 500 | 0,010 | 0,010 | 38.000 | 470 | 0,010 | 0,010 | 38.000 | 470 | 0,010 | 0,010 |
| 0,25 | 5 | 30.000 | 760 | 0,008 | 0,020 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 380 | 0,005 | 0,010 | 29.000 | 360 | 0,005 | 0,010 |
| 0,3 | 1 | 50.000 | 1.660 | 0,045 | 0,100 | 50.000 | 1.400 | 0,030 | 0,050 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.300 | 0,030 | 0,050 |
| 0,3 | 1,5 | 50.000 | 1.600 | 0,045 | 0,100 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 |
| 0,3 | 2 | 50.000 | 1.600 | 0,045 | 0,100 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 |
| 0,3 | 2,5 | 50.000 | 1.550 | 0,045 | 0,100 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.100 | 0,030 | 0,050 | 50.000 | 1.100 | 0,030 | 0,050 |
| 0,3 | 3 | 50.000 | 1.550 | 0,030 | 0,060 | 50.000 | 1.200 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 |
| 0,3 | 3,5 | 50.000 | 1.340 | 0,030 | 0,060 | 45.000 | 1.000 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 |
| 0,3 | 4 | 50.000 | 1.200 | 0,015 | 0,040 | 40.000 | 900 | 0,010 | 0,020 | 40.000 | 850 | 0,010 | 0,020 | 40.000 | 850 | 0,010 | 0,020 |
| 0,3 | 4,5 | 45.000 | 1.040 | 0,015 | 0,040 | 34.000 | 780 | 0,010 | 0,020 | 34.000 | 740 | 0,010 | 0,020 | 34.000 | 740 | 0,010 | 0,020 |
| 0,3 | 5 | 30.000 | 960 | 0,015 | 0,040 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 |
| 0,3 | 5,5 | 30.000 | 820 | 0,015 | 0,040 | 28.000 | 650 | 0,010 | 0,020 | 28.000 | 610 | 0,010 | 0,020 | 28.000 | 610 | 0,010 | 0,020 |
| 0,3 | 6 | 30.000 | 720 | 0,015 | 0,040 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 540 | 0,010 | 0,020 |
| 0,4 | 2 | 50.000 | 2.200 | 0,060 | 0,160 | 50.000 | 2.000 | 0,040 | 0,080 | 50.000 | 1.900 | 0,040 | 0,080 | 50.000 | 1.900 | 0,040 | 0,080 |
| 0,4 | 3 | 50.000 | 1.740 | 0,060 | 0,160 | 48.000 | 1.600 | 0,040 | 0,080 | 48.000 | 1.500 | 0,040 | 0,080 | 48.000 | 1.500 | 0,040 | 0,080 |
| 0,4 | 4 | 50.000 | 1.680 | 0,060 | 0,160 | 40.000 | 1.200 | 0,040 | 0,080 | 40.000 | 1.100 | 0,040 | 0,080 | 40.000 | 1.100 | 0,040 | 0,080 |
| 0,4 | 5 | 43.000 | 1.600 | 0,045 | 0,100 | 34.000 | 950 | 0,030 | 0,050 | 34.000 | 900 | 0,030 | 0,050 | 34.000 | 900 | 0,030 | 0,050 |
| 0,4 | 6 | 32.000 | 1.260 | 0,045 | 0,100 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 |
| 0,4 | 7 | 30.000 | 1.000 | 0,020 | 0,080 | 25.000 | 600 | 0,010 | 0,020 | 25.000 | 570 | 0,010 | 0,020 | 25.000 | 570 | 0,010 | 0,020 |
| 0,4 | 8 | 24.000 | 720 | 0,010 | 0,040 | 23.000 | 450 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,010 |
| 0,5 | 2,5 | 50.000 | 3.270 | 0,075 | 0,200 | 50.000 | 3.400 | 0,050 | 0,100 | 50.000 | 3.200 | 0,050 | 0,100 | 50.000 | 3.200 | 0,050 | 0,100 |
| 0,5 | 3 | 50.000 | 3.060 | 0,075 | 0,200 | 45.000 | 3.200 | 0,050 | 0,100 | 45.000 | 3.000 | 0,050 | 0,100 | 45.000 | 3.000 | 0,050 | 0,100 |
| 0,5 | 4 | 50.000 | 3.000 | 0,075 | 0,200 | 40.000 | 3.000 | 0,050 | 0,100 | 40.000 | 2.850 | 0,050 | 0,100 | 40.000 | 2.850 | 0,050 | 0,100 |
| 0,5 | 5 | 47.000 | 2.870 | 0,075 | 0,200 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,100 |
| 0,5 | 6 | 43.000 | 2.600 | 0,075 | 0,200 | 30.000 | 2.000 | 0,050 | 0,100 | 30.000 | 1.900 | 0,050 | 0,100 | 30.000 | 1.900 | 0,050 | 0,100 |
| 0,5 | 7 | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,100 |
| 0,5 | 8 | 27.000 | 2.000 | 0,075 | 0,150 | 26.000 | 1.600 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,100 |
| 0,5 | 9 | 26.000 | 1.540 | 0,045 | 0,075 | 24.000 | 1.200 | 0,030 | 0,050 | 24.000 | 1.100 | 0,030 | 0,050 | 24.000 | 1.100 | 0,030 | 0,050 |
| 0,5 | 10 | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,6 | 4 | 40.000 | 3.000 | 0,120 | 0,210 | 40.000 | 3.000 | 0,060 | 0,120 | 40.000 | 2.850 | 0,060 | 0,120 | 40.000 | 2.850 | 0,060 | 0,120 |
| 0,6 | 6 | 35.000 | 2.600 | 0,090 | 0,210 | 32.000 | 2.100 | 0,060 | 0,120 | 32.000 | 2.000 | 0,060 | 0,120 | 32.000 | 2.000 | 0,060 | 0,120 |
| 0,6 | 8 | 30.000 | 2.000 | 0,090 | 0,210 | 25.000 | 1.700 | 0,060 | 0,120 | 25.000 | 1.600 | 0,060 | 0,120 | 25.000 | 1.600 | 0,060 | 0,120 |
| 0,6 | 10 | 21.000 | 1.400 | 0,075 | 0,120 | 20.000 | 1.200 | 0,050 | 0,100 | 20.000 | 1.100 | 0,050 | 0,100 | 18.000 | 990 | 0,050 | 0,100 |
| 0,6 | 12 | 20.000 | 1.000 | 0,045 | 0,100 | 19.000 | 900 | 0,030 | 0,050 | 17.000 | 850 | 0,030 | 0,050 | 16.000 | 800 | 0,030 | 0,050 |
| 0,7 | 8 | 30.000 | 2.100 | 0,140 | 0,245 | 25.000 | 1.700 | 0,070 | 0,140 | 25.000 | 1.600 | 0,070 | 0,140 | 25.000 | 1.600 | 0,070 | 0,140 |
| 0,7 | 12 | 22.000 | 1.210 | 0,060 | 0,140 | 19.000 | 1.000 | 0,030 | 0,070 | 19.000 | 950 | 0,030 | 0,070 | 19.000 | 950 | 0,030 | 0,070 |
| 0,75 | 3 | 50.000 | 5.330 | 0,150 | 0,300 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 4.800 | 0,075 | 0,150 | 50.000 | 4.800 | 0,075 | 0,150 |
| 0,75 | 4 | 42.000 | 4.110 | 0,150 | 0,300 | 40.000 | 3.900 | 0,075 | 0,150 | 40.000 | 3.700 | 0,075 | 0,150 | 40.000 | 3.700 | 0,075 | 0,150 |
| 0,75 | 6 | 32.000 | 3.000 | 0,150 | 0,300 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0,150 |
| 0,75 | 8 | 30.000 | 2.650 | 0,150 | 0,300 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0,150 |
| 0,75 | 10 | 30.000 | 2.400 | 0,150 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0,150 |
| 0,75 | 12 | 24.000 | 1.400 | 0,150 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0,100 |
| 0,75 | 14 | 22.000 | 1.400 | 0,100 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0,100 | 17.000 | 1.100 | 0,050 | 0,100 |
| 0,8 | 4 | 40.000 | 4.500 | 0,160 | 0,320 | 38.000 | 4.000 | 0,080 | 0,160 | 38.000 | 3.800 | 0,080 | 0,160 | 38.000 | 3.600 | 0,080 | 0,160 |

# CUTTING CONDITIONS

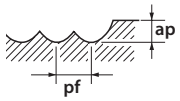
**Milling | Endmills | Cutting conditions**

## WXL-LN-EBD

### High speed milling

| | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | Lg (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,8 | 8 | 26.000 | 3.000 | 0,160 | 0,320 | 24.000 | 3.000 | 0,080 | 0,160 | 24.000 | 2.800 | 0,080 | 0,160 | 23.000 | 2.600 | 0,080 | 0,160 |
| 0,8 | 12 | 24.000 | 2.400 | 0,120 | 0,200 | 21.000 | 1.800 | 0,050 | 0,100 | 21.000 | 1.700 | 0,050 | 0,100 | 20.000 | 1.600 | 0,050 | 0,100 |
| 0,8 | 16 | 18.000 | 1.600 | 0,100 | 0,200 | 16.000 | 800 | 0,050 | 0,100 | 16.000 | 760 | 0,050 | 0,100 | 15.000 | 700 | 0,050 | 0,100 |
| 0,9 | 8 | 25.000 | 3.200 | 0,180 | 0,540 | 24.000 | 3.000 | 0,090 | 0,270 | 24.000 | 2.800 | 0,090 | 0,270 | 23.000 | 2.600 | 0,090 | 0,270 |
| 0,9 | 12 | 22.000 | 2.500 | 0,180 | 0,360 | 18.000 | 1.800 | 0,090 | 0,180 | 15.800 | 1.500 | 0,090 | 0,180 | 14.700 | 1.350 | 0,090 | 0,180 |
| 0,9 | 16 | 16.000 | 1.200 | 0,100 | 0,240 | 16.000 | 980 | 0,050 | 0,120 | 14.000 | 850 | 0,050 | 0,120 | 13.000 | 780 | 0,050 | 0,120 |
| 1 | 3 | 50.000 | 5.800 | 0,200 | 0,400 | 50.000 | 5.600 | 0,100 | 0,200 | 50.000 | 5.600 | 0,100 | 0,200 | 47.000 | 5.300 | 0,100 | 0,200 |
| 1 | 4 | 50.000 | 5.800 | 0,200 | 0,400 | 50.000 | 5.600 | 0,100 | 0,200 | 50.000 | 5.600 | 0,100 | 0,200 | 47.000 | 5.300 | 0,100 | 0,200 |
| 1 | 6 | 38.000 | 4.000 | 0,200 | 0,400 | 36.000 | 3.000 | 0,100 | 0,200 | 36.000 | 2.800 | 0,100 | 0,200 | 34.000 | 2.600 | 0,100 | 0,200 |
| 1 | 8 | 27.000 | 3.360 | 0,200 | 0,400 | 25.000 | 2.600 | 0,100 | 0,200 | 25.000 | 2.400 | 0,100 | 0,200 | 23.000 | 2.200 | 0,100 | 0,200 |
| 1 | 10 | 22.000 | 3.050 | 0,200 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 12 | 16.000 | 2.580 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 |
| 1 | 14 | 15.000 | 2.400 | 0,200 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 16 | 14.000 | 2.200 | 0,200 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 18 | 13.000 | 2.000 | 0,200 | 0,200 | 13.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.500 | 0,100 | 0,100 | 12.000 | 1.300 | 0,100 | 0,100 |
| 1 | 20 | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0,000 | 0,100 |
| 1,25 | 6 | 32.000 | 5.550 | 0,250 | 0,400 | 28.000 | 4.600 | 0,100 | 0,200 | 28.000 | 4.300 | 0,100 | 0,200 | 25.000 | 3.700 | 0,100 | 0,200 |
| 1,25 | 10 | 21.000 | 4.000 | 0,250 | 0,400 | 20.000 | 3.300 | 0,100 | 0,200 | 20.000 | 3.100 | 0,100 | 0,200 | 18.000 | 2.700 | 0,100 | 0,200 |
| 1,25 | 15 | 17.000 | 3.000 | 0,250 | 0,400 | 17.000 | 2.800 | 0,100 | 0,200 | 17.000 | 2.600 | 0,100 | 0,200 | 16.000 | 2.400 | 0,100 | 0,200 |
| 1,25 | 20 | 15.000 | 1.800 | 0,250 | 0,400 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1,25 | 25 | 12.000 | 1.010 | 0,060 | 0,100 | 12.000 | 1.000 | 0,030 | 0,050 | 12.000 | 950 | 0,030 | 0,050 | 10.000 | 860 | 0,030 | 0,050 |
| 1,25 | 30 | 10.000 | 800 | 0,060 | 0,100 | - | - | - | - | - | - | - | - | - | - | - | - |
| 1,5 | 6 | 42.000 | 6.800 | 0,300 | 0,600 | 41.500 | 6.200 | 0,150 | 0,300 | 41.500 | 6.200 | 0,150 | 0,300 | 32.000 | 4.800 | 0,150 | 0,300 |
| 1,5 | 8 | 32.000 | 4.600 | 0,300 | 0,600 | 30.000 | 4.500 | 0,150 | 0,300 | 30.000 | 4.200 | 0,150 | 0,300 | 25.000 | 3.500 | 0,150 | 0,300 |
| 1,5 | 10 | 28.000 | 4.000 | 0,300 | 0,600 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.600 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 |
| 1,5 | 12 | 24.000 | 3.100 | 0,300 | 0,600 | 20.000 | 3.000 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 |
| 1,5 | 14 | 22.000 | 2.900 | 0,300 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 15 | 20.000 | 2.800 | 0,250 | 0,600 | 16.000 | 2.400 | 0,100 | 0,300 | 16.000 | 2.200 | 0,100 | 0,300 | 13.000 | 1.700 | 0,100 | 0,300 |
| 1,5 | 16 | 20.000 | 2.600 | 0,250 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 20 | 16.000 | 2.200 | 0,250 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 25 | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 30 | 12.000 | 1.000 | 0,075 | 0,100 | 10.000 | 800 | 0,030 | 0,050 | 9.000 | 760 | 0,030 | 0,050 | 7.800 | 590 | 0,030 | 0,050 |
| 1,75 | 10 | 26.000 | 5.400 | 0,375 | 0,600 | 25.000 | 3.750 | 0,150 | 0,300 | 25.000 | 3.500 | 0,150 | 0,300 | 19.500 | 2.660 | 0,150 | 0,300 |
| 1,75 | 15 | 20.000 | 4.000 | 0,300 | 0,600 | 18.000 | 3.000 | 0,100 | 0,300 | 18.000 | 2.800 | 0,100 | 0,300 | 14.000 | 2.180 | 0,100 | 0,300 |
| 1,75 | 20 | 18.000 | 3.000 | 0,300 | 0,400 | 16.000 | 2.700 | 0,100 | 0,200 | 16.000 | 2.500 | 0,100 | 0,200 | 12.000 | 1.850 | 0,100 | 0,200 |
| 1,75 | 25 | 14.000 | 2.800 | 0,200 | 0,200 | 12.000 | 2.000 | 0,100 | 0,100 | 12.000 | 1.900 | 0,100 | 0,100 | 9.000 | 1.400 | 0,100 | 0,100 |
| 1,75 | 30 | 10.000 | 2.200 | 0,125 | 0,200 | 10.000 | 1.600 | 0,050 | 0,100 | 10.000 | 1.500 | 0,050 | 0,100 | 8.000 | 1.200 | 0,050 | 0,100 |
| 1,75 | 35 | 10.000 | 1.200 | 0,100 | 0,100 | 10.000 | 1.000 | 0,050 | 0,050 | 10.000 | 950 | 0,050 | 0,500 | 7.000 | 670 | 0,050 | 0,050 |
| 2 | 8 | 31.000 | 5.700 | 0,400 | 1,000 | 31.000 | 5.700 | 0,200 | 0,500 | 31.000 | 5.700 | 0,200 | 0,500 | 24.000 | 4.400 | 0,200 | 0,500 |
| 2 | 10 | 25.000 | 4.500 | 0,400 | 1,000 | 25.000 | 4.500 | 0,200 | 0,500 | 25.000 | 4.200 | 0,200 | 0,500 | 20.000 | 3.300 | 0,200 | 0,500 |
| 2 | 12 | 20.000 | 4.000 | 0,400 | 1,000 | 20.000 | 3.600 | 0,200 | 0,500 | 20.000 | 3.400 | 0,200 | 0,500 | 16.000 | 2.700 | 0,200 | 0,500 |
| 2 | 14 | 20.000 | 4.000 | 0,400 | 1,000 | 20.000 | 3.600 | 0,200 | 0,500 | 20.000 | 3.400 | 0,200 | 0,500 | 16.000 | 2.700 | 0,200 | 0,500 |
| 2 | 15 | 20.000 | 4.000 | 0,400 | 1,000 | 20.000 | 3.600 | 0,200 | 0,500 | 20.000 | 3.400 | 0,200 | 0,500 | 16.000 | 2.700 | 0,200 | 0,500 |
| 2 | 16 | 20.000 | 3.460 | 0,400 | 0,600 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.000 | 0,200 | 0,500 | 14.000 | 2.300 | 0,200 | 0,500 |
| 2 | 20 | 18.000 | 3.000 | 0,400 | 0,500 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.600 | 0,200 | 0,400 | 12.000 | 1.900 | 0,200 | 0,400 |
| 2 | 25 | 18.000 | 3.000 | 0,250 | 0,600 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 | 12.000 | 1.900 | 0,100 | 0,300 |
| 2 | 30 | 16.000 | 2.850 | 0,250 | 0,400 | 14.000 | 2.400 | 0,100 | 0,200 | 14.000 | 2.200 | 0,100 | 0,200 | 11.000 | 1.700 | 0,100 | 0,200 |
| 2 | 35 | 14.000 | 2.200 | 0,250 | 0,400 | 12.000 | 1.800 | 0,100 | 0,200 | 12.000 | 1.700 | 0,100 | 0,200 | 9.000 | 1.700 | 0,100 | 0,200 |
| 2 | 40 | 12.000 | 1.600 | 0,125 | 0,200 | 10.000 | 1.300 | 0,050 | 0,100 | 10.000 | 1.200 | 0,050 | 0,100 | 7.000 | 840 | 0,050 | 0,100 |
| 2,5 | 10 | 25.000 | 5.600 | 0,500 | 1,250 | 25.000 | 5.400 | 0,250 | 0,500 | 25.000 | 5.400 | 0,250 | 0,500 | 19.000 | 4.000 | 0,250 | 0,500 |
| 2,5 | 15 | 20.000 | 4.400 | 0,500 | 1,250 | 20.000 | 4.200 | 0,250 | 0,500 | 20.000 | 3.900 | 0,250 | 0,500 | 16.000 | 3.100 | 0,250 | 0,500 |
| 2,5 | 20 | 18.000 | 3.800 | 0,500 | 1,250 | 16.000 | 3.500 | 0,250 | 0,500 | 16.000 | 3.300 | 0,250 | 0,500 | 12.000 | 2.400 | 0,250 | 0,500 |
| 2,5 | 25 | 20.000 | 3.400 | 0,400 | 0,750 | 15.000 | 3.200 | 0,200 | 0,300 | 15.000 | 3.000 | 0,200 | 0,300 | 12.000 | 2.400 | 0,200 | 0,300 |
| 2,5 | 30 | 16.000 | 2.900 | 0,250 | 0,750 | 14.000 | 2.500 | 0,100 | 0,300 | 14.000 | 2.300 | 0,100 | 0,300 | 11.000 | 1.800 | 0,100 | 0,300 |
| 2,5 | 35 | 14.000 | 2.200 | 0,250 | 0,750 | 12.000 | 1.600 | 0,100 | 0,300 | 12.000 | 1.500 | 0,100 | 0,300 | 9.000 | 1.100 | 0,100 | 0,300 |
| 2,5 | 40 | 12.000 | 1.800 | 0,250 | 0,500 | 10.000 | 1.200 | 0,100 | 0,200 | 10.000 | 1.100 | 0,100 | 0,200 | 8.000 | 880 | 0,100 | 0,200 |
| 2,5 | 45 | 9.000 | 1.200 | 0,200 | 0,250 | 9.000 | 900 | 0,100 | 0,100 | 9.000 | 850 | 0,100 | 0,100 | 7.000 | 660 | 0,100 | 0,100 |
| 2,5 | 50 | 8.000 | 1.100 | 0,200 | 0,250 | 8.000 | 800 | 0,100 | 0,100 | 8.000 | 760 | 0,100 | 0,100 | 6.000 | 570 | 0,100 | 0,100 |
| 3 | 10 | 22.000 | 5.900 | 0,750 | 1,250 | 20.000 | 5.400 | 0,300 | 0,500 | 20.000 | 5.000 | 0,300 | 0,500 | 15.000 | 3.750 | 0,300 | 0,500 |
| 3 | 20 | 18.000 | 4.400 | 0,750 | 1,250 | 16.000 | 4.200 | 0,300 | 0,500 | 16.000 | 3.900 | 0,300 | 0,500 | 12.000 | 2.900 | 0,300 | 0,500 |
| 3 | 25 | 14.000 | 4.000 | 0,600 | 1,250 | 12.000 | 3.200 | 0,300 | 0,500 | 12.000 | 3.000 | 0,300 | 0,500 | 9.000 | 2.250 | 0,300 | 0,500 |
| 3 | 30 | 10.000 | 3.200 | 0,600 | 1,250 | 10.000 | 2.600 | 0,300 | 0,500 | 10.000 | 2.400 | 0,300 | 0,500 | 8.000 | 1.900 | 0,300 | 0,500 |
| 3 | 35 | 9.000 | 3.000 | 0,400 | 1,000 | 9.000 | 2.300 | 0,200 | 0,400 | 9.000 | 2.100 | 0,200 | 0,400 | 7.000 | 1.600 | 0,200 | 0,400 |
| 3 | 40 | 9.000 | 2.800 | 0,400 | 0,750 | 9.000 | 2.000 | 0,200 | 0,300 | 9.000 | 1.900 | 0,200 | 0,300 | 7.000 | 1.400 | 0,200 | 0,300 |
| 3 | 45 | 8.000 | 2.500 | 0,400 | 0,750 | 8.000 | 1.800 | 0,200 | 0,300 | 8.000 | 1.700 | 0,200 | 0,300 | 6.500 | 1.300 | 0,200 | 0,300 |
| 3 | 50 | 7.000 | 2.300 | 0,400 | 0,750 | 7.000 | 1.600 | 0,200 | 0,300 | 7.000 | 1.500 | 0,200 | 0,300 | 5.500 | 1.100 | 0,200 | 0,300 |

Max cutting depth




1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL is recommended.
3. Please adjust conditions based on machining accuracy, machining shape and machining path.
4. When using a tool with a diameter of dia. 0.5 (R0.25) or less, or an L/D (effective length/tool diameter) ratio grater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
5. When the available RPM is insufficient, reduce the RPM and feed rates in proportion

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## WXL-PC-EBD

### Regular milling

| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min⁻¹) | F (mm/min) | ap (mm) | pf (mm) | S (min⁻¹) | F (mm/min) | ap (mm) | pf (mm) | S (min⁻¹) | F (mm/min) | ap (mm) | pf (mm) | S (min⁻¹) | F (mm/min) | ap (mm) | pf (mm) |
| 0,1 | 0,5° | 1 | 0,3° | 32.000 | 200 | 0,020 | 0,020 | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 100 | 0,005 | 0,005 |
| 0,1 | 0,5° | 1,5 | 0,3° | 32.000 | 200 | 0,020 | 0,020 | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 100 | 0,005 | 0,005 |
| 0,1 | 0,5° | 2 | 0,3° | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 0,5° | 2,5 | 0,3° | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 100 | 0,005 | 0,005 | 32.000 | 100 | 0,005 | 0,005 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 0,5° | 3 | 0,3° | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 | 32.000 | 80 | 0,005 | 0,005 | 32.000 | 60 | 0,003 | 0,005 |
| 0,1 | 1° | 2 | 0,3° | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 1° | 2,5 | 0,3° | 32.000 | 150 | 0,020 | 0,020 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 100 | 0,010 | 0,010 | 32.000 | 80 | 0,005 | 0,005 |
| 0,1 | 1° | 3 | 0,3° | 32.000 | 150 | 0,010 | 0,010 | 32.000 | 100 | 0,005 | 0,005 | 32.000 | 100 | 0,005 | 0,005 | 32.000 | 80 | 0,005 | 0,005 |
| 0,15 | 0,5° | 2 | 0,3° | 32.000 | 600 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 0,5° | 3 | 0,3° | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 |
| 0,15 | 1° | 3 | 0,3° | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,15 | 1° | 4 | 0,3° | 32.000 | 450 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 | 32.000 | 200 | 0,010 | 0,010 |
| 0,2 | 0,5° | 2 | 0,3° | 27.000 | 450 | 0,030 | 0,050 | 32.000 | 400 | 0,015 | 0,025 | 32.000 | 300 | 0,015 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,2 | 0,5° | 3 | 0,3° | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 0,5° | 4 | 0,3° | 27.000 | 450 | 0,020 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 0,5° | 5 | 0,3° | 27.000 | 400 | 0,015 | 0,050 | 27.000 | 300 | 0,005 | 0,015 | 27.000 | 200 | 0,005 | 0,012 | 27.000 | 200 | 0,005 | 0,010 |
| 0,2 | 0,5° | 6 | 0,3° | 27.000 | 300 | 0,010 | 0,030 | 27.000 | 300 | 0,005 | 0,015 | 27.000 | 200 | 0,005 | 0,012 | 27.000 | 200 | 0,005 | 0,010 |
| 0,2 | 1° | 4 | 0,3° | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 1° | 5 | 0,3° | 27.000 | 450 | 0,020 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,2 | 1° | 6 | 0,3° | 27.000 | 400 | 0,015 | 0,050 | 27.000 | 300 | 0,005 | 0,015 | 27.000 | 200 | 0,005 | 0,012 | 27.000 | 200 | 0,005 | 0,010 |
| 0,25 | 0,5° | 4 | 0,3° | 32.000 | 600 | 0,040 | 0,050 | 32.000 | 400 | 0,020 | 0,025 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,015 |
| 0,25 | 0,5° | 6 | 0,3° | 27.000 | 450 | 0,040 | 0,050 | 20.000 | 200 | 0,020 | 0,025 | 20.000 | 150 | 0,020 | 0,020 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 0,5° | 8 | 0,3° | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 0,5° | 10 | 0,3° | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,005 | 0,010 |
| 0,25 | 1° | 4 | 0,3° | 32.000 | 600 | 0,040 | 0,050 | 32.000 | 400 | 0,020 | 0,025 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,25 | 1° | 6 | 0,3° | 27.000 | 450 | 0,040 | 0,050 | 32.000 | 400 | 0,020 | 0,025 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,25 | 1° | 8 | 0,3° | 27.000 | 450 | 0,040 | 0,050 | 20.000 | 200 | 0,020 | 0,025 | 20.000 | 150 | 0,020 | 0,020 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 1° | 10 | 0,3° | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,020 | 0,025 | 20.000 | 150 | 0,020 | 0,020 | 20.000 | 150 | 0,010 | 0,010 |
| 0,25 | 1° | 12 | 0,3° | 21.000 | 300 | 0,020 | 0,030 | 20.000 | 200 | 0,010 | 0,015 | 20.000 | 150 | 0,010 | 0,010 | 20.000 | 150 | 0,010 | 0,010 |
| 0,3 | 0,5° | 2 | 0,3° | 32.000 | 675 | 0,045 | 0,120 | 32.000 | 450 | 0,030 | 0,060 | 32.000 | 300 | 0,030 | 0,050 | 32.000 | 300 | 0,030 | 0,030 |
| 0,3 | 0,5° | 4 | 0,3° | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,050 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 0,5° | 6 | 0,3° | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,020 | 0,020 |
| 0,3 | 0,5° | 8 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 0,5° | 10 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 0,5° | 12 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,020 | 0,040 | 20.000 | 150 | 0,010 | 0,010 |
| 0,3 | 0,5° | 16 | 0,3° | 20.000 | 150 | 0,025 | 0,050 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,010 | 0,040 | 20.000 | 150 | 0,010 | 0,010 |
| 0,3 | 1° | 4 | 0,3° | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,050 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 1° | 6 | 0,3° | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,020 | 0,020 |
| 0,3 | 1° | 8 | 0,3° | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,020 | 0,020 |
| 0,3 | 1° | 10 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 1° | 12 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,3 | 1° | 16 | 0,3° | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,4 | 0,5° | 4 | 0,3° | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,080 |
| 0,4 | 0,5° | 6 | 0,3° | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,030 | 0,050 |
| 0,4 | 0,5° | 8 | 0,3° | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,030 | 0,050 |
| 0,4 | 0,5° | 12 | 0,3° | 22.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,050 |
| 0,4 | 1° | 8 | 0,3° | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,030 | 0,050 |
| 0,4 | 1° | 12 | 0,3° | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,020 | 0,050 |
| 0,4 | 1° | 16 | 0,3° | 22.000 | 225 | 0,060 | 0,120 | 19.000 | 150 | 0,040 | 0,060 | 17.000 | 150 | 0,040 | 0,050 | 17.000 | 150 | 0,020 | 0,020 |
| 0,5 | 0,5° | 6 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 0,5° | 8 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 0,5° | 10 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 0,5° | 12 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 0,5° | 16 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,025 |
| 0,5 | 0,5° | 18 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,025 |
| 0,5 | 0,5° | 20 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,025 |
| 0,5 | 0,5° | 25 | 0,3° | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 0,5° | 30 | 0,3° | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 0,5° | 35 | 0,3° | 13.000 | 300 | 0,040 | 0,120 | 13.000 | 200 | 0,010 | 0,050 | 10.000 | 150 | 0,010 | 0,040 | 10.000 | 150 | 0,005 | 0,015 |
| 0,5 | 1° | 10 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 1° | 16 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 1° | 20 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,020 |
| 0,5 | 1° | 25 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,020 |
| 0,5 | 1° | 30 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1° | 35 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1° | 40 | 0,3° | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1° | 50 | 0,3° | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1° | 60 | 0,3° | 16.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,030 | 0,050 | 10.000 | 150 | 0,030 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1° | 70 | 0,3° | 12.000 | 300 | 0,060 | 0,120 | 13.000 | 200 | 0,020 | 0,050 | 10.000 | 150 | 0,020 | 0,040 | 10.000 | 150 | 0,010 | 0,015 |
| 0,5 | 1,5° | 8 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 1,5° | 10 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 1,5° | 12 | 0,3° | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 1,5° | 16 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 1,5° | 20 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 1,5° | 25 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 1,5° | 30 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 1,5° | 35 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,020 |
| 0,5 | 2° | 45 | 0,3° | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,6 | 0,5° | 12 | 0,3° | 20.000 | 450 | 0,090 | 0,240 | 17.000 | 300 | 0,060 | 0,120 | 14.000 | 200 | 0,060 | 0,100 | 14.000 | 200 | 0,060 | 0,060 |
| 0,6 | 0,5° | 25 | 0,3° | 16.000 | 300 | 0,090 | 0,180 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,020 | 0,030 |
| 0,6 | 1° | 12 | 0,3° | 20.000 | 450 | 0,090 | 0,240 | 17.000 | 300 | 0,060 | 0,120 | 14.000 | 200 | 0,060 | 0,100 | 14.000 | 200 | 0,060 | 0,060 |
| 0,6 | 1° | 25 | 0,3° | 16.000 | 300 | 0,090 | 0,240 | 14.000 | 200 | 0,060 | 0,090 | 11.000 | 150 | 0,060 | 0,070 | 11.000 | 150 | 0,020 | 0,030 |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## WXL-PC-EBD

### Regular milling

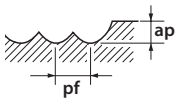
| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,6 | 1,5° | 12 | 0,3° | 20.000 | 600 | 0,090 | 0,240 | 17.000 | 450 | 0,060 | 0,120 | 14.000 | 300 | 0,060 | 0,100 | 14.000 | 300 | 0,060 | 0,060 |
| 0,6 | 1,5° | 25 | 0,3° | 20.000 | 450 | 0,090 | 0,240 | 17.000 | 300 | 0,060 | 0,120 | 14.000 | 200 | 0,060 | 0,100 | 14.000 | 200 | 0,060 | 0,060 |
| 0,75 | 0,5° | 8 | 0,3° | 18.000 | 750 | 0,140 | 0,300 | 15.000 | 500 | 0,080 | 0,150 | 12.000 | 350 | 0,080 | 0,150 | 12.000 | 300 | 0,080 | 0,150 |
| 0,75 | 0,5° | 10 | 0,3° | 17.000 | 450 | 0,140 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 0,5° | 12 | 0,3° | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 0,5° | 16 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 0,75 | 0,5° | 20 | 0,3° | 13.000 | 300 | 0,120 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,050 | 0,100 |
| 0,75 | 0,5° | 25 | 0,3° | 13.000 | 300 | 0,120 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,050 | 0,100 |
| 0,75 | 0,5° | 30 | 0,3° | 13.000 | 300 | 0,120 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,035 | 0,100 |
| 0,75 | 0,5° | 35 | 0,3° | 13.000 | 300 | 0,090 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,030 | 0,100 |
| 0,75 | 1° | 10 | 0,3° | 18.000 | 750 | 0,140 | 0,300 | 15.000 | 500 | 0,080 | 0,150 | 12.000 | 350 | 0,080 | 0,150 | 12.000 | 300 | 0,080 | 0,150 |
| 0,75 | 1° | 12 | 0,3° | 17.000 | 450 | 0,140 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 1° | 16 | 0,3° | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 1° | 20 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 0,75 | 1° | 25 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,050 | 0,100 |
| 0,75 | 1° | 30 | 0,3° | 13.000 | 300 | 0,090 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,030 | 0,100 |
| 0,75 | 1° | 35 | 0,3° | 13.000 | 300 | 0,090 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,020 | 0,100 |
| 0,75 | 1,5° | 10 | 0,3° | 18.000 | 750 | 0,120 | 0,300 | 15.000 | 500 | 0,080 | 0,150 | 12.000 | 350 | 0,080 | 0,150 | 12.000 | 300 | 0,080 | 0,150 |
| 0,75 | 1,5° | 12 | 0,3° | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 1,5° | 16 | 0,3° | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 1,5° | 20 | 0,3° | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 0,75 | 1,5° | 25 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 0,75 | 1,5° | 30 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 0,75 | 1,5° | 35 | 0,3° | 13.000 | 300 | 0,075 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,050 | 0,100 |
| 0,75 | 2° | 38,6 | 0,3° | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 1 | 0,5° | 8 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 0,5° | 10 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 0,5° | 12 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 0,5° | 16 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 0,5° | 20 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 0,5° | 25 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 0,5° | 30 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 0,5° | 35 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 0,5° | 40 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 1° | 16 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 1° | 20 | 0,3° | 14.000 | 750 | 0,200 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1° | 25 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1° | 30 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,080 | 0,100 |
| 1 | 1° | 35 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,080 | 0,100 |
| 1 | 1° | 40 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 1° | 50 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 1° | 60 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 1° | 70 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 1,5° | 16 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 1,5° | 20 | 0,3° | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 1,5° | 25 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1,5° | 30 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1,5° | 35 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1,5° | 41,5 | 0,3° | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 2° | 31,5 | 0,3° | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1,5 | 0,5° | 8 | 0,3° | 15.000 | 1.200 | 0,200 | 0,840 | 9.500 | 800 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,300 |
| 1,5 | 0,5° | 10 | 0,3° | 15.000 | 1.200 | 0,200 | 0,840 | 9.500 | 800 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,420 | 7.500 | 600 | 0,150 | 0,300 |
| 1,5 | 0,5° | 12 | 0,3° | 12.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 0,5° | 16 | 0,3° | 10.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 0,5° | 20 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 0,5° | 25 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 0,5° | 30 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 0,5° | 35 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 0,5° | 40 | 0,3° | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 0,5° | 50 | 0,3° | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 1° | 20 | 0,3° | 10.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 1° | 25 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1° | 30 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1° | 35 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 1° | 40 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 1° | 50 | 0,3° | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 1° | 60 | 0,3° | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 1° | 70 | 0,3° | 9.000 | 375 | 0,200 | 0,840 | 7.500 | 250 | 0,150 | 0,420 | 6.000 | 200 | 0,150 | 0,300 | 6.000 | 200 | 0,090 | 0,150 |
| 1,5 | 1,5° | 20 | 0,3° | 10.000 | 900 | 0,300 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 1,5° | 25 | 0,3° | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1,5° | 30 | 0,3° | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1,5° | 35 | 0,3° | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1,5° | 40 | 0,3° | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1,5° | 50 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 1,5° | 62,5 | 0,3° | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 1,5° | 47,5 | 0,3° | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 2 | 1° | 20 | 0,5° | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 1° | 30 | 0,5° | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 1° | 40 | 0,5° | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,560 | 5.000 | 250 | 0,120 | 0,300 |
| 2 | 1° | 50 | 0,5° | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,560 | 5.000 | 250 | 0,120 | 0,200 |
| 2 | 1° | 60 | 0,5° | 5.000 | 375 | 0,350 | 1,280 | 5.000 | 250 | 0,200 | 0,640 | 4.000 | 200 | 0,200 | 0,560 | 4.000 | 200 | 0,120 | 0,200 |
| 2 | 1,5° | 44,2 | 0,5° | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |

## WXL-PC-EBD

### Regular milling

| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 2 | 2° | 34 | 0,5° | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,500 |
| 2,5 | 1° | 30 | 0,5° | 7.000 | 750 | 0,600 | 1,800 | 6.500 | 500 | 0,250 | 0,900 | 5.000 | 400 | 0,250 | 0,700 | 5.000 | 400 | 0,250 | 0,500 |
| 2,5 | 1° | 40 | 0,5° | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 2,5 | 1° | 60 | 0,5° | 5.000 | 600 | 0,400 | 1,800 | 4.000 | 400 | 0,250 | 0,900 | 4.000 | 200 | 0,250 | 0,600 | 4.000 | 200 | 0,200 | 0,250 |
| 2,5 | 1,5° | 26,9 | 0,5° | 9.000 | 1.350 | 0,600 | 1,800 | 6.500 | 900 | 0,250 | 0,900 | 5.000 | 750 | 0,250 | 0,700 | 5.000 | 750 | 0,250 | 0,500 |
| 2,5 | 1,5° | 65,1 | 0,5° | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 2,5 | 2° | 50,1 | 0,5° | 6.000 | 750 | 0,600 | 1,800 | 5.000 | 500 | 0,250 | 0,900 | 4.000 | 250 | 0,250 | 0,700 | 4.000 | 250 | 0,250 | 0,500 |
| 3 | 1° | 30 | 0,5° | 7.000 | 1.200 | 0,750 | 2,400 | 5.500 | 800 | 0,300 | 1,200 | 4.500 | 600 | 0,300 | 0,960 | 4.500 | 600 | 0,300 | 0,600 |
| 3 | 1° | 40 | 0,5° | 5.000 | 600 | 0,750 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 1° | 50 | 0,5° | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 1° | 60 | 0,5° | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 1° | 70 | 0,5° | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,300 |
| 3 | 1° | 80 | 0,5° | 5.000 | 600 | 0,450 | 2,400 | 4.000 | 400 | 0,200 | 1,200 | 4.000 | 300 | 0,200 | 0,960 | 4.000 | 300 | 0,200 | 0,300 |
| 3 | 1,5° | 49 | 0,5° | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 2° | 36 | 0,5° | 7.000 | 1.200 | 0,750 | 2,400 | 5.500 | 800 | 0,300 | 1,200 | 4.500 | 600 | 0,300 | 0,960 | 4.500 | 600 | 0,300 | 0,600 |

Max cutting depth




1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%..
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

## WXL-PC-EBD

### High speed milling

| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0.1 | 0.5° | 1 | 0.3° | 50.000 | 440 | 0,007 | 0,010 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,1 | 0,5° | 1,5 | 0,3° | 50.000 | 440 | 0,007 | 0,010 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,1 | 0,5° | 2 | 0,3° | 50.000 | 360 | 0,007 | 0,010 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 |
| 0,1 | 0,5° | 2,5 | 0,3° | 50.000 | 320 | 0,007 | 0,010 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 210 | 0,005 | 0,005 | 37.000 | 200 | 0,005 | 0,005 |
| 0,1 | 0,5° | 3 | 0,3° | 50.000 | 250 | 0,007 | 0,010 | 38.000 | 200 | 0,005 | 0,005 | 38.000 | 180 | 0,005 | 0,005 | 37.000 | 150 | 0,003 | 0,005 |
| 0,1 | 1° | 3,5 | 0,3° | 50.000 | 440 | 0,007 | 0,010 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,1 | 1° | 4 | 0,3° | 50.000 | 360 | 0,007 | 0,010 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 |
| 0,1 | 1° | 4,5 | 0,3° | 50.000 | 320 | 0,007 | 0,010 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 210 | 0,005 | 0,005 | 37.000 | 200 | 0,005 | 0,005 |
| 1,5 | 0,5° | 2 | 0,3° | 50.000 | 730 | 0,007 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,005 |
| 1,5 | 0,5° | 3 | 0,3° | 50.000 | 580 | 0,007 | 0,010 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 |
| 1,5 | 1° | 3 | 0,3° | 50.000 | 610 | 0,007 | 0,020 | 47.000 | 510 | 0,005 | 0,010 | 47.000 | 480 | 0,005 | 0,010 | 47.000 | 480 | 0,005 | 0,005 |
| 1,5 | 1° | 4 | 0,3° | 50.000 | 580 | 0,007 | 0,010 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 |
| 0,2 | 0,5° | 2 | 0,3° | 50.000 | 970 | 0,015 | 0,040 | 50.000 | 800 | 0,010 | 0,020 | 50.000 | 760 | 0,010 | 0,020 | 50.000 | 760 | 0,010 | 0,010 |
| 0,2 | 0,5° | 3 | 0,3° | 50.000 | 670 | 0,012 | 0,030 | 45.000 | 550 | 0,008 | 0,015 | 45.000 | 520 | 0,008 | 0,015 | 45.000 | 520 | 0,008 | 0,010 |
| 0,2 | 0,5° | 4 | 0,3° | 48.000 | 540 | 0,007 | 0,020 | 43.000 | 500 | 0,005 | 0,010 | 43.000 | 470 | 0,005 | 0,010 | 43.000 | 470 | 0,005 | 0,010 |
| 0,2 | 0,5° | 5 | 0,3° | 45.000 | 480 | 0,007 | 0,020 | 40.000 | 420 | 0,005 | 0,010 | 40.000 | 400 | 0,005 | 0,010 | 40.000 | 400 | 0,005 | 0,010 |
| 0,2 | 0,5° | 6 | 0,3° | 40.000 | 400 | 0,007 | 0,010 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 350 | 0,005 | 0,005 | 35.000 | 340 | 0,005 | 0,005 |
| 0,2 | 1° | 4 | 0,3° | 50.000 | 670 | 0,012 | 0,030 | 45.000 | 550 | 0,008 | 0,015 | 45.000 | 520 | 0,008 | 0,015 | 45.000 | 520 | 0,008 | 0,010 |
| 0,2 | 1° | 5 | 0,3° | 48.000 | 540 | 0,007 | 0,020 | 43.000 | 500 | 0,005 | 0,010 | 43.000 | 470 | 0,005 | 0,010 | 43.000 | 470 | 0,005 | 0,010 |
| 0,2 | 1° | 6 | 0,3° | 45.000 | 480 | 0,007 | 0,020 | 40.000 | 420 | 0,005 | 0,010 | 40.000 | 400 | 0,005 | 0,010 | 40.000 | 400 | 0,005 | 0,010 |
| 0,25 | 0,5° | 4 | 0,3° | 50.000 | 1.200 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,015 |
| 0,25 | 0,5° | 6 | 0,3° | 38.000 | 940 | 0,015 | 0,020 | 38.000 | 500 | 0,010 | 0,010 | 38.000 | 470 | 0,010 | 0,010 | 38.000 | 470 | 0,010 | 0,010 |
| 0,25 | 0,5° | 8 | 0,3° | 30.000 | 760 | 0,007 | 0,020 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 380 | 0,005 | 0,010 | 29.000 | 360 | 0,005 | 0,010 |
| 0,25 | 0,5° | 10 | 0,3° | 30.000 | 500 | 0,005 | 0,020 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 300 | 0,005 | 0,010 | 29.000 | 250 | 0,005 | 0,010 |
| 0,25 | 1° | 4 | 0,3° | 50.000 | 1.200 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,010 |
| 0,25 | 1° | 6 | 0,3° | 50.000 | 1.200 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,010 |
| 0,25 | 1° | 8 | 0,3° | 50.000 | 1.200 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,010 |
| 0,25 | 1° | 10 | 0,3° | 30.000 | 760 | 0,007 | 0,020 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 380 | 0,005 | 0,010 | 29.000 | 360 | 0,005 | 0,010 |
| 0,25 | 1° | 12 | 0,3° | 30.000 | 760 | 0,007 | 0,020 | 30.000 | 400 | 0,005 | 0,010 | 30.000 | 380 | 0,005 | 0,010 | 29.000 | 360 | 0,005 | 0,010 |
| 0,3 | 0,5° | 2 | 0,3° | 50.000 | 1.550 | 0,030 | 0,060 | 50.000 | 1.200 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 |
| 0,3 | 0,5° | 4 | 0,3° | 50.000 | 1.350 | 0,030 | 0,060 | 45.000 | 1.000 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 |
| 0,3 | 0,5° | 6 | 0,3° | 35.000 | 960 | 0,015 | 0,040 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 |
| 0,3 | 0,5° | 8 | 0,3° | 30.000 | 720 | 0,015 | 0,040 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 540 | 0,010 | 0,020 |
| 0,3 | 0,5° | 10 | 0,3° | 30.000 | 500 | 0,015 | 0,040 | 26.000 | 480 | 0,010 | 0,020 | 26.000 | 450 | 0,010 | 0,020 | 25.000 | 380 | 0,010 | 0,020 |
| 0,3 | 0,5° | 12 | 0,3° | 30.000 | 500 | 0,010 | 0,040 | 26.000 | 480 | 0,007 | 0,020 | 26.000 | 450 | 0,007 | 0,020 | 25.000 | 380 | 0,007 | 0,010 |
| 0,3 | 0,5° | 16 | 0,3° | 30.000 | 400 | 0,007 | 0,040 | 26.000 | 380 | 0,005 | 0,020 | 26.000 | 360 | 0,005 | 0,020 | 25.000 | 300 | 0,005 | 0,010 |
| 0,3 | 1° | 4 | 0,3° | 50.000 | 1.350 | 0,030 | 0,060 | 45.000 | 1.000 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 | 45.000 | 950 | 0,020 | 0,030 |
| 0,3 | 1° | 6 | 0,3° | 35.000 | 960 | 0,015 | 0,040 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 |
| 0,3 | 1° | 8 | 0,3° | 35.000 | 960 | 0,015 | 0,040 | 30.000 | 680 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 | 30.000 | 640 | 0,010 | 0,020 |
| 0,3 | 1° | 10 | 0,3° | 30.000 | 720 | 0,015 | 0,040 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 540 | 0,010 | 0,020 |
| 0,3 | 1° | 12 | 0,3° | 30.000 | 720 | 0,015 | 0,040 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 540 | 0,010 | 0,020 |
| 0,3 | 1° | 16 | 0,3° | 30.000 | 500 | 0,015 | 0,040 | 26.000 | 480 | 0,010 | 0,020 | 26.000 | 450 | 0,010 | 0,020 | 25.000 | 380 | 0,010 | 0,020 |
| 0,4 | 0,5° | 4 | 0,3° | 50.000 | 1.750 | 0,060 | 0,160 | 48.000 | 1.600 | 0,040 | 0,080 | 48.000 | 1.500 | 0,040 | 0,060 | 48.000 | 1.500 | 0,040 | 0,040 |
| 0,4 | 0,5° | 6 | 0,3° | 43.000 | 1.600 | 0,045 | 0,100 | 34.000 | 950 | 0,030 | 0,050 | 34.000 | 900 | 0,030 | 0,050 | 34.000 | 900 | 0,020 | 0,025 |
| 0,4 | 0,5° | 8 | 0,3° | 32.000 | 1.250 | 0,045 | 0,100 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 | 30.000 | 760 | 0,020 | 0,025 |
| 0,4 | 0,5° | 12 | 0,3° | 24.000 | 720 | 0,010 | 0,040 | 23.000 | 450 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,025 |
| 0,4 | 1° | 8 | 0,3° | 43.000 | 1.600 | 0,045 | 0,100 | 34.000 | 950 | 0,030 | 0,050 | 34.000 | 900 | 0,030 | 0,050 | 34.000 | 900 | 0,020 | 0,025 |
| 0,4 | 1° | 12 | 0,3° | 32.000 | 1.250 | 0,045 | 0,100 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 | 30.000 | 760 | 0,020 | 0,025 |
| 0,4 | 1° | 16 | 0,3° | 24.000 | 720 | 0,010 | 0,040 | 23.000 | 450 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,010 | 23.000 | 420 | 0,005 | 0,015 |
| 0,5 | 0,5° | 6 | 0,3° | 47.000 | 2.850 | 0,075 | 0,200 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,080 | 36.000 | 2.100 | 0,050 | 0,050 |
| 0,5 | 0,5° | 8 | 0,3° | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,080 | 27.000 | 1.600 | 0,050 | 0,050 |
| 0,5 | 0,5° | 10 | 0,3° | 27.000 | 2.000 | 0,075 | 0,150 | 26.000 | 1.600 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,080 | 26.000 | 1.500 | 0,050 | 0,050 |
| 0,5 | 0,5° | 12 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,050 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 0,5° | 16 | 0,3° | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,020 |
| 0,5 | 0,5° | 18 | 0,3° | 24.000 | 1.000 | 0,010 | 0,040 | 22.000 | 770 | 0,007 | 0,020 | 22.000 | 700 | 0,007 | 0,020 | 21.000 | 680 | 0,007 | 0,020 |
| 0,5 | 0,5° | 20 | 0,3° | 24.000 | 1.000 | 0,010 | 0,030 | 22.000 | 770 | 0,007 | 0,015 | 22.000 | 700 | 0,007 | 0,015 | 21.000 | 680 | 0,007 | 0,015 |
| 0,5 | 0,5° | 25 | 0,3° | 20.000 | 800 | 0,010 | 0,030 | 18.000 | 600 | 0,007 | 0,015 | 18.000 | 480 | 0,007 | 0,015 | 17.000 | 550 | 0,007 | 0,015 |
| 0,5 | 0,5° | 30 | 0,3° | 20.000 | 800 | 0,007 | 0,030 | 18.000 | 600 | 0,005 | 0,015 | 18.000 | 480 | 0,005 | 0,015 | 17.000 | 550 | 0,005 | 0,015 |
| 0,5 | 0,5° | 35 | 0,3° | 15.000 | 550 | 0,005 | 0,030 | 14.000 | 450 | 0,005 | 0,010 | 12.000 | 400 | 0,005 | 0,010 | 11.000 | 350 | 0,005 | 0,010 |
| 0,5 | 1° | 10 | 0,3° | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,050 | 27.000 | 1.600 | 0,050 | 0,050 |
| 0,5 | 1° | 16 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 1° | 20 | 0,3° | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,015 |
| 0,5 | 1° | 25 | 0,3° | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,015 |
| 0,5 | 1° | 30 | 0,3° | 24.000 | 1.000 | 0,010 | 0,040 | 22.000 | 770 | 0,007 | 0,020 | 22.000 | 700 | 0,007 | 0,020 | 21.000 | 680 | 0,007 | 0,015 |
| 0,5 | 1° | 35 | 0,3° | 24.000 | 1.000 | 0,010 | 0,030 | 22.000 | 770 | 0,007 | 0,015 | 22.000 | 700 | 0,007 | 0,015 | 21.000 | 680 | 0,007 | 0,015 |
| 0,5 | 1° | 40 | 0,3° | 22.000 | 1.000 | 0,010 | 0,030 | 20.000 | 770 | 0,007 | 0,015 | 20.000 | 700 | 0,007 | 0,015 | 19.000 | 680 | 0,007 | 0,015 |
| 0,5 | 1° | 50 | 0,3° | 20.000 | 800 | 0,010 | 0,030 | 18.000 | 600 | 0,007 | 0,015 | 18.000 | 480 | 0,007 | 0,015 | 17.000 | 550 | 0,007 | 0,010 |
| 0,5 | 1° | 60 | 0,3° | 18.000 | 800 | 0,007 | 0,030 | 16.000 | 600 | 0,005 | 0,015 | 16.000 | 480 | 0,005 | 0,015 | 15.000 | 550 | 0,005 | 0,015 |
| 0,5 | 1° | 70 | 0,3° | 15.000 | 600 | 0,005 | 0,030 | 14.000 | 480 | 0,005 | 0,015 | 13.000 | 380 | 0,005 | 0,015 | 12.000 | 450 | 0,005 | 0,015 |
| 0,5 | 1,5° | 8 | 0,3° | 47.000 | 2.850 | 0,075 | 0,200 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,080 | 36.000 | 2.100 | 0,050 | 0,050 |
| 0,5 | 1,5° | 10 | 0,3° | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,080 | 27.000 | 1.600 | 0,050 | 0,050 |
| 0,5 | 1,5° | 12 | 0,3° | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,080 | 27.000 | 1.600 | 0,050 | 0,050 |
| 0,5 | 1,5° | 16 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 1,5° | 20 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 1,5° | 25 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 1,5° | 30 | 0,3° | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,020 |
| 0,5 | 1,5° | 35 | 0,3° | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,020 |
| 0,5 | 2° | 45 | 0,3° | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,6 | 0,5° | 12 | 0,3° | 30.000 | 2.000 | 0,090 | 0,210 | 25.000 | 1.700 | 0,060 | 0,120 | 25.000 | 1.600 | 0,060 | 0,100 | 25.000 | 1.600 | 0,060 | 0,060 |
| 0,6 | 0,5° | 25 | 0,3° | 24.000 | 1.000 | 0,020 | 0,040 | 22.000 | 770 | 0,015 | 0,020 | 22.000 | 700 | 0,015 | 0,020 | 21.000 | 680 | 0,015 | 0,030 |
| 0,6 | 1° | 12 | 0,3° | 30.000 | 2.200 | 0,090 | 0,210 | 25.000 | 2.000 | 0,060 | 0,120 | 25.000 | 2.000 | 0,060 | 0,100 | 25.000 | 1.900 | 0,060 | 0,060 |
| 0,6 | 1° | 25 | 0,3° | 30.000 | 2.000 | 0,040 | 0,210 | 25.000 | 1.700 | 0,060 | 0,090 | 25.000 | 1.600 | 0,060 | 0,050 | 25.000 | 1.600 | 0,020 | 0,030 |

# CUTTING CONDITIONS



## WXL-PC-EBD

### High speed milling

| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,6 | 1,5° | 12 | 0,3° | 30.000 | 2.200 | 0,090 | 0,210 | 25.000 | 2.000 | 0,060 | 0,120 | 25.000 | 2.000 | 0,060 | 0,100 | 25.000 | 1.900 | 0,060 | 0,060 |
| 0,6 | 1,5° | 25 | 0,3° | 30.000 | 2.000 | 0,050 | 0,210 | 25.000 | 1.700 | 0,060 | 0,120 | 25.000 | 1.600 | 0.06 | 0.100 | 25.000 | 1.600 | 0.050 | 0.060 |
| 0,75 | 0,5° | 8 | 0,3° | 32.000 | 3.000 | 0,120 | 0,300 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0,120 | 30.000 | 2.700 | 0,075 | 0,100 |
| 0,75 | 0,5° | 10 | 0,3° | 30.000 | 2.650 | 0,120 | 0,300 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0.120 | 24.000 | 2.100 | 0,075 | 0,100 |
| 0,75 | 0,5° | 12 | 0,3° | 30.000 | 2.400 | 0,120 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0.120 | 24.000 | 1.900 | 0,075 | 0,100 |
| 0,75 | 0,5° | 16 | 0,3° | 24.000 | 1.400 | 0,120 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0.090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 0,75 | 0,5° | 20 | 0,3° | 22.000 | 1.400 | 0,100 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0.070 | 17.000 | 1.100 | 0,030 | 0,030 |
| 0,75 | 0,5° | 25 | 0,3° | 22.000 | 1.100 | 0,100 | 0,200 | 18.000 | 1.000 | 0,050 | 0,100 | 18.000 | 900 | 0,050 | 0.070 | 17.000 | 900 | 0,020 | 0,030 |
| 0,75 | 0,5° | 30 | 0,3° | 22.000 | 1.100 | 0,075 | 0,200 | 18.000 | 1.000 | 0,035 | 0,100 | 18.000 | 900 | 0,035 | 0.070 | 17.000 | 900 | 0,010 | 0,030 |
| 0,75 | 0,5° | 35 | 0,3° | 20.000 | 1.000 | 0,050 | 0,200 | 17.000 | 9.000 | 0,030 | 0,100 | 17.000 | 800 | 0,030 | 0.070 | 15.000 | 800 | 0,010 | 0,030 |
| 0,75 | 1° | 10 | 0,3° | 32.000 | 3.000 | 0,120 | 0,300 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0.120 | 30.000 | 2.700 | 0,075 | 0,100 |
| 0,75 | 1° | 12 | 0,3° | 30.000 | 2.650 | 0,120 | 0,300 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0.120 | 24.000 | 2.100 | 0,075 | 0,100 |
| 0,75 | 1° | 16 | 0,3° | 30.000 | 2.400 | 0,120 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0.120 | 24.000 | 1.900 | 0,075 | 0,100 |
| 0,75 | 1° | 20 | 0,3° | 24.000 | 1.400 | 0,120 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0.090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 0,75 | 1° | 25 | 0,3° | 22.000 | 1.400 | 0,100 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0.090 | 17.000 | 1.100 | 0,050 | 0,060 |
| 0,75 | 1° | 30 | 0,3° | 22.000 | 1.400 | 0,070 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0.070 | 17.000 | 1.100 | 0,030 | 0,030 |
| 0,75 | 1° | 35 | 0,3° | 22.000 | 1.100 | 0,070 | 0,200 | 18.000 | 1.000 | 0,050 | 0,100 | 18.000 | 900 | 0,050 | 0.070 | 17.000 | 900 | 0,020 | 0,030 |
| 0,75 | 1,5° | 10 | 0,3° | 32.000 | 3.000 | 0,120 | 0,300 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0.120 | 30.000 | 2.700 | 0,075 | 0,100 |
| 0,75 | 1,5° | 12 | 0,3° | 32.000 | 3.000 | 0,120 | 0,300 | 30.000 | 2.900 | 0,075 | 0,150 | 30.000 | 2.700 | 0,075 | 0.120 | 30.000 | 2.700 | 0,075 | 0,100 |
| 0,75 | 1,5° | 16 | 0,3° | 30.000 | 2.400 | 0,120 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0.120 | 24.000 | 1.900 | 0,075 | 0,100 |
| 0,75 | 1,5° | 20 | 0,3° | 30.000 | 2.400 | 0,120 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0.120 | 24.000 | 1.900 | 0,080 | 0,100 |
| 0,75 | 1,5° | 25 | 0,3° | 24.000 | 1.400 | 0,100 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0.090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 0,75 | 1,5° | 30 | 0,3° | 24.000 | 1.400 | 0,100 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0.090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 0,75 | 1,5° | 35 | 0,3° | 22.000 | 1.400 | 0,050 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0.070 | 17.000 | 1.100 | 0,020 | 0,030 |
| 0,75 | 2° | 38,6 | 0,3° | 24.000 | 1.400 | 0,100 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0,090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 1 | 0.5° | 8 | 0.3° | 27.000 | 3.350 | 0,150 | 0,400 | 25.000 | 2.600 | 0,100 | 0,200 | 25.000 | 2.400 | 0,100 | 0,200 | 23.000 | 2.200 | 0,100 | 0,200 |
| 1 | 0,5° | 10 | 0,3° | 22.000 | 3.050 | 0,150 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 0,5° | 12 | 0,3° | 22.000 | 3.050 | 0,150 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 0,5° | 16 | 0,3° | 15.000 | 2.400 | 0,150 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 0,5° | 20 | 0,3° | 15.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 0,5° | 25 | 0,3° | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0,050 | 0,100 |
| 1 | 0,5° | 30 | 0,3° | 12.000 | 1.000 | 0,100 | 0,200 | 12.000 | 1.000 | 0,050 | 0,100 | 11.000 | 900 | 0,050 | 0,100 | 10.000 | 800 | 0,050 | 0,100 |
| 1 | 0,5° | 35 | 0,3° | 12.000 | 1.000 | 0,075 | 0,200 | 12.000 | 1.000 | 0,030 | 0,100 | 11.000 | 900 | 0,030 | 0,100 | 10.000 | 800 | 0,030 | 0,100 |
| 1 | 0,5° | 40 | 0,3° | 12.000 | 800 | 0,050 | 0,200 | 12.000 | 800 | 0,020 | 0,100 | 11.000 | 800 | 0,020 | 0,100 | 10.000 | 700 | 0,020 | 0,100 |
| 1 | 1° | 16 | 0,3° | 22.000 | 3.050 | 0,150 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 1° | 20 | 0,3° | 15.000 | 2.400 | 0,150 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 1° | 25 | 0,3° | 15.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 1° | 30 | 0,3° | 14.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,070 | 0,100 |
| 1 | 1° | 35 | 0,3° | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0,050 | 0,100 |
| 1 | 1° | 40 | 0,3° | 12.000 | 1.000 | 0,100 | 0,200 | 12.000 | 1.000 | 0,050 | 0,100 | 11.000 | 900 | 0,050 | 0,100 | 10.000 | 800 | 0,050 | 0,100 |
| 1 | 1° | 50 | 0,3° | 12.000 | 1.000 | 0,075 | 0,200 | 12.000 | 1.000 | 0,030 | 0,100 | 11.000 | 900 | 0,030 | 0,100 | 10.000 | 800 | 0,030 | 0,100 |
| 1 | 1° | 60 | 0,3° | 12.000 | 800 | 0,050 | 0,200 | 12.000 | 800 | 0,020 | 0,100 | 11.000 | 800 | 0,020 | 0,100 | 10.000 | 700 | 0,020 | 0,100 |
| 1 | 1° | 70 | 0,3° | 12.000 | 800 | 0,030 | 0,100 | 12.000 | 800 | 0,010 | 0,050 | 11.000 | 800 | 0,010 | 0,050 | 10.000 | 700 | 0,010 | 0,050 |
| 1 | 1,5° | 16 | 0,3° | 22.000 | 3.050 | 0,200 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 1,5° | 20 | 0,3° | 22.000 | 3.050 | 0,200 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 1,5° | 25 | 0,3° | 15.000 | 2.400 | 0,150 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 1,5° | 30 | 0,3° | 15.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 1,5° | 35 | 0,3° | 15.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 1,5° | 41,5 | 0,3° | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0,050 | 0,100 |
| 1 | 2° | 31,5 | 0,3° | 15.000 | 2.400 | 0,150 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 0,5° | 8 | 0,3° | 32.000 | 4.600 | 0,200 | 0,600 | 30.000 | 4.500 | 0,150 | 0,300 | 30.000 | 4.200 | 0,150 | 0,300 | 25.000 | 3.500 | 0,150 | 0,300 |
| 1,5 | 0,5° | 10 | 0,3° | 28.000 | 4.000 | 0,200 | 0,600 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.600 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 |
| 1,5 | 0,5° | 12 | 0,3° | 28.000 | 4.000 | 0,200 | 0,600 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.600 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 |
| 1,5 | 0,5° | 16 | 0,3° | 22.000 | 2.900 | 0,200 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 0,5° | 20 | 0,3° | 20.000 | 2.600 | 0,150 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 0,5° | 25 | 0,3° | 16.000 | 2.200 | 0,150 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 0,5° | 30 | 0,3° | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 0,5° | 35 | 0,3° | 12.000 | 1.000 | 0,075 | 0,100 | 10.000 | 800 | 0,030 | 0,050 | 9.000 | 760 | 0,030 | 0,050 | 7.800 | 590 | 0,030 | 0,050 |
| 1,5 | 0,5° | 40 | 0,3° | 12.000 | 800 | 0,075 | 0,100 | 10.000 | 600 | 0,030 | 0,050 | 9.000 | 600 | 0,030 | 0,050 | 7.800 | 480 | 0,030 | 0,050 |
| 1,5 | 0,5° | 50 | 0,3° | 10.000 | 650 | 0,050 | 0,100 | 8.000 | 500 | 0,020 | 0,050 | 7.500 | 500 | 0,020 | 0,050 | 6.200 | 400 | 0,020 | 0,050 |
| 1,5 | 1° | 20 | 0,3° | 22.000 | 2.900 | 0,200 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 1° | 25 | 0,3° | 20.000 | 2.600 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 1° | 30 | 0,3° | 16.000 | 2.200 | 0,200 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 1° | 35 | 0,3° | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 1° | 40 | 0,3° | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 1° | 50 | 0,3° | 12.000 | 1.000 | 0,075 | 0,100 | 10.000 | 800 | 0,030 | 0,050 | 9.000 | 760 | 0,030 | 0,050 | 7.800 | 590 | 0,030 | 0,050 |
| 1,5 | 1° | 60 | 0,3° | 12.000 | 800 | 0,075 | 0,100 | 10.000 | 600 | 0,030 | 0,050 | 9.000 | 600 | 0,030 | 0,050 | 7.800 | 480 | 0,030 | 0,050 |
| 1,5 | 1° | 70 | 0,3° | 10.000 | 650 | 0,050 | 0,100 | 8.000 | 500 | 0,020 | 0,050 | 7.500 | 500 | 0,020 | 0,050 | 6.200 | 400 | 0,020 | 0,050 |
| 1,5 | 1,5° | 20 | 0,3° | 22.000 | 2.900 | 0,250 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 1,5° | 25 | 0,3° | 20.000 | 2.600 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 1,5° | 30 | 0,3° | 20.000 | 2.600 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 1,5° | 35 | 0,3° | 16.000 | 2.200 | 0,200 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 1,5° | 40 | 0,3° | 16.000 | 2.200 | 0,200 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 1,5° | 50 | 0,3° | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 1,5° | 62,5 | 0,3° | 12.000 | 1.000 | 0,075 | 0,100 | 10.000 | 800 | 0,030 | 0,050 | 9.000 | 760 | 0,030 | 0,050 | 7.800 | 590 | 0,030 | 0,050 |
| 1,5 | 1,5° | 47,5 | 0,3° | 16.000 | 2.200 | 0,250 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 2 | 1° | 20 | 0,5° | 20.000 | 3.450 | 0,400 | 0,600 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.000 | 0,200 | 0,500 | 14.000 | 2.300 | 0,200 | 0,400 |
| 2 | 1° | 30 | 0,5° | 18.000 | 3.000 | 0,400 | 0,500 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.600 | 0,200 | 0,400 | 12.000 | 1.900 | 0,200 | 0,400 |
| 2 | 1° | 40 | 0,5° | 18.000 | 3.000 | 0,250 | 0,600 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 | 12.000 | 1.900 | 0,100 | 0,300 |
| 2 | 1° | 50 | 0,5° | 14.000 | 2.200 | 0,250 | 0,400 | 12.000 | 1.800 | 0,100 | 0,200 | 12.000 | 1.700 | 0,100 | 0,200 | 9.000 | 1.700 | 0,100 | 0,200 |
| 2 | 1° | 60 | 0,5° | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |

# CUTTING CONDITIONS

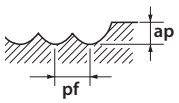
**Milling | Endmills | Cutting conditions**

## WXL-PC-EBD

### High speed milling

| | | | | Cu | | | | ~32 HRC | | | | 33~41 HRC Hardened steel, pre-hardened steel | | | | 42~50 HRC Hardened steel, pre-hardened steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | θ | l2 | Cutting angle | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 2 | 1,5° | 44,2 | 0,5° | 18.000 | 3.000 | 0,250 | 0,600 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 | 12.000 | 1.900 | 0,100 | 0,300 |
| 2 | 2° | 34 | 0,5° | 20.000 | 3.450 | 0,400 | 0,600 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.000 | 0,200 | 0,500 | 14.000 | 2.300 | 0,200 | 0,500 |
| 2,5 | 1° | 30 | 0,5° | 20.000 | 3.400 | 0,400 | 0,750 | 15.000 | 3.200 | 0,200 | 0,300 | 15.000 | 3.000 | 0,200 | 0,300 | 12.000 | 2.400 | 0,200 | 0,300 |
| 2,5 | 1° | 40 | 0,5° | 16.000 | 2.900 | 0,250 | 0,750 | 14.000 | 2.500 | 0,100 | 0,300 | 14.000 | 2.300 | 0,100 | 0,300 | 11.000 | 1.800 | 0,100 | 0,300 |
| 2,5 | 1° | 60 | 0,5° | 12.000 | 1.800 | 0,250 | 0,500 | 10.000 | 1.200 | 0,100 | 0,200 | 10.000 | 1.100 | 0,100 | 0,200 | 8.000 | 880 | 0,100 | 0,200 |
| 2,5 | 1,5° | 26,9 | 0,5° | 18.000 | 3.800 | 0,500 | 1,250 | 16.000 | 3.500 | 0,250 | 0,500 | 16.000 | 3.300 | 0,250 | 0,500 | 12.000 | 2.400 | 0,250 | 0,500 |
| 2,5 | 1,5° | 65,1 | 0,5° | 14.000 | 2.200 | 0,250 | 0,750 | 12.000 | 1.600 | 0,100 | 0,300 | 12.000 | 1.500 | 0,100 | 0,300 | 9.000 | 1.100 | 0,100 | 0,300 |
| 2,5 | 2° | 50,1 | 0,5° | 16.000 | 2.900 | 0,250 | 0,750 | 14.000 | 2.500 | 0,100 | 0,300 | 14.000 | 2.300 | 0,100 | 0,300 | 11.000 | 1.800 | 0,100 | 0,300 |
| 3 | 1° | 30 | 0,5° | 14.000 | 4.000 | 0,600 | 1,250 | 12.000 | 3.200 | 0,300 | 0,500 | 12.000 | 3.000 | 0,300 | 0,500 | 9.000 | 2.250 | 0,300 | 0,500 |
| 3 | 1° | 40 | 0,5° | 10.000 | 3.200 | 0,600 | 1,250 | 10.000 | 2.600 | 0,300 | 0,500 | 10.000 | 2.400 | 0,300 | 0,500 | 8.000 | 1.900 | 0,300 | 0,500 |
| 3 | 1° | 50 | 0,5° | 9.000 | 3.000 | 0,400 | 1,000 | 9.000 | 2.300 | 0,200 | 0,400 | 9.000 | 2.100 | 0,200 | 0,400 | 7.000 | 1.600 | 0,200 | 0,400 |
| 3 | 1° | 60 | 0,5° | 9.000 | 2.800 | 0,400 | 0,750 | 9.000 | 2.000 | 0,200 | 0,300 | 9.000 | 1.900 | 0,200 | 0,300 | 7.000 | 1.400 | 0,200 | 0,300 |
| 3 | 1° | 70 | 0,5° | 7.000 | 2.300 | 0,400 | 0,750 | 7.000 | 1.600 | 0,200 | 0,300 | 7.000 | 1.500 | 0,200 | 0,300 | 5.500 | 1.100 | 0,200 | 0,300 |
| 3 | 1° | 80 | 0,5° | 6.000 | 2.000 | 0,300 | 0,750 | 6.000 | 1.300 | 0,150 | 0,300 | 6.000 | 1.200 | 0,150 | 0,300 | 5.000 | 900 | 0,150 | 0,300 |
| 3 | 1,5° | 49 | 0,5° | 10.000 | 3.200 | 0,600 | 1,250 | 10.000 | 2.600 | 0,300 | 0,500 | 10.000 | 2.400 | 0,300 | 0,500 | 8.000 | 1.900 | 0,300 | 0,500 |
| 3 | 2° | 36 | 0,5° | 14.000 | 4.000 | 0,600 | 1,250 | 12.000 | 3.200 | 0.300 | 0.500 | 12.000 | 3.000 | 0.300 | 0.500 | 9.000 | 2.250 | 0.300 | 0.500 |

Max cutting depth




1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%..
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should beadjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

## AM-CRE

### Radius type

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~65HRC | | Stainless Steel ≤200HB | | Cobalt Chronium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 50~70m/min | | 40~60m/min | | 60~80m/min | | 50~70m/min | | 40~60m/min | | 20~40m/min | |
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 6xR1,5 | 3.200 | 960 | 2.700 | 800 | 3.700 | 1.120 | 3.200 | 960 | 2.700 | 800 | 1.600 | 480 |
| 8xR2 | 2.400 | 720 | 2.000 | 600 | 2.800 | 840 | 2.400 | 720 | 2.000 | 600 | 1.200 | 360 |
| 10xR2 | 1.900 | 920 | 1.600 | 760 | 2.200 | 1.070 | 1.900 | 920 | 1.600 | 760 | 960 | 460 |
| 12xR2 | 1.600 | 1.270 | 1.300 | 1.060 | 1.900 | 1.490 | 1.600 | 1.270 | 1.300 | 1.060 | 800 | 640 |
| 16xR3 | 1.200 | 1.430 | 1.000 | 1.190 | 1.400 | 1.670 | 1.200 | 1.430 | 1.000 | 1.190 | 600 | 720 |
| 20xR3 | 1.000 | 1.530 | 800 | 1.270 | 1.100 | 1.780 | 1.000 | 1.530 | 800 | 1.270 | 480 | 760 |

Depth of cut

| ae | ap |
|---|---|
| Max:0,5mm | Max:0,5mm |

1. This tool is recommended for the roughing of additive manufacturing and mold overlay surfaces.
2. Please use machines and holders that are rigid and highly accurate.
3. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
4. Please reduce the feed rate when the depth of cut is greater than specified.
5. Please adjust the speed, feed and depth of cut accordingly when the overhang length is longer than specified.
6. Please use a suitable fluid with high smoke retardant properties.
7. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
8. Please use water-soluble coolant when machining stainless steel, cobalt-chromium based alloy, titanium alloy, and Ni-based alloy.
9. Tool runout should be kept to a minimum for maximum accuracy.
10. When the cutting load fluctuates in areas such as the corners, please reduce the rotational speed.

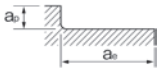
## AM-HFC

### High Feed Radius type

### Frontal Milling

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 90~110m/min | | 70~90m/min | | 50~70m/min | | 100~120m/min | | 90~110m/min | | 70~90m/min | | 30~50m/min | |
| DC x rt | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 4 × R0,5 | 7.960 | 5.730 | 6.370 | 4.590 | 4.780 | 1.720 | 8.760 | 6.310 | 7.960 | 5.730 | 6.370 | 4.590 | 3.180 | 760 |
| 5 × R0,6 | 6.370 | 5.730 | 5.100 | 4.590 | 3.820 | 1.720 | 7.010 | 6.310 | 6.370 | 5.730 | 5.100 | 4.590 | 2.550 | 770 |
| 6 × R0,8 | 5.310 | 5.730 | 4.250 | 4.590 | 3.180 | 1.720 | 5.840 | 6.310 | 5.310 | 5.730 | 4.250 | 4.590 | 2.120 | 760 |
| 8 × R1 | 3.980 | 5.730 | 3.180 | 4.580 | 2.390 | 1.720 | 4.380 | 6.310 | 3.980 | 5.730 | 3.180 | 4.580 | 1.590 | 760 |
| 10 × R1,2 | 3.180 | 5.720 | 2.550 | 4.590 | 1.910 | 1.720 | 3.500 | 6.300 | 3.180 | 5.720 | 2.550 | 4.590 | 1.270 | 760 |
| 12 × R1,5 | 2.650 | 5.720 | 2.120 | 4.580 | 1.590 | 1.720 | 2.920 | 6.310 | 2.650 | 5.720 | 2.120 | 4.580 | 1.060 | 760 |

Depth of cut




| ae | ap |
|---|---|
| Max: 0,5D | Max: 0,04D |

If the pick amount is 0.5 x D or more, cusp may occur on the machined surface.

During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.

## AM-HFC

### High Feed Radius type

### Side Milling

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80~100m/min | | 50~70m/min | | 30~50m/min | | 90~110m/min | | 80~100m/min | | 50~70m/min | | 20~40m/min | |
| DC x rt | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 4 × R0,5 | 7.170 | 1.200 | 4.780 | 570 | 3.180 | 230 | 7.960 | 1.340 | 7.170 | 1.200 | 4.780 | 570 | 2.390 | 230 |
| 5 × R0,6 | 5.730 | 1.200 | 3.820 | 570 | 2.550 | 230 | 6.370 | 1.340 | 5.730 | 1.200 | 3.820 | 570 | 1.910 | 230 |
| 6 × R0,8 | 4.780 | 1.200 | 3.180 | 570 | 2.120 | 230 | 5.310 | 1.340 | 4.780 | 1.200 | 3.180 | 570 | 1.590 | 230 |
| 8 × R1 | 3.580 | 1.720 | 2.390 | 800 | 1.590 | 380 | 3.980 | 1.910 | 3.580 | 1.720 | 2.390 | 800 | 1.190 | 230 |
| 10 × R1,2 | 2.870 | 1.720 | 1.910 | 800 | 1.270 | 380 | 3.180 | 1.910 | 2.870 | 1.720 | 1.910 | 800 | 960 | 230 |
| 12 × R1,5 | 2.390 | 1.720 | 1.590 | 800 | 1.060 | 380 | 2.650 | 1.910 | 2.390 | 1.720 | 1.590 | 800 | 800 | 230 |

Depth of cut

| ae | ap |
|---|---|
| Max: 0,05D | Max: 1,5D |

| ae | ap |
|---|---|
| Max: 0,02D | Max: 1,5D |

| ae | ap |
|---|---|
| Max: 0,02D | Max: 1D |

| ae | ap |
|---|---|
| Max: 0,05D | Max: 1,5D |

| ae | ap |
|---|---|
| Max: 0,02D | Max: 1,5D |

1. This tool is recommended for the roughing of additive manufacturing and mold overlay surfaces.
2.Please use machines and holders that are rigid and highly accurate.
3. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
4. Please reduce the feed rate when the depth of cut is greater than specified.
5. The above table is a guide when the amount of protrusion of the tool is 4 x D or less. If the amount of protrusion is large, chattering is likely to occur, so adjust the rotation speed, feed rate and depth of cut with reference to the coefficients.
6. Please use a suitable fluid with high smoke retardant properties.
7. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
8. Please use water-soluble coolant when machining stainless steel, cobalt-chromium alloy, titanium alloy, and Ni-based alloy.
9.Tool runout should be kept to a minimum for maximum accuracy.
10. When the cutting load fluctuates in areas such as the corners, please reduce the rotational speed.

### Tool extension coefficients

| Overhang Length | Cutting Speed | ap | fz |
|---|---|---|---|
| L/D ≤ 4 | 100% | 100% | 100% |
| 4 < L/D ≤ 5 | 90% | 75% | 80% |
| 5 < L/D ≤ 6 | 80% | 50% | 60% |

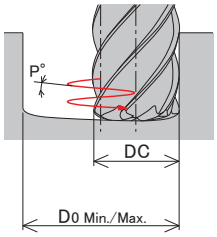
# CUTTING CONDITIONS



## AM-HFC

**High Feed Radius type** Maximum Ramping Angle (E°)

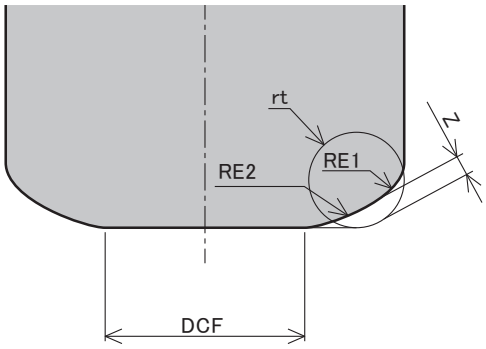
| DC x rt | Ramping Angle E° | Helical Milling (mm) D0 Min. | Helical Milling (mm) D0 Max. | Helical Angle P° |
|---|---|---|---|---|
| 4×R0,5 | 3° | 6 | 7 | 1,5° |
| 5×R0,6 | 3° | 7,5 | 9 | 1,5° |
| 6×R0,8 | 3° | 9 | 11 | 1,5° |
| 8×R1 | 3° | 12 | 15 | 1,5° |
| 10×R1,2 | 3° | 15 | 19 | 1,5° |
| 12×R1,5 | 3° | 18 | 23 | 1,5° |




### Edge shape definitions for the purpose of creating a program

| DC | rt | Remainder Z |
|---|---|---|
| 4 | R0,5 | 0,11 |
| 5 | R0,6 | 0,15 |
| 6 | R0,8 | 0,17 |
| 8 | R1 | 0,22 |
| 10 | R1,2 | 0,31 |
| 12 | R1,5 | 0,36 |

During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.




## AM-EBT

**Ball type**

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~65HRC | | Stainless Steel ≤200HB | | Cobalt Chronium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 50~70m/min | | 40~60m/min | | 60~80m/min | | 50~70m/min | | 40~60m/min | | 20~40m/min | |
| R | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 3 | 3.200 | 960 | 2.700 | 800 | 3.700 | 1.120 | 3.200 | 960 | 2.700 | 800 | 1.600 | 480 |
| 4 | 2.400 | 860 | 2.000 | 720 | 2.800 | 1.000 | 2.400 | 860 | 2.000 | 720 | 1.200 | 430 |
| 5 | 1.900 | 860 | 1.600 | 720 | 2.200 | 1.000 | 1.900 | 860 | 1.600 | 720 | 960 | 430 |
| 6 | 1.600 | 960 | 1.300 | 800 | 1.900 | 1.120 | 1.600 | 960 | 1.300 | 800 | 800 | 480 |
| 8 | 1.200 | 790 | 1.000 | 660 | 1.400 | 920 | 1.200 | 790 | 1.000 | 660 | 600 | 390 |
| 10 | 1.000 | 720 | 800 | 600 | 1.100 | 840 | 1.000 | 720 | 800 | 600 | 480 | 360 |
| Depth of cut | | | | | | | | | | | | |

| Dc | ap | pf |
|---|---|---|
| R≤6 | Max:0,15D | 0,05D |
| 8≤R | Max:3mm | |

1. This tool is recommended for the roughing of additive manufacturing and mold overlay surfaces.
2. Please use machines and holders that are rigid and highly accurate.
3. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
4. Please adjust the speed, feed and depth of cut accordingly when the overhang length is longer than specified.
5. Please use a suitable fluid with high smoke retardant properties.
6. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
7. Please use water-soluble coolant when machining stainless steel, cobalt-chromium based alloy, titanium alloy, and Ni-based alloy.
8. Tool runout should be kept to a minimum for maximum accuracy.
9. When the cutting load fluctuates in areas such as the corners, please reduce the rotational speed.

## PHX-LN-CRE

**Rib groove milling & Contour line finish milling**

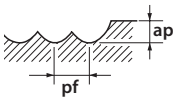
| | | | Slotting<br>CENA1 · STAVAX · HPM38 · SKD61<br>42~55HRC | | | | Contour offset<br>CENA1 · STAVAX · HPM38 · SKD61<br>42~55HRC | | | | Contour line finish milling<br>CENA1 · STAVAX · HPM38 · SKD61<br>42~55HRC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | R | l2 | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | ae (mm) | S ($min^{-1}$) | F (mm/min) | ae (mm) |
| 0,8 | 0,1 | 2 | 18,000 | 720 | 0,020 | 0,200 | 18,000 | 930 | 0,020 | 0,200 | 18,000 | 1,150 | 0,015 |
| 0,8 | 0,1 | 4 | 18,000 | 720 | 0,020 | 0,200 | 18,000 | 930 | 0,020 | 0,200 | 18,000 | 1,150 | 0,015 |
| 0,8 | 0,1 | 6 | 18,000 | 720 | 0,020 | 0,200 | 18,000 | 930 | 0,020 | 0,200 | 18,000 | 1,150 | 0,015 |
| 0,8 | 0,1 | 8 | 15,000 | 540 | 0,013 | 0,200 | 15,000 | 630 | 0,013 | 0,200 | 16,000 | 700 | 0,013 |
| 1 | 0,1 | 4 | 18,000 | 830 | 0,030 | 0,230 | 18,000 | 880 | 0,030 | 0,230 | 18,000 | 1,440 | 0,015 |
| 1 | 0,1 | 6 | 18,000 | 830 | 0,024 | 0,230 | 18,000 | 880 | 0,024 | 0,230 | 18,000 | 1,440 | 0,015 |
| 1 | 0,1 | 8 | 15,000 | 750 | 0,013 | 0,230 | 15,000 | 800 | 0,013 | 0,230 | 15,000 | 1,200 | 0,015 |
| 1 | 0,1 | 10 | 12,000 | 300 | 0,007 | 0,200 | 12,000 | 400 | 0,007 | 0,200 | 12,000 | 960 | 0,015 |
| 1 | 0,1 | 12 | 10,500 | 220 | 0,006 | 0,180 | 10,500 | 288 | 0,006 | 0,180 | 10,500 | 840 | 0,015 |
| 1 | 0,2 | 4 | 18,000 | 830 | 0,030 | 0,230 | 18,000 | 880 | 0,030 | 0,230 | 18,000 | 1,440 | 0,018 |
| 1 | 0,2 | 6 | 18,000 | 830 | 0,024 | 0,230 | 18,000 | 880 | 0,024 | 0,230 | 18,000 | 1,440 | 0,018 |
| 1 | 0,2 | 8 | 15,000 | 750 | 0,013 | 0,230 | 15,000 | 800 | 0,013 | 0,230 | 15,000 | 1,200 | 0,018 |
| 1 | 0,2 | 10 | 12,000 | 300 | 0,007 | 0,200 | 12,000 | 400 | 0,007 | 0,200 | 12,000 | 960 | 0,018 |
| 1 | 0,2 | 12 | 10,500 | 220 | 0,006 | 0,180 | 10,500 | 290 | 0,006 | 0,180 | 10,500 | 840 | 0,018 |
| 1 | 0,3 | 4 | 18,000 | 830 | 0,030 | 0,230 | 18,000 | 1,000 | 0,030 | 0,230 | 18,000 | 1,440 | 0,022 |
| 1 | 0,3 | 6 | 18,000 | 830 | 0,024 | 0,230 | 18,000 | 890 | 0,024 | 0,230 | 18,000 | 1,440 | 0,022 |
| 1,5 | 0,1 | 4 | 16,000 | 1,230 | 0,030 | 0,340 | 16,000 | 1,300 | 0,030 | 0,340 | 18,000 | 1,620 | 0,015 |
| 1,5 | 0,1 | 8 | 16,000 | 1,230 | 0,026 | 0,340 | 16,000 | 1,300 | 0,026 | 0,340 | 18,000 | 1,620 | 0,015 |
| 1,5 | 0,1 | 12 | 10,000 | 480 | 0,013 | 0,300 | 10,000 | 750 | 0,013 | 0,300 | 10,000 | 900 | 0,015 |
| 1,5 | 0,2 | 4 | 16,000 | 1,230 | 0,030 | 0,340 | 16,000 | 1,300 | 0,030 | 0,340 | 18,000 | 1,620 | 0,018 |
| 1,5 | 0,2 | 6 | 16,000 | 1,230 | 0,029 | 0,340 | 16,000 | 1,300 | 0,029 | 0,340 | 18,000 | 1,620 | 0,018 |
| 1,5 | 0,2 | 8 | 16,000 | 1,230 | 0,026 | 0,340 | 16,000 | 1,300 | 0,026 | 0,340 | 18,000 | 1,620 | 0,018 |
| 2 | 0,1 | 8 | 12,000 | 1,300 | 0,030 | 0,460 | 12,000 | 1,760 | 0,030 | 0,460 | 18,000 | 1,620 | 0,015 |
| 2 | 0,1 | 10 | 12,000 | 1,200 | 0,030 | 0,460 | 12,000 | 1,620 | 0,030 | 0,460 | 15,000 | 1,350 | 0,015 |
| 2 | 0,1 | 12 | 12,000 | 1,150 | 0,024 | 0,460 | 12,000 | 1,320 | 0,024 | 0,460 | 13,000 | 1,170 | 0,015 |
| 2 | 0,1 | 16 | 7,600 | 780 | 0,012 | 0,460 | 7,600 | 750 | 0,012 | 0,460 | 7,000 | 630 | 0,015 |
| 2 | 0,3 | 8 | 12,000 | 1,300 | 0,050 | 0,460 | 12,000 | 1,620 | 0,050 | 0,460 | 18,000 | 1,620 | 0,022 |
| 2 | 0,3 | 12 | 12,000 | 1,150 | 0,040 | 0,460 | 12,000 | 1,320 | 0,040 | 0,460 | 13,000 | 1,170 | 0,022 |
| 2 | 0,5 | 6 | 12,000 | 1,300 | 0,080 | 0,450 | 12,000 | 1,760 | 0,080 | 0,450 | 18,000 | 1,620 | 0,025 |
| 2 | 0,5 | 8 | 12,000 | 1,300 | 0,075 | 0,450 | 12,000 | 1,760 | 0,075 | 0,450 | 18,000 | 1,620 | 0,025 |
| 2 | 0,5 | 10 | 12,000 | 1,200 | 0,070 | 0,450 | 12,000 | 1,620 | 0,070 | 0,450 | 15,000 | 1,350 | 0,025 |
| 2 | 0,5 | 12 | 12,000 | 1,150 | 0,060 | 0,450 | 12,000 | 1,320 | 0,060 | 0,450 | 13,000 | 1,170 | 0,025 |
| 3 | 0,3 | 12 | 8,000 | 1,200 | 0,046 | 0,700 | 8,000 | 1,400 | 0,046 | 0,700 | 13,000 | 1,170 | 0,022 |

## PHX-LN-DBT

### Vibration control

| | | | High feed roughing ~40HRC<br>SKT4 • SKD61 • NAK80 • HPM1 • DH**<br>SCM • S40C~S60C • CoCrMo<br>42~55HRC | | | | Semi-roughing 40~60HRC<br>DH** • DAC** • ZHD** • SKD61 • SKD11 • Ti-6Al-4V(H) • CoCr • SKT4 • NAK80 • HPM** • SCM**<br>42~55HRC | | | | Slotting ~60HRC<br>DH** • DAC** • ZHD** • SKD61 • SKD11 • Ti-6Al-4V(H) • CoCr • SKT4 • NAK80 • HPM** • SCM** | | | | Finishing ~60HRC<br>DH** • DAC** • ZHD** • SKD61 • SKD11 • Ti-6Al-4V(H) • CoCr • SKT4 • NAK80 • HPM** • SCM** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | l1 | Angle | S (min-1) | F (mm/min) | ap (mm) | Pf (mm) | S (min-1) | F (mm/min) | ap (mm) | Pf (mm) | S (min-1) | F (mm/min) | ap (min-1) | Last pitch*1 | S (min-1) | F (mm/min) | ap (mm) | Pf (mm) | Clearance (mm) |
| 0,3 | 1 | 0,3° | 18.000 | 1.200 | 0,060 | 0,140 | 18.000 | 1.000 | 0,050 | 0,100 | 18.000 | 300 | 0,050 | 0,050 | 18.000 | 700 | 0,018 | 0,018 | 0,03 |
| 0,3 | 2 | 0,3° | 18.000 | 1.000 | 0,050 | 0,120 | 18.000 | 850 | 0,040 | 0,100 | 18.000 | 255 | 0,040 | 0,050 | 18.000 | 700 | 0,018 | 0,018 | 0,03 |
| 0,3 | 3 | 0,3° | 18.000 | 850 | 0,040 | 0,120 | 18.000 | 700 | 0,030 | 0,080 | 18.000 | 210 | 0,030 | 0,040 | 18.000 | 700 | 0,018 | 0,018 | 0,025 |
| 0,3 | 4 | 0,3° | 18.000 | 700 | 0,030 | 0,100 | 18.000 | 600 | 0,025 | 0,080 | 18.000 | 180 | 0,025 | 0,040 | 18.000 | 700 | 0,018 | 0,018 | 0,02 |
| 0,3 | 6 | 0,3° | 18.000 | 500 | 0,020 | 0,090 | 16.000 | 400 | 0,020 | 0,060 | 16.000 | 120 | 0,020 | 0,030 | 16.000 | 620 | 0,018 | 0,018 | 0,01 |
| 0,5 | 4 | 0,3° | 18.000 | 1.200 | 0,080 | 0,200 | 18.000 | 1.100 | 0,070 | 0,160 | 18.000 | 330 | 0,070 | 0,070 | 18.000 | 900 | 0,030 | 0,030 | 0,05 |
| 0,5 | 6 | 0,3° | 18.000 | 1.000 | 0,050 | 0,160 | 18.000 | 900 | 0,050 | 0,160 | 18.000 | 270 | 0,050 | 0,070 | 18.000 | 900 | 0,030 | 0,030 | 0,05 |
| 0,5 | 8 | 0,3° | 16.000 | 800 | 0,040 | 0,160 | 16.000 | 700 | 0,040 | 0,160 | 16.000 | 210 | 0,040 | 0,050 | 16.000 | 720 | 0,030 | 0,030 | 0,03 |
| 0,5 | 10 | 0,3° | 12.000 | 650 | 0,040 | 0,160 | 10.000 | 550 | 0,030 | 0,150 | 10.000 | 160 | 0,030 | 0,050 | 12.000 | 540 | 0,030 | 0,030 | 0,03 |
| 0,5 | 12 | 0,3° | 8.000 | 420 | 0,030 | 0,150 | 8.000 | 420 | 0,030 | 0,150 | - | - | - | - | 8.000 | 360 | 0,030 | 0,030 | 0,02 |
| 0,5 | 14 | 0,3° | 7.000 | 350 | 0,020 | 0,130 | 7.000 | 350 | 0,020 | 0,130 | - | - | - | - | 7.000 | 320 | 0,030 | 0,030 | 0,02 |
| 0,5 | 16 | 0,3° | 6.000 | 260 | 0,010 | 0,100 | 6.000 | 260 | 0,010 | 0,100 | - | - | - | - | 6.000 | 270 | 0,020 | 0,020 | 0,01 |
| 0,75 | 6 | 0,3° | 18.000 | 1.500 | 0,100 | 0,300 | 16.000 | 1.300 | 0,100 | 0,230 | 16.000 | 390 | 0,100 | 0,100 | 18.000 | 1.100 | 0,040 | 0,040 | 0,05 |
| 0,75 | 8 | 0,3° | 16.000 | 1.300 | 0,080 | 0,300 | 16.000 | 1.150 | 0,080 | 0,230 | 16.000 | 340 | 0,080 | 0,100 | 16.000 | 960 | 0,040 | 0,040 | 0,05 |
| 0,75 | 10 | 0,3° | 15.000 | 1.100 | 0,060 | 0,250 | 15.000 | 950 | 0,060 | 0,230 | 15.000 | 280 | 0,060 | 0,100 | 15.000 | 900 | 0,040 | 0,040 | 0,03 |
| 0,75 | 12 | 0,3° | 10.000 | 700 | 0,040 | 0,200 | 10.000 | 600 | 0,030 | 0,200 | 10.000 | 180 | 0,030 | 0,100 | 10.000 | 600 | 0,040 | 0,040 | 0,02 |
| 0,75 | 16 | 0,3° | 7.500 | 400 | 0,025 | 0,150 | 7.500 | 400 | 0,020 | 0,150 | 7.500 | 120 | 0,020 | 0,070 | 10.000 | 600 | 0,040 | 0,040 | 0,01 |
| 1 | 6 | 0,3° | 18.000 | 1.600 | 0,200 | 0,600 | 15.000 | 1.400 | 0,200 | 0,300 | 15.000 | 420 | 0,200 | 0,100 | 15.000 | 1.800 | 0,060 | 0,050 | 0,1 |
| 1 | 8 | 0,3° | 14.000 | 1.400 | 0,180 | 0,500 | 14.000 | 1.200 | 0,150 | 0,300 | 14.000 | 360 | 0,150 | 0,100 | 12.000 | 1.500 | 0,060 | 0,050 | 0,07 |
| 1 | 10 | 0,3° | 12.000 | 1.250 | 0,160 | 0,400 | 12.000 | 1.100 | 0,120 | 0,300 | 12.000 | 330 | 0,120 | 0,100 | 12.000 | 1.500 | 0,060 | 0,050 | 0,07 |
| 1 | 12 | 0,3° | 10.000 | 1.050 | 0,140 | 0,400 | 10.000 | 900 | 0,100 | 0,300 | 10.000 | 300 | 0,100 | 0,100 | 10.000 | 1.200 | 0,060 | 0,050 | 0,07 |
| 1 | 14 | 0,3° | 8.000 | 850 | 0,120 | 0,350 | 8.000 | 700 | 0,080 | 0,300 | 8.000 | 240 | 0,080 | 0,100 | 8.000 | 1.000 | 0,060 | 0,050 | 0,05 |
| 1 | 16 | 0,3° | 7.500 | 780 | 0,120 | 0,400 | 7.500 | 650 | 0,070 | 0,250 | 7.500 | 260 | 0,070 | 0,070 | 7.500 | 950 | 0,060 | 0,050 | 0,03 |
| 1 | 18 | 0,3° | 6.800 | 700 | 0,100 | 0,400 | 6.800 | 630 | 0,060 | 0,200 | 6.800 | 250 | 0,060 | 0,070 | 6.800 | 700 | 0,060 | 0,050 | 0,03 |
| 1 | 20 | 0,3° | 6.200 | 650 | 0,100 | 0,400 | 6.200 | 600 | 0,050 | 0,200 | 6.200 | 240 | 0,050 | 0,050 | 6.200 | 600 | 0,060 | 0,050 | 0,02 |
| 1 | 22 | 0,3° | 6.000 | 600 | 0,080 | 0,300 | 6.000 | 450 | 0,050 | 0,150 | 6.000 | 180 | 0,050 | 0,050 | 6.000 | 550 | 0,060 | 0,050 | 0,02 |
| 1,5 | 12 | 0,3° | 12.000 | 1.700 | 0,300 | 0,700 | 8.000 | 1.200 | 0,250 | 0,500 | 8.000 | 480 | 0,250 | 0,150 | 11.000 | 2.050 | 0,090 | 0,080 | 0,1 |
| 1,5 | 16 | 0,3° | 10.000 | 1.550 | 0,250 | 0,700 | 8.000 | 1.200 | 0,200 | 0,500 | 8.000 | 480 | 0,200 | 0,150 | 10.000 | 1.900 | 0,090 | 0,080 | 0,07 |
| 1,5 | 20 | 0,3° | 7.500 | 1.150 | 0,200 | 0,600 | 7.200 | 1.100 | 0,200 | 0,500 | 7.200 | 440 | 0,200 | 0,150 | 7.500 | 1.400 | 0,090 | 0,080 | 0,07 |
| 1,5 | 25 | 0,3° | 4.800 | 750 | 0,180 | 0,600 | 4.600 | 700 | 0,180 | 0,500 | 4.600 | 280 | 0,180 | 0,150 | 4.800 | 900 | 0,090 | 0,080 | 0,05 |
| 2 | 16 | 0,5° | 9.300 | 1.900 | 0,270 | 1,000 | 6.000 | 1.200 | 0,270 | 0,800 | 6.000 | 480 | 0,270 | 0,200 | 9.000 | 2.250 | 0,120 | 0,100 | 0,1 |
| 2 | 20 | 0,5° | 7.600 | 1.550 | 0,250 | 1,000 | 6.000 | 1.150 | 0,250 | 0,800 | 6.000 | 450 | 0,250 | 0,200 | 8.200 | 2.050 | 0,120 | 0,100 | 0,1 |
| 2 | 25 | 0,5° | 6.100 | 1.250 | 0,230 | 0,800 | 5.500 | 1.100 | 0,230 | 0,600 | 5.500 | 420 | 0,230 | 0,200 | 5.500 | 1.350 | 0,120 | 0,100 | 0,07 |
| 3 | 20 | 0,5° | 8.000 | 3.000 | 0,430 | 1,500 | 4.000 | 1.200 | 0,300 | 1,000 | 4.000 | 480 | 0,300 | 0,200 | 8.000 | 1.800 | 0,180 | 0,160 | 0,1 |
| 3 | 30 | 0,5° | 5.100 | 1.500 | 0,340 | 1,200 | 4.000 | 1.150 | 0,300 | 1,000 | 4.000 | 480 | 0,300 | 0,200 | 5.100 | 1.150 | 0,180 | 0,160 | 0,07 |

Max cutting depth



## VU-TBR

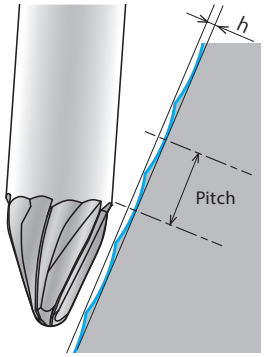
### Using peripheral edge R (RE2)

| | Carbon Steel • Alloy Steel S55C • SCM • SKT | | | | Hardened Steel • Prehardened Steel SKT • SKD • NAK55 • HPM1 | | | | Hardened Steel • Prehardened Steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | ~30HRC | | | | 30~45HRC | | | | 45~55HRC | | | |
| Ø | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) |
| R0,5 × R150 × 20° | 10.700 | 3.400 | Based on Cusp height (see chart below) | 0,3 | 8.800 | 2.500 | Based on Cusp height (see chart below) | 0,3 | 6.800 | 1.600 | Based on Cusp height (see chart below) | 0,3 |
| R1 × R150 × 20° | 7.300 | 2.300 | | 0,3 | 6.000 | 1.700 | | 0,3 | 4.700 | 1.100 | | 0,3 |
| R1,5 × R300 × 20° | 5.600 | 1.800 | | 0,3 | 4.600 | 1.300 | | 0,3 | 3.600 | 900 | | 0,3 |
| R2 × R300 × 20° | 4.500 | 2.200 | | 0,3 | 3.700 | 1.600 | | 0,3 | 2.900 | 1.000 | | 0,3 |
| R2,5 × R500 × 20° | 3.400 | 1.600 | | 0,3 | 2.800 | 1.200 | | 0,3 | 2.200 | 800 | | 0,3 |
| R3 × R500 × 20° | 3.300 | 1.600 | | 0,3 | 2.700 | 1.100 | | 0,3 | 2.100 | 800 | | 0,3 |

1. Use a rigid and precise machine and holder.
2. Use a coolant with low air-blow or fuming property according to the work material. MQL (oil mist coolant) is recommended for cutting hardened steels.
3. "Using tip R (RE1)" is the guide to use the tip R. Please adjust the rotation speed, feed rate and cutting pitch based on the cutting shape, machine rigidity, workpiece and holding conditions.
4. When chattering, vibration or abnormal cutting noise occurs, please adjust the rotation speed, feed rate and cutting pitch.
5. In order to change the rotation speed, both the rotation speed and the feed rate should be changed at the same ratio.

### Theoretical Cusp Height

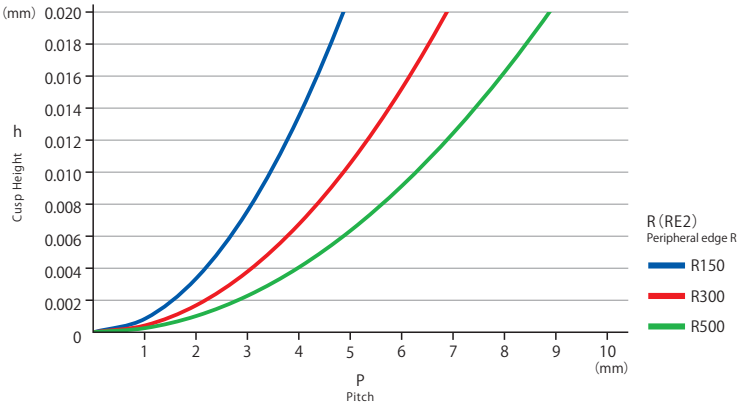
(VU-TBR) Taper Barrel Type




$$h = 0.5 \times \left(2 \times RE2 - \sqrt{(2 \times RE2)^2 - P^2}\right)$$

h: Cusp height P: Pitch RE2: peripheral edge R

### Cusp Height and Pitch



## VU-TBR

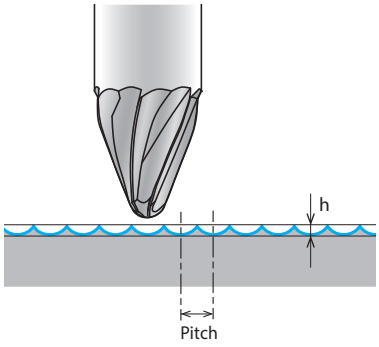
### Using Tip R (RE1)

| | Carbon Steel • Alloy Steel S55C • SCM • SKT | | | | Hardened Steel • Prehardened Steel SKT • SKD • NAK55 • HPM1 | | | | Hardened Steel • Prehardened Steel | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | ~30HRC | | | | 30~45HRC | | | | 45~55HRC | | | |
| Ø | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) |
| R0,5 × R150 × 20° | 19.500 | 6.200 | Based on Cusp height (see chart below) | ~0,1 | 15.600 | 4.400 | Based on Cusp height (see chart below) | ~0,1 | 13.600 | 3.300 | Based on Cusp height (see chart below) | ~0,1 |
| R1 × R150 × 20° | 13.000 | 4.300 | | ~0,2 | 10.700 | 3.000 | | ~0,2 | 9.300 | 2.200 | | ~0,2 |
| R1,5 × R300 × 20° | 10.300 | 3.300 | | ~0,25 | 8.200 | 2.300 | | ~0,25 | 7.200 | 1.700 | | ~0,25 |
| R2 × R300 × 20° | 8.300 | 4.000 | | ~0,3 | 6.600 | 2.800 | | ~0,3 | 5.800 | 2.100 | | ~0,3 |
| R2,5 × R500 × 20° | 6.300 | 3.000 | | ~0,3 | 5.000 | 2.100 | | ~0,3 | 4.400 | 1.600 | | ~0,3 |
| R3 × R500 × 20° | 6.000 | 2.900 | | ~0,3 | 4.800 | 2.000 | | ~0,3 | 4.200 | 1.500 | | ~0,3 |

1. Use a rigid and precise machine and holder.
2. Use a coolant with low air-blow or fuming property according to the work material. MQL (oil mist coolant) is recommended for cutting hardened steels.
3. "Using tip R (RE1)" is the guide to use the tip R. Please adjust the rotation speed, feed rate and cutting pitch based on the cutting shape, machine rigidity, workpiece and holding conditions.
4. When chattering, vibration or abnormal cutting noise occurs, please adjust the rotation speed, feed rate and cutting pitch.
5. In order to change the rotation speed, both the rotation speed and the feed rate should be changed at the same ratio.

### Theoretical Cusp Height

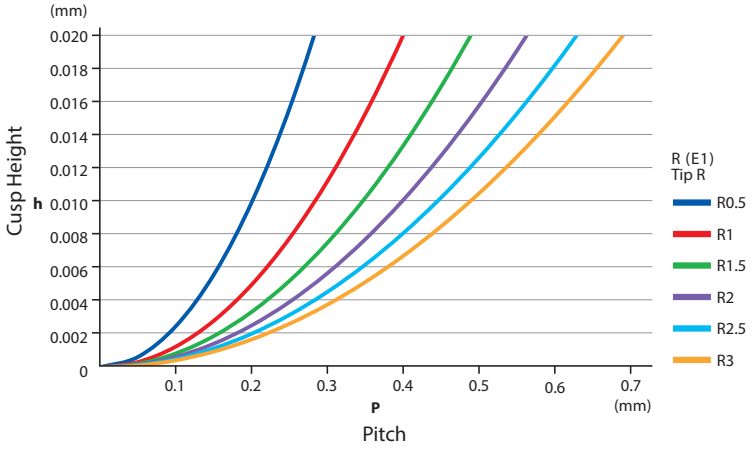
(VU-TBR) Taper Barrel Type




$$h = 0.5 \times \left(2 \times RE1 - \sqrt{(2 \times RE1)^2 - P^2}\right)$$

h: Cusp height
P: Pitch
RE1: peripheral edge R

### Cusp Height and Pitch



## VU-EGG-(H)

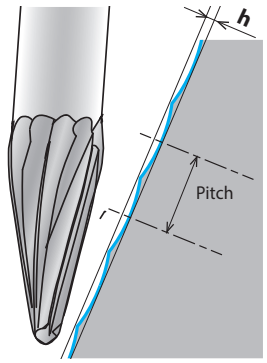
### Using peripheral edge R (RE2)

| | Carbon Steel • Alloy Steel S55C • SCM • SKT | | | | Hardened Steel • Prehardened Steel SKT • SKD • NAK55 • HPM1 | | | | Hardened Steel • Prehardened Steel | | | | Hardened Steel • Prehardened Steel Only VU-EGG-H only, not recommendable for VU-EGG | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | ~30HRC | | | | 30~45HRC | | | | 45~55HRC | | | | 55~62HRC | | | |
| Ø | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) |
| R1,5XR50 | 7.300 | 1.400 | Based on Cusp height (see chart below) | 0,3 | 6.000 | 1.100 | Based on Cusp height (see chart below) | 0,3 | 4.700 | 700 | Based on Cusp height (see chart below) | 0,3 | 4.000 | 500 | Based on Cusp height (see chart below) | 0,3 |

1. Use a rigid and precise machine and holder.
2. Use a coolant with low air-blow or fuming property according to the work material. MQL (oil mist coolant) is recommended for cutting hardened steels.
3. "Using tip R (RE1)" is the guide to use the tip R. Please adjust the rotation speed, feed rate and cutting pitch based on the cutting shape, machine rigidity, workpiece and holding conditions.
4. When chattering, vibration or abnormal cutting noise occurs, please adjust the rotation speed, feed rate and cutting pitch.
5. In order to change the rotation speed, both the rotation speed and the feed rate should be changed at the same ratio.

### Theoretical Cusp Height

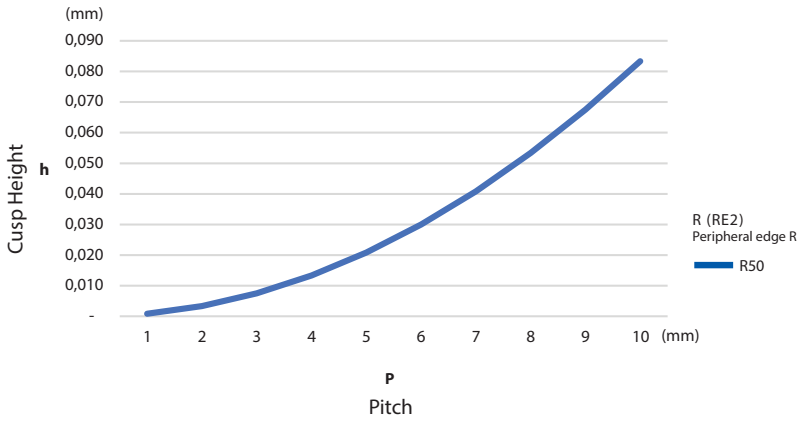
(VU-EGG) Oval shape end-mill




$$h = 0.5 \times \left(2 \times RE2 - \sqrt{(2 \times RE2)^2 - P^2}\right)$$

h: Cusp height
P: Peripheral edge R
RE2: peripheral edge R

### Cusp Height and Pitch



# CUTTING CONDITIONS

# VU-EGG-(H)

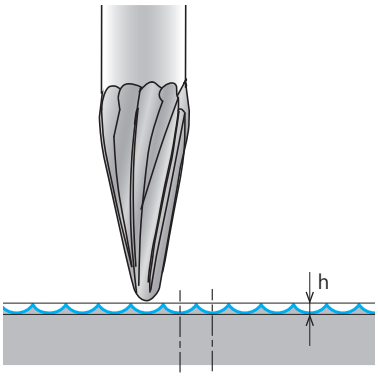
## Using Tip R (RE1)

| | Carbon Steel • Alloy Steel S55C • SCM • SKT | | | | Hardened Steel • Prehardened Steel SKT • SKD • NAK55 • HPM1 | | | | Hardened Steel • Prehardened Steel | | | | Hardened Steel • Prehardened Steel Only VU-EGG-H only, not recommendable for VU-EGG | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | ~30HRC | | | | 30~45HRC | | | | 45~55HRC | | | | 55~62HRC | | | |
| Ø | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) | S ($min^{-1}$) | F (mm/min) | Pitch | Depth of Cut (mm) |
| R1,5XR50 | 10.300 | 1.900 | Based on Cusp height (see chart below) | ~ 0,25 | 8.200 | 1.300 | Based on Cusp height (see chart below) | ~ 0,25 | 7.200 | 1.000 | Based on Cusp height (see chart below) | ~ 0,25 | 6.100 | 610 | Based on Cusp height (see chart below) | ~ 0,25 |

1. Use a rigid and precise machine and holder.
2. Use a coolant with low air-blow or fuming property according to the work material. MQL (oil mist coolant) is recommended for cutting hardened steels.
3. "Using tip R (RE1)" is the guide to use the tip R. Please adjust the rotation speed, feed rate and cutting pitch based on the cutting shape, machine rigidity, workpiece and holding conditions.
4. When chattering, vibration or abnormal cutting noise occurs, please adjust the rotation speed, feed rate and cutting pitch.
5. In order to change the rotation speed, both the rotation speed and the feed rate should be changed at the same ratio.

## Theoretical Cusp Height

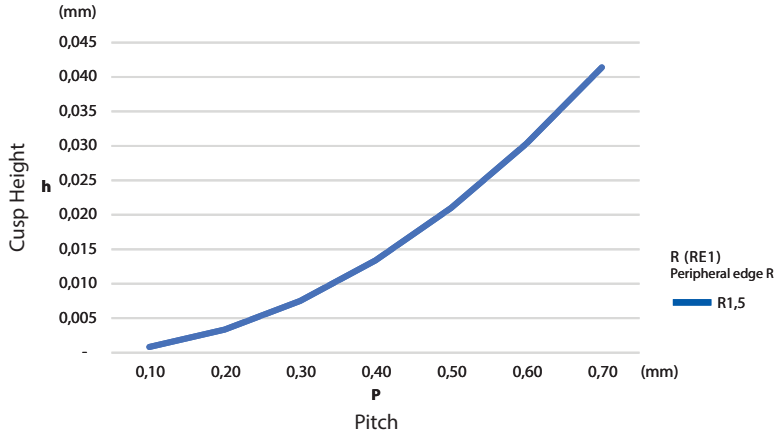
(VU-EGG-H) Oval Type




$$h = 0.5 \times \left(2 \times RE1 - \sqrt{(2 \times RE1)^2 - P^2}\right)$$

h: Cusp height
P: Pitch
RE1: peripheral edge R

### Cusp Height and Pitch



# AE-VTSS

## Slot Milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 | | 70 | | 60 | | 60 | | 50 | | 50 | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 10.600 | 650 | 7.400 | 480 | 6.400 | 350 | 6.400 | 330 | 5.300 | 300 | 5.300 | 280 |
| 4 | 8.000 | 670 | 5.600 | 500 | 4.800 | 350 | 4.800 | 340 | 4.000 | 320 | 4.000 | 310 |
| 5 | 6.400 | 710 | 4.500 | 560 | 3.800 | 420 | 3.800 | 390 | 3.200 | 340 | 3.200 | 330 |
| 6 | 5.300 | 740 | 3.700 | 620 | 3.200 | 460 | 3.200 | 260 | 2.700 | 330 | 2.700 | 320 |
| 8 | 4.000 | 630 | 2.800 | 500 | 2.400 | 440 | 2.400 | 260 | 2.000 | 310 | 2.000 | 300 |
| 10 | 3.200 | 580 | 2.200 | 490 | 1.900 | 380 | 1.900 | 240 | 1.600 | 290 | 1.600 | 280 |
| 12 | 2.700 | 560 | 1.900 | 460 | 1.600 | 380 | 1.600 | 230 | 1.300 | 290 | 1.300 | 280 |
| Depth of cut | ap<br>0,5D | | | | | | | | ap<br>0,25D | | | |

## Side Milling

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 | | 90 | | 80 | | 70 | | 70 | | 60 | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 10.600 | 960 | 9.600 | 610 | 8.500 | 460 | 7.400 | 310 | 7.400 | 330 | 6.400 | 310 |
| 4 | 8.000 | 1.060 | 7.200 | 650 | 6.400 | 480 | 5.600 | 350 | 5.600 | 360 | 4.800 | 340 |
| 5 | 6.400 | 1.150 | 5.700 | 690 | 5.100 | 540 | 4.500 | 370 | 4.500 | 370 | 3.800 | 340 |
| 6 | 5.300 | 1.190 | 4.800 | 870 | 4.200 | 630 | 3.700 | 420 | 3.700 | 380 | 3.200 | 360 |
| 8 | 4.000 | 1.020 | 3.600 | 870 | 3.200 | 620 | 2.800 | 400 | 2.800 | 300 | 2.400 | 280 |
| 10 | 3.200 | 960 | 2.900 | 780 | 2.500 | 530 | 2.200 | 380 | 2.200 | 280 | 1.900 | 270 |
| 12 | 2.700 | 810 | 2.400 | 720 | 2.100 | 440 | 1.900 | 360 | 1.900 | 280 | 1.600 | 250 |
| Depth of cut | ap<br>1D | ae<br>0,2D | | | | | | | | | | |

## Plunging

| | Mild Steel • Carbon Steel • Cast Iron<br>SS400 • S55C • FC250<br>~750N/mm² | | Alloy Steel • Tool Steel<br>SCM • SKS • SKD<br>~30HRC | | Prehardened Steel • Hardened Steel<br>PX5 • NAK80<br>30~45HRC | | Stainless Steel<br>SUS304 • SUS420<br>≤200HB | | Precipitation Stainless Steel<br>SUS630 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 | | 70 | | 60 | | 60 | | 50 | | 50 | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 10.600 | 250 | 7.400 | 115 | 6.400 | 110 | 6.400 | 110 | 5.300 | 60 | 5.300 | 60 |
| 4 | 8.000 | 250 | 5.600 | 115 | 4.800 | 110 | 4.800 | 110 | 4.000 | 60 | 4.000 | 60 |
| 5 | 6.400 | 285 | 4.500 | 120 | 3.800 | 110 | 3.800 | 110 | 3.200 | 65 | 3.200 | 65 |
| 6 | 5.300 | 320 | 3.700 | 120 | 3.200 | 110 | 3.200 | 110 | 2.700 | 70 | 2.700 | 70 |
| 8 | 4.000 | 300 | 2.800 | 110 | 2.400 | 100 | 2.400 | 100 | 2.000 | 65 | 2.000 | 65 |
| 10 | 3.200 | 290 | 2.200 | 105 | 1.900 | 95 | 1.900 | 95 | 1.600 | 60 | 1.600 | 60 |
| 12 | 2.700 | 275 | 1.900 | 100 | 1.600 | 90 | 1.600 | 90 | 1.300 | 55 | 1.300 | 55 |
| Depth of cut | ap<br>≤0,5D | | | | | | | | | | | |

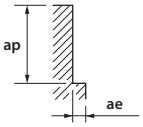
1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
5. Please use water-soluble coolant when machining stainless steel, precipitation stainless steel, titanium alloy.
6. Reduce speed and feed as well as depth of cut when high precision is required.

# WX-G-ETSS

## Side milling (Contour line finish)

| | C≤0,2% - GG<br>E24 • XC48 • GG25<br>750 N/mm² | | | ~30 HRC<br>350NCD16 • 40CMD8 | | | SUS<br>316 ~ 304<br>800 N/mm² | | | 30~38 HRC<br>Z38CDV5 • Z40CDV5 | | | 45~55 HRC<br>Z38CDV5 | | | 55~60 HRC<br>Z160CDV12 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 100<br>(m/min) | | | 80<br>(m/min) | | | 80<br>(m/min) | | | 60<br>(m/min) | | | 60<br>(m/min) | | | 30<br>(m/min) | | |
| Ø | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) |
| 3 | 10.610 | 589 | 0,027 | 8.488 | 458 | 0,018 | 6.366 | 267 | 0,014 | 6.366 | 344 | 0,018 | 6.366 | 210 | 0,011 | 3.183 | 105 | 0,011 |
| 4 | 7.958 | 907 | 0,038 | 6.366 | 477 | 0,025 | 4.775 | 272 | 0,019 | 4.775 | 358 | 0,025 | 4.775 | 229 | 0,016 | 2.387 | 107 | 0,015 |
| 5 | 6.366 | 955 | 0,05 | 5.093 | 519 | 0,034 | 3.820 | 298 | 0,026 | 3.820 | 390 | 0,034 | 3.820 | 241 | 0,021 | 1.910 | 115 | 0,02 |
| 6 | 5.305 | 987 | 0,062 | 4.244 | 547 | 0,043 | 3.183 | 306 | 0,032 | 3.183 | 411 | 0,043 | 3.183 | 248 | 0,026 | 1.592 | 119 | 0,025 |
| 8 | 3.979 | 883 | 0,074 | 3.183 | 535 | 0,056 | 2.387 | 272 | 0,038 | 2.387 | 401 | 0,056 | 2.387 | 222 | 0,031 | 1.194 | 107 | 0,03 |
| 10 | 3.183 | 793 | 0,083 | 2.546 | 519 | 0,068 | 1.910 | 241 | 0,042 | 1.910 | 390 | 0,068 | 1.910 | 195 | 0,034 | 955 | 95 | 0,033 |
| 12 | 2.653 | 796 | 0,100 | 2.122 | 497 | 0,078 | 1.592 | 239 | 0,050 | 1.592 | 372 | 0,078 | 1.592 | 196 | 0,041 | 796 | 95 | 0,04 |
| 16 | 1.989 | 657 | 0,100 | 1.592 | 525 | 0,110 | 1.194 | 286 | 0,080 | 1.194 | 394 | 0,110 | 1.194 | 190 | 0,053 | 597 | 90 | 0,05 |

Max cutting depth




| D | ap | ae |
|---|---|---|
| < 6 | 1,5D | 0,02D |
| ≥ 6 | 1,5D | 0,05D |

| ap | ae |
|---|---|
| 1,5D | 0,02D |

ap max = 0,5mm

| ap | ae |
|---|---|
| 1D | 0,02D |

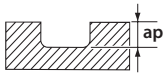
ap max = 0,5mm

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.

## Slotting

| | C≤0,2% - GG<br>E24 • XC48 • GG25<br>750 N/mm² | | | ~30 HRC<br>350NCD16 • 40CMD8 | | | SUS<br>316 ~ 304<br>800 N/mm² | | | 30~38 HRC<br>Z38CDV5 • Z40CDV5 | | | 45~55 HRC<br>Z38CDV5 | | | 55~60 HRC<br>Z160CDV12 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80<br>(m/min) | | | 60<br>(m/min) | | | 50<br>(m/min) | | | 55<br>(m/min) | | | 45<br>(m/min) | | | 20<br>(m/min) | | |
| Ø | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) | S<br>(min-1) | F<br>(mm/min) | AZ<br>(mm) |
| 3 | 8.488 | 688 | 0,027 | 6.897 | 372 | 0,018 | 5.305 | 223 | 0,014 | 5.836 | 245 | 0,014 | 4.775 | 158 | 0,011 | 2.122 | 70 | 0.011 |
| 4 | 6.366 | 726 | 0,038 | 5.173 | 388 | 0,025 | 3.979 | 227 | 0,019 | 4.377 | 249 | 0,019 | 3.581 | 172 | 0,016 | 1.592 | 72 | 0,015 |
| 5 | 5.093 | 764 | 0,050 | 4.138 | 422 | 0,034 | 3.183 | 248 | 0,026 | 3.501 | 273 | 0,026 | 2.865 | 180 | 0,021 | 1.273 | 76 | 0,020 |
| 6 | 4.244 | 789 | 0,062 | 3.448 | 445 | 0,043 | 2.653 | 255 | 0,032 | 2.918 | 280 | 0,032 | 2.387 | 186 | 0,026 | 1.061 | 80 | 0,025 |
| 8 | 3.183 | 707 | 0,074 | 2.586 | 434 | 0,056 | 1.989 | 233 | 0,039 | 2.188 | 256 | 0,039 | 1.790 | 167 | 0,031 | 796 | 72 | 0,030 |
| 10 | 2.546 | 672 | 0,088 | 2.069 | 422 | 0,068 | 1.592 | 224 | 0,047 | 1.751 | 247 | 0,047 | 1.432 | 146 | 0,034 | 637 | 63 | 0,033 |
| 12 | 2.122 | 637 | 0,100 | 1.724 | 403 | 0,078 | 1.326 | 215 | 0,054 | 1.459 | 236 | 0,054 | 1.194 | 147 | 0,041 | 531 | 64 | 0,040 |
| 16 | 1.592 | 573 | 0,120 | 1.293 | 388 | 0,100 | 995 | 239 | 0,080 | 1.094 | 263 | 0,080 | 895 | 142 | 0,053 | 398 | 60 | 0,05 0 |

Max cutting depth




ap = 0,3D
ap max = 3mm

ap max = 0,2D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.

# CUTTING CONDITIONS

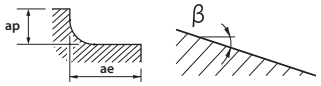


## WX-HS-CRE

### High speed milling

| | GG | | 30~38 HRC SKT • SKD • NAK55 • HPM50 | | 38~45 HRC - SUS SUS304 • SKD • NAK80 • HPM50 | | 45~55 HRC | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 6 X R 1,5 | 10.600 | 14.000 | 10.600 | 12.700 | 7.950 | 9.550 | 7.950 | 8.600 | 5.300 | 3.800 |
| 8 X R 2 | 7.950 | 14.000 | 7.950 | 12.700 | 5.950 | 9.550 | 5.950 | 8.600 | 4.000 | 3.800 |
| 10 X R 2 | 6.350 | 14.000 | 6.350 | 12.700 | 4.750 | 9.550 | 4.750 | 8.600 | 3.200 | 3.800 |
| 12 X R 3 | 5.300 | 14.000 | 5.300 | 12.700 | 4.000 | 9.550 | 4.000 | 8.600 | 2.650 | 3.800 |

Max cutting depth




| ap | ae |
|---|---|
| 0,1xR | 0,3D |

| R | ap | ae |
|---|---|---|
| ≤2 | 0,1xR | 0,3D |
| >2 | 0,2mm | 0,3D |

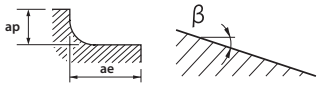
| R | ap | ae |
|---|---|---|
| ≤2 | 0,05xR | 0,3D |
| >2 | 0,1mm | 0,3D |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation much as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

### Low speed, high feed milling

| | GG | | 30~38 HRC SKT • SKD • NAK55 • HPM50 | | 38~45 HRC - SUS SUS304 • SKD • NAK80 • HPM50 | | 45~55 HRC | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 6 X R 1,5 | 5.300 | 7.000 | 4.250 | 5.100 | 3.700 | 4.450 | 2.650 | 2.850 | 1.600 | 1.150 |
| 8 X R 2 | 4.000 | 7.000 | 3.200 | 5.100 | 2.800 | 4.450 | 2.000 | 2.850 | 1.200 | 1.150 |
| 10 X R 2 | 3.200 | 7.000 | 2.550 | 5.100 | 2.250 | 4.450 | 1.600 | 2.850 | 955 | 1.150 |
| 12 X R 3 | 2.650 | 7.000 | 2.100 | 5.100 | 1.850 | 4.450 | 1.350 | 2.850 | 795 | 1.150 |

Max cutting depth




| ap | ae |
|---|---|
| 0,1xR | 0,3D |

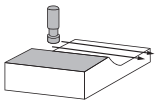
| R | ap | ae |
|---|---|---|
| ≤2 | 0,1xR | 0,3D |
| >2 | 0,2mm | 0,3D |

| R | ap | ae |
|---|---|---|
| ≤2 | 0,05xR | 0,3D |
| >2 | 0,1mm | 0,3D |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation much as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

### (%)Tool extension coefficients

| Overhang length | Cutting speed | ap | feed |
|---|---|---|---|
| L/D ≤ 4 | 100 | 100 | 100 |
| L/D = 5 | 60~80 | 60~80 | 70~90 |
| L/D = 6 | 40~60 | 40~60 | 60~80 |



1. When milling flat areas with a stable load, the speed and the feed rate of the high-speed conditions can be further increased to 150 - 200%.
2. The ultra-high speed conditions are for a tool extension length : less than 4 x D. If the tool extension length is over 4 x D, do not refer to it.

# CUTTING CONDITIONS

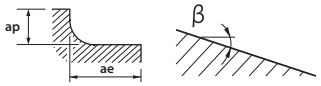


## WX-CRE

### High speed milling

| | GG | | 30~38 HRC SKT • SKD • NAK55 • HPM50 | | 38~45 HRC - SUS SUS304 • SKD • NAK80 • HPM50 | | 45~55 HRC | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 2 X R 0,5 | 31.850 | 10.500 | 32.000 | 9.550 | 24.000 | 7.150 | 24.000 | 6.450 | 16.000 | 2.850 |
| 3 X R 0,75 | 21.000 | 12.500 | 21.000 | 12.000 | 16.000 | 8.400 | 16.000 | 7.850 | 10.500 | 3.300 |
| 4 X R 1 | 16.000 | 13.000 | 16.000 | 12.000 | 12.000 | 9.000 | 12.000 | 8.200 | 7.950 | 3.550 |
| 5 X R 1,2 | 12.500 | 14.000 | 12.500 | 12.500 | 9.550 | 9.550 | 9.550 | 8.600 | 6.350 | 3.800 |
| 6 X R 1,5 | 10.600 | 14.000 | 10.600 | 12.700 | 7.950 | 9.550 | 7.950 | 8.600 | 5.300 | 3.800 |
| 7 X R 1,5 | 9.100 | 12.000 | 9.100 | 10.900 | 6.800 | 8.200 | 6.800 | 7.350 | 4.550 | 3.250 |
| 8 X R 2 | 7.950 | 14.000 | 7.950 | 12.700 | 5.950 | 9.550 | 5.950 | 8.600 | 4.000 | 3.800 |
| 9 X R 2 | 7.050 | 12.400 | 7.050 | 11.300 | 5.300 | 8.500 | 5.300 | 7.650 | 3.550 | 3.400 |
| 10 X R 2 | 6.350 | 14.000 | 6.350 | 12.700 | 4.750 | 9.550 | 4.750 | 8.600 | 3.200 | 3.800 |
| 11 X R 2 | 5.800 | 12.700 | 5.800 | 11.600 | 4.350 | 8.700 | 4.350 | 7.800 | 2.900 | 3.500 |
| 12 X R 3 | 5.300 | 14.000 | 5.300 | 12.700 | 4.000 | 9.550 | 4.000 | 8.600 | 2.650 | 3.800 |
| 13 X R 3 | 4.900 | 12.900 | 4.900 | 11.800 | 3.650 | 8.800 | 3.650 | 7.950 | 2.450 | 3.550 |

Max cutting depth




| ap | ae |
|---|---|
| 0,1xR | 0,3D |

| R | ap | ae |
|---|---|---|
| ≤2 | 0,1xR | 0,3D |
| >2 | 0,2mm | 0,3D |

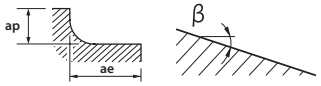
| R | ap | ae |
|---|---|---|
| ≤2 | 0,05xR | 0,3D |
| >2 | 0,1mm | 0,3D |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation much as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

### Low speed, high feed milling

| | GG | | 30~38 HRC SKT • SKD • NAK55 • HPM50 | | 38~45 HRC - SUS SUS304 • SKD • NAK80 • HPM50 | | 45~55 HRC | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 2 X R 0,5 | 16.000 | 5.250 | 12.500 | 3.800 | 11.000 | 3.350 | 7.950 | 2.150 | 4.750 | 860 |
| 3 x R 0,75 | 10.500 | 6.250 | 8.500 | 4.500 | 7.450 | 3.900 | 5.300 | 2.600 | 3.200 | 995 |
| 4 X R 1 | 7.950 | 6.600 | 6.350 | 4.800 | 5.550 | 4.200 | 4.000 | 2.750 | 2.400 | 1.050 |
| 5 X R 1,2 | 6.350 | 7.000 | 5.100 | 5.100 | 4.450 | 4.450 | 3.200 | 2.850 | 1.900 | 1.150 |
| 6 X R 1,5 | 5.300 | 7.000 | 4.250 | 5.100 | 3.700 | 4.450 | 2.650 | 2.850 | 1.600 | 1.150 |
| 7 X R 1,5 | 4.550 | 6.000 | 3.650 | 4.350 | 3.200 | 3.800 | 2.250 | 2.450 | 1.350 | 980 |
| 8 X R 2 | 4.000 | 7.000 | 3.200 | 5.100 | 2.800 | 4.450 | 2.000 | 2.850 | 1.200 | 1.150 |
| 9 X R 2 | 3.550 | 6.200 | 2.850 | 4.550 | 2.500 | 3.950 | 1.750 | 2.550 | 1.050 | 1.000 |
| 10 X R 2 | 3.200 | 7.000 | 2.550 | 5.100 | 2.250 | 4.450 | 1.600 | 2.850 | 955 | 1.150 |
| 11 X R 2 | 2.900 | 6.350 | 2.300 | 4.650 | 2.050 | 4.050 | 1.450 | 2.600 | 870 | 1.050 |
| 12 X R 3 | 2.650 | 7.000 | 2.100 | 5.100 | 1.850 | 4.450 | 1.350 | 2.850 | 795 | 1.150 |
| 13 X R 3 | 2.450 | 6.450 | 1.950 | 4.700 | 1.700 | 4.100 | 1.200 | 2.650 | 735 | 1.050 |

Max cutting depth




| ap | ae |
|---|---|
| 0,1xR | 0,3D |

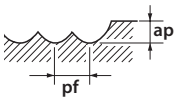
| R | ap | ae |
|---|---|---|
| ≤2 | 0,1xR | 0,3D |
| >2 | 0,2mm | 0,3D |

| R | ap | ae |
|---|---|---|
| ≤2 | 0,05xR | 0,3D |
| >2 | 0,1mm | 0,3D |

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation much as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

# FXS-EQD

## Regular milling

| Ø | C≤0,2% - GG S55C • SS400 ~750 N/mm2 | | ~30 HRC SKD • SKS • SNCM | | 30~38 HRC NAK55 • HPMI • SKT | | 38~45 HRC SUS SUS304 • X210CR12 X40CRMOV51 | | 45~55 HRC HRS | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| R 0,5 | 32.000 | 860 | 32.000 | 860 | 32.000 | 860 | 32.000 | 860 | 32.000 | 860 | 32.000 | 765 |
| R 1 | 31.500 | 2.250 | 24.000 | 1.350 | 24.000 | 1.350 | 24.000 | 1.350 | 24.000 | 1.350 | 22.000 | 1.200 |
| R 2 | 17.500 | 2.500 | 15.500 | 1.800 | 14.000 | 1.550 | 13.500 | 1.450 | 12.500 | 1.350 | 11.000 | 1.150 |
| R 3 | 11.500 | 2.150 | 10.500 | 1.850 | 9.500 | 1.700 | 9.000 | 1.600 | 8.450 | 1.500 | 7.400 | 1.300 |
| R 4 | 8.750 | 1.800 | 7.950 | 1.400 | 7.150 | 1.250 | 6.850 | 1.200 | 6.350 | 1.100 | 5.550 | 995 |
| R 5 | 7.000 | 1.500 | 6.350 | 1.100 | 5.700 | 1.000 | 5.500 | 980 | 5.050 | 905 | 4.450 | 800 |
| R 6 | 6.650 | 1.170 | 5.950 | 1.050 | 4.750 | 840 | 4.550 | 800 | 4.200 | 745 | 3.800 | 680 |
| Max cutting depth | ap = 0,05D<br>pf = 0,10D | | | |  | | | | ap = 0,02D<br>pf = 0,10D | | | |

1. Use high precision machine set up to ensure maximum rigidity.
2. Set up speed & feed in accordance with cutting conditions and and a high rigidity machine set up.

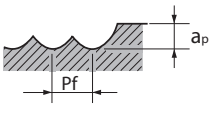
# CUTTING CONDITIONS

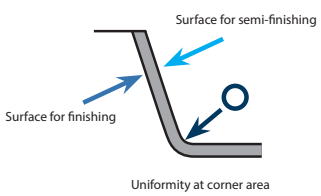


## CBN-FB2

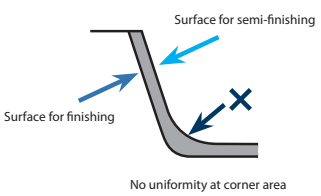
| RE | LU | Hardened Steel | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | STAVAX - HPM38 ~55HRC | | | | SKD11 - YXR3 - HAP10 ~62HRC | | | | SKH51 - YXR7 - HAP40 ~66HRC | | | | SKH57 - HAP72 ~70HRC | | | |
| | (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | Pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | Pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | Pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | Pf (mm) |
| R0,1 | 0,3 | 40.000 | 660 | 0,005 | 0,005 | 40.000 | 530 | 0,005 | 0,005 | 40.000 | 430 | 0,004 | 0,004 | 40.000 | 360 | 0,003 | 0,003 |
| R0,1 | 0,5 | 40.000 | 500 | 0,005 | 0,005 | 40.000 | 400 | 0,005 | 0,005 | 40.000 | 330 | 0,004 | 0,004 | 40.000 | 280 | 0,003 | 0,003 |
| R0,1 | 0,6 | 40.000 | 450 | 0,005 | 0,005 | 40.000 | 360 | 0,005 | 0,005 | 40.000 | 290 | 0,004 | 0,004 | 40.000 | 250 | 0,003 | 0,003 |
| R0,1 | 1 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 240 | 0,005 | 0,005 | 40.000 | 200 | 0,004 | 0,004 | 40.000 | 170 | 0,003 | 0,003 |
| R0,1 | 2 | 40.000 | 200 | 0,005 | 0,005 | 40.000 | 160 | 0,005 | 0,005 | 40.000 | 130 | 0,004 | 0,004 | 40.000 | 110 | 0,003 | 0,003 |
| R0,15 | 0,3 | 40.000 | 900 | 0,005 | 0,005 | 40.000 | 720 | 0,005 | 0,005 | 40.000 | 590 | 0,004 | 0,004 | 40.000 | 500 | 0,003 | 0,003 |
| R0,15 | 0,5 | 40.000 | 800 | 0,005 | 0,005 | 40.000 | 640 | 0,005 | 0,005 | 40.000 | 520 | 0,004 | 0,004 | 40.000 | 440 | 0,003 | 0,003 |
| R0,15 | 0,75 | 40.000 | 680 | 0,005 | 0,005 | 40.000 | 540 | 0,005 | 0,005 | 40.000 | 440 | 0,004 | 0,004 | 40.000 | 370 | 0,003 | 0,003 |
| R0,15 | 0,9 | 40.000 | 600 | 0,005 | 0,005 | 40.000 | 480 | 0,005 | 0,005 | 40.000 | 390 | 0,004 | 0,004 | 40.000 | 330 | 0,003 | 0,003 |
| R0,15 | 1,5 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 240 | 0,005 | 0,005 | 40.000 | 200 | 0,004 | 0,004 | 40.000 | 170 | 0,003 | 0,003 |
| R0,2 | 0,5 | 40.000 | 1.200 | 0,005 | 0,01 | 40.000 | 960 | 0,005 | 0,009 | 40.000 | 780 | 0,004 | 0,007 | 40.000 | 660 | 0,003 | 0,006 |
| R0,2 | 0,75 | 40.000 | 1.100 | 0,005 | 0,01 | 40.000 | 880 | 0,005 | 0,009 | 40.000 | 720 | 0,004 | 0,007 | 40.000 | 610 | 0,003 | 0,006 |
| R0,2 | 1 | 40.000 | 1.000 | 0,005 | 0,01 | 40.000 | 800 | 0,005 | 0,009 | 40.000 | 650 | 0,004 | 0,007 | 40.000 | 550 | 0,003 | 0,006 |
| R0,2 | 1,2 | 40.000 | 920 | 0,005 | 0,01 | 40.000 | 740 | 0,005 | 0,009 | 40.000 | 600 | 0,004 | 0,007 | 40.000 | 510 | 0,003 | 0,006 |
| R0,2 | 2 | 40.000 | 600 | 0,005 | 0,01 | 40.000 | 480 | 0,005 | 0,009 | 40.000 | 390 | 0,004 | 0,007 | 40.000 | 330 | 0,003 | 0,006 |
| R0,2 | 3 | 40.000 | 250 | 0,005 | 0,005 | 40.000 | 200 | 0,005 | 0,005 | 40.000 | 160 | 0,004 | 0,004 | 40.000 | 140 | 0,003 | 0,003 |
| R0,25 | 1 | 40.000 | 1.200 | 0,01 | 0,01 | 40.000 | 960 | 0,009 | 0,009 | 40.000 | 780 | 0,007 | 0,007 | 40.000 | 660 | 0,006 | 0,006 |
| R0,25 | 1,5 | 40.000 | 1.100 | 0,01 | 0,01 | 40.000 | 880 | 0,009 | 0,009 | 40.000 | 720 | 0,007 | 0,007 | 40.000 | 610 | 0,006 | 0,006 |
| R0,25 | 2,5 | 40.000 | 800 | 0,01 | 0,01 | 40.000 | 640 | 0,009 | 0,009 | 40.000 | 520 | 0,007 | 0,007 | 40.000 | 440 | 0,006 | 0,006 |
| R0,25 | 3,5 | 38.000 | 400 | 0,01 | 0,01 | 38.000 | 320 | 0,009 | 0,009 | 38.000 | 260 | 0,007 | 0,007 | 38.000 | 220 | 0,006 | 0,006 |
| R0,3 | 1,2 | 40.000 | 1.800 | 0,01 | 0,02 | 40.000 | 1.440 | 0,009 | 0,018 | 40.000 | 1.170 | 0,007 | 0,014 | 40.000 | 990 | 0,006 | 0,011 |
| R0,3 | 1,5 | 40.000 | 1.700 | 0,01 | 0,02 | 40.000 | 1.360 | 0,009 | 0,018 | 40.000 | 1.110 | 0,007 | 0,014 | 40.000 | 940 | 0,006 | 0,011 |
| R0,3 | 1,8 | 40.000 | 1.600 | 0,01 | 0,02 | 40.000 | 1.280 | 0,009 | 0,018 | 40.000 | 1.040 | 0,007 | 0,014 | 40.000 | 880 | 0,006 | 0,011 |
| R0,3 | 2 | 40.000 | 1.500 | 0,01 | 0,02 | 40.000 | 1.200 | 0,009 | 0,018 | 40.000 | 980 | 0,007 | 0,014 | 40.000 | 830 | 0,006 | 0,011 |
| R0,3 | 3 | 40.000 | 1.100 | 0,01 | 0,02 | 40.000 | 880 | 0,009 | 0,018 | 40.000 | 720 | 0,007 | 0,014 | 40.000 | 610 | 0,006 | 0,011 |
| R0,3 | 4 | 35.000 | 600 | 0,01 | 0,015 | 35.000 | 480 | 0,009 | 0,014 | 35.000 | 390 | 0,007 | 0,011 | 35.000 | 330 | 0,006 | 0,008 |
| R0,3 | 4,5 | 32.000 | 400 | 0,01 | 0,01 | 32.000 | 320 | 0,009 | 0,009 | 32.000 | 260 | 0,007 | 0,007 | 32.000 | 220 | 0,006 | 0,006 |
| R0,3 | 5 | 29.000 | 300 | 0,008 | 0,008 | 29.000 | 240 | 0,007 | 0,007 | 29.000 | 200 | 0,006 | 0,006 | 29.000 | 170 | 0,004 | 0,004 |
| R0,3 | 6 | 24.000 | 200 | 0,005 | 0,005 | 24.000 | 160 | 0,005 | 0,005 | 24.000 | 130 | 0,004 | 0,004 | 24.000 | 110 | 0,003 | 0,003 |
| R0,4 | 1,5 | 40.000 | 1.900 | 0,01 | 0,02 | 40.000 | 1.520 | 0,009 | 0,018 | 40.000 | 1.240 | 0,007 | 0,014 | 40.000 | 1.050 | 0,006 | 0,011 |
| R0,4 | 1,6 | 40.000 | 1.800 | 0,01 | 0,02 | 40.000 | 1.440 | 0,009 | 0,018 | 40.000 | 1.170 | 0,007 | 0,014 | 40.000 | 990 | 0,006 | 0,011 |
| R0,4 | 2 | 40.000 | 1.500 | 0,01 | 0,02 | 40.000 | 1.200 | 0,009 | 0,018 | 40.000 | 980 | 0,007 | 0,014 | 40.000 | 830 | 0,006 | 0,011 |
| R0,4 | 2,4 | 40.000 | 1.300 | 0,01 | 0,02 | 40.000 | 1.040 | 0,009 | 0,018 | 40.000 | 850 | 0,007 | 0,014 | 40.000 | 720 | 0,006 | 0,011 |
| R0,4 | 4 | 40.000 | 1.000 | 0,01 | 0,015 | 40.000 | 800 | 0,009 | 0,014 | 40.000 | 650 | 0,007 | 0,011 | 40.000 | 550 | 0,006 | 0,008 |
| R0,4 | 6 | 30.000 | 650 | 0,005 | 0,01 | 30.000 | 520 | 0,005 | 0,009 | 30.000 | 420 | 0,004 | 0,007 | 30.000 | 360 | 0,003 | 0,006 |
| R0,5 | 2 | 40.000 | 2.500 | 0,02 | 0,04 | 40.000 | 2.000 | 0,018 | 0,036 | 40.000 | 1.630 | 0,014 | 0,028 | 40.000 | 1.380 | 0,011 | 0,022 |
| R0,5 | 2,5 | 40.000 | 2.200 | 0,02 | 0,04 | 40.000 | 1.760 | 0,018 | 0,036 | 40.000 | 1.430 | 0,014 | 0,028 | 40.000 | 1.210 | 0,011 | 0,022 |
| R0,5 | 3 | 40.000 | 2.000 | 0,02 | 0,035 | 40.000 | 1.600 | 0,018 | 0,032 | 40.000 | 1.300 | 0,014 | 0,025 | 40.000 | 1.100 | 0,011 | 0,019 |
| R0,5 | 4 | 40.000 | 1.700 | 0,02 | 0,03 | 40.000 | 1.360 | 0,018 | 0,027 | 40.000 | 1.110 | 0,014 | 0,021 | 40.000 | 940 | 0,011 | 0,017 |
| R0,5 | 6 | 30.000 | 1.100 | 0,015 | 0,02 | 30.000 | 880 | 0,014 | 0,018 | 30.000 | 720 | 0,011 | 0,014 | 30.000 | 610 | 0,008 | 0,011 |
| R0,5 | 8 | 22.000 | 750 | 0,015 | 0,015 | 22.000 | 600 | 0,014 | 0,014 | 22.000 | 490 | 0,011 | 0,011 | 22.000 | 410 | 0,008 | 0,008 |
| R0,5 | 10 | 16.000 | 540 | 0,01 | 0,01 | 16.000 | 430 | 0,009 | 0,009 | 16.000 | 350 | 0,007 | 0,007 | 16.000 | 300 | 0,006 | 0,006 |
| R0,6 | 2,4 | 40.000 | 2.500 | 0,02 | 0,04 | 40.000 | 2.000 | 0,018 | 0,036 | 40.000 | 1.630 | 0,014 | 0,028 | 40.000 | 1.380 | 0,011 | 0,022 |
| R0,6 | 3 | 40.000 | 2.500 | 0,02 | 0,04 | 40.000 | 2.000 | 0,018 | 0,036 | 40.000 | 1.630 | 0,014 | 0,028 | 40.000 | 1.380 | 0,011 | 0,022 |
| R0,6 | 6 | 30.000 | 1.310 | 0,02 | 0,02 | 30.000 | 1.050 | 0,018 | 0,018 | 30.000 | 850 | 0,014 | 0,014 | 30.000 | 720 | 0,011 | 0,011 |
| R0,75 | 3 | 40.000 | 3.000 | 0,03 | 0,05 | 40.000 | 2.400 | 0,027 | 0,045 | 40.000 | 1.950 | 0,021 | 0,035 | 40.000 | 1.650 | 0,017 | 0,028 |
| R0,75 | 3,8 | 40.000 | 2.800 | 0,03 | 0,05 | 40.000 | 2.240 | 0,027 | 0,045 | 40.000 | 1.820 | 0,021 | 0,035 | 40.000 | 1.540 | 0,017 | 0,028 |
| R0,75 | 7,5 | 30.000 | 1.600 | 0,02 | 0,03 | 30.000 | 1.280 | 0,018 | 0,027 | 30.000 | 1.040 | 0,014 | 0,021 | 30.000 | 880 | 0,011 | 0,017 |
| R0,75 | 10 | 23.000 | 1.040 | 0,015 | 0,02 | 23.000 | 830 | 0,014 | 0,018 | 23.000 | 680 | 0,011 | 0,014 | 23.000 | 570 | 0,008 | 0,011 |
| R0,75 | 15 | 12.000 | 480 | 0,01 | 0,02 | 12.000 | 380 | 0,009 | 0,018 | 12.000 | 310 | 0,007 | 0,014 | 12.000 | 260 | 0,006 | 0,011 |
| R1 | 4 | 30.000 | 2.400 | 0,05 | 0,1 | 30.000 | 1.920 | 0,045 | 0,09 | 30.000 | 1.560 | 0,035 | 0,07 | 30.000 | 1.320 | 0,028 | 0,055 |
| R1 | 5 | 29.000 | 2.030 | 0,05 | 0,08 | 29.000 | 1.620 | 0,045 | 0,072 | 29.000 | 1.320 | 0,035 | 0,056 | 29.000 | 1.120 | 0,028 | 0,044 |
| R1 | 6 | 28.000 | 1.680 | 0,04 | 0,05 | 28.000 | 1.340 | 0,036 | 0,045 | 28.000 | 1.090 | 0,028 | 0,035 | 28.000 | 920 | 0,022 | 0,028 |
| R1 | 8 | 25.000 | 1.350 | 0,03 | 0,05 | 25.000 | 1.080 | 0,027 | 0,045 | 25.000 | 880 | 0,021 | 0,035 | 25.000 | 740 | 0,017 | 0,028 |
| R1 | 10 | 22.000 | 1.100 | 0,03 | 0,03 | 22.000 | 880 | 0,027 | 0,027 | 22.000 | 720 | 0,021 | 0,021 | 22.000 | 610 | 0,017 | 0,017 |
| R1 | 14 | 16.000 | 720 | 0,02 | 0,02 | 16.000 | 580 | 0,018 | 0,018 | 16.000 | 470 | 0,014 | 0,014 | 16.000 | 400 | 0,011 | 0,011 |
| R1 | 20 | 8.000 | 360 | 0,02 | 0,02 | 8.000 | 290 | 0,018 | 0,018 | 8.000 | 230 | 0,014 | 0,014 | 8.000 | 200 | 0,011 | 0,011 |
| R1,5 | 6 | 20.000 | 2.000 | 0,1 | 0,15 | 20.000 | 1.600 | 0,09 | 0,135 | 20.000 | 1.300 | 0,07 | 0,105 | 20.000 | 1.100 | 0,055 | 0,083 |
| R1,5 | 9 | 20.000 | 1.600 | 0,08 | 0,1 | 20.000 | 1.280 | 0,072 | 0,09 | 20.000 | 1.040 | 0,056 | 0,07 | 20.000 | 880 | 0,044 | 0,055 |

1. Use a rigid and precise machine and holder.
2. Using air blow or MQL (oil mist coolant) is recommended.
3. Please use the tool while minimizing runout accuracy.
4. The above cutting conditions are for contouring operation with low-load and stable condition. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When RPM are insufficient, please reduce the RPM and feed rates at same ratio as listed above.
7. Uneven finishing allowance may negatively impact tool life and machining accuracy. Therefore, please ensure the allowance is as uniform as possible during pre-machining.




Uniformity at corner area




No uniformity at corner area

# DG-EBD

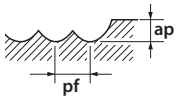
## Roughing

| R | mm | Graphite | | | | | |
|---|---|---|---|---|---|---|---|
| | | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | | short | long | short | long | | |
| R 2 | 16~40 | 20.000 | 11.000 | 3.150 | 1.800 | 0,40 | 1,20 |
| R 3 | 24~36 | 20.000 | 9.600 | 4.500 | 2.100 | 0,60 | 1,80 |
| R 4 | 32~56 | 16.000 | 7.200 | 3.900 | 1.800 | 0,80 | 2,40 |
| R 5 | 40~60 | 12.500 | 5.700 | 3.000 | 1.350 | 1,00 | 3,00 |
| R 6 | 48~84 | 10.500 | 4.800 | 2.550 | 1.100 | 1,20 | 3,60 |

## Finishing

| R | mm | Graphite | | | | | |
|---|---|---|---|---|---|---|---|
| | | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | | short | long | short | long | | |
| R 2 | 16~40 | 20.000 | 11.000 | 2.100 | 1.200 | 0,12 | 0,12 |
| R 3 | 24~36 | 20.000 | 9.600 | 3.000 | 1.400 | 0,18 | 0,18 |
| R 4 | 32~56 | 16.000 | 7.200 | 2.600 | 1.200 | 0,22 | 0,22 |
| R 5 | 40~60 | 12.500 | 5.700 | 2.000 | 900 | 0,26 | 0,26 |
| R 6 | 48~84 | 10.500 | 4.800 | 1.700 | 750 | 0,30 | 0,30 |

Max cutting depth




Set the diagonal plunge angle to be approximately 0,5° and 1°

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
5. To mill graphite, use a dedicated milling machine. To prevent inhalation of dust, use a dust collector and a dust mask when working around graphite.
6. During milling, keep the runout at the tip of the end mill to be less than 0.01 mm.
7. To achieve efficient finishing, the feed rate may be adjusted as high as triple the rate.
8. For high-efficiency machining, lower the feed rate as far down as 30% for high-load operations such as slotting. This can minimize the amount of cutting remnants resulting from the flexing of the tool.
9. If gouging occurs while milling a flat area, raise the speed.
10. If a cut involves the shaping of a corner, use the corner radius process of the program, or adjust the speed so that it would not cause chattering, and reduce the speed at the corner at the same time (by approximately 60%).

# DG-LN-EBD

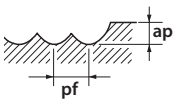
## Roughing

| R x l1 | Graphite | | | | | |
|---|---|---|---|---|---|---|
| | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | short | long | short | long | | |
| R0,2x4 | 40.000 | 20.000 | 960 | 480 | 0,040 | 0,120 |
| R0,2x8 | 30.000 | 18.000 | 430 | 250 | 0,030 | 0,080 |
| R0,3x6 | 40.000 | 20.000 | 960 | 480 | 0,060 | 0,180 |
| R0,3x10 | 33.000 | 20.000 | 635 | 385 | 0,050 | 0,150 |
| R0,4x15 | 19.000 | 14.000 | 370 | 280 | 0,050 | 0,150 |
| R0,5x6 | 40.000 | 20.000 | 1.150 | 575 | 0,100 | 0,300 |
| R0,5x16 | 23.000 | 18.000 | 530 | 410 | 0,080 | 0,240 |
| R0,5x20 | 18.000 | 12.000 | 310 | 205 | 0,070 | 0,200 |
| R0,5x30 | 8.000 | 5.000 | 145 | 85 | 0,040 | 0,130 |
| R0,75x6 | 40.000 | 20.000 | 1.800 | 900 | 0,150 | 0,450 |
| R0,75x10 | 38.000 | 20.000 | 1.600 | 865 | 0,150 | 0,450 |
| R0,75x16 | 30.000 | 20.000 | 1.300 | 865 | 0,150 | 0,450 |
| R1x16 | 28.000 | 20.000 | 1.800 | 1.350 | 0,200 | 0,600 |
| R1x30 | 16.000 | 11.500 | 840 | 615 | 0,180 | 0,520 |
| R1,5x20 | 20.000 | 15.500 | 2.050 | 1.550 | 0,300 | 0,900 |
| R1,5x40 | 12.500 | 9.200 | 1.000 | 740 | 0,220 | 0,650 |
| R2x20 | 20.000 | 14.000 | 2.950 | 2.050 | 0,400 | 1,200 |

## Finishing

| R x l1 | Graphite | | | | | |
|---|---|---|---|---|---|---|
| | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | short | long | short | long | | |
| R0,2x4 | 40.000 | 20.000 | 800 | 400 | 0,012 | 0,012 |
| R0,2x8 | 30.000 | 18.000 | 360 | 210 | 0,012 | 0,012 |
| R0,3x6 | 40.000 | 20.000 | 800 | 400 | 0,018 | 0,018 |
| R0,3x10 | 33.000 | 20.000 | 530 | 320 | 0,018 | 0,018 |
| R0,4x15 | 19.000 | 14.000 | 280 | 230 | 0,021 | 0,021 |
| R0,5x6 | 40.000 | 20.000 | 950 | 480 | 0,030 | 0,030 |
| R0,5x16 | 23.000 | 18.000 | 440 | 340 | 0,030 | 0,030 |
| R0,5x20 | 18.000 | 12.000 | 260 | 170 | 0,030 | 0,030 |
| R0,5x30 | 8.000 | 5.000 | 120 | 70 | 0,020 | 0,020 |
| R0,75x6 | 40.000 | 20.000 | 1.500 | 750 | 0,045 | 0,045 |
| R0,75x10 | 38.000 | 20.000 | 1.350 | 720 | 0,045 | 0,045 |
| R0,75x16 | 30.000 | 20.000 | 1.100 | 720 | 0,045 | 0,045 |
| R1x16 | 28.000 | 20.000 | 1.300 | 950 | 0,060 | 0,060 |
| R1x30 | 16.000 | 11.500 | 600 | 440 | 0,060 | 0,060 |
| R1,5x20 | 20.000 | 15.500 | 1.450 | 1.100 | 0,090 | 0,090 |
| R1,5x40 | 12.500 | 9.200 | 720 | 530 | 0,090 | 0,090 |
| R2x20 | 20.000 | 14.000 | 2.100 | 1.450 | 0,120 | 0,120 |

Max cutting depth




Set the diagonal plunge angle to be approximately 0,3° and 0,5°

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
5. To mill graphite, use a dedicated milling machine. To prevent inhalation of dust, use a dust collector and a dust mask when working around graphite.
6. During milling, keep the runout at the tip of the end mill to be less than 0.01 mm.
7. To achieve efficient finishing, the feed rate may be adjusted as high as triple the rate.
8. For high-efficiency machining, lower the feed rate as far down as 30% for high-load operations such as slotting. This can minimize the amount of cutting remnants resulting from the flexing of the tool.
9. If gouging occurs while milling a flat area, raise the speed.
10. If a cut involves the shaping of a corner, use the corner radius process of the program, or adjust the speed so that it would not cause chattering, and reduce the speed at the corner at the same time (by approximately 60%).

# CUTTING CONDITIONS



# DG-CPR

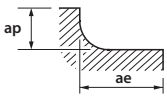
## Roughing

| R | Graphite | | | | | |
|---|---|---|---|---|---|---|
| | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | short | long | short | long | | |
| 0,5 x R0,1 x 0° x 4 | 20.000 | 16.000 | 720 | 575 | 0,05 | 0,24 |
| 0,5 x R0,1 x 0° x 6 | 20.000 | 16.000 | 720 | 575 | 0,05 | 0,24 |
| 1 x R0,1 x 0° x 10 | 16.000 | 12.000 | 1.150 | 865 | 0,1 | 0,48 |
| 2 x R0,2 x 0° x 10 | 16.000 | 12.000 | 2.050 | 1.500 | 0,3 | 1,28 |
| 2 x R0,2 x 0° x 20 | 11.000 | 8.000 | 1.400 | 1.000 | 0,18 | 1,2 |
| 4 x R0,3 x 0° x 40 | 12.000 | 8.000 | 3.450 | 2.300 | 0,35 | 2,8 |
| 4 x R0,5 x 0° x 25 | 12.000 | 8.000 | 2.950 | 1.870 | 0,4 | 3 |
| 4 x R0,5 x 0° x 40 | 12.000 | 8.000 | 3.450 | 2.300 | 0,35 | 3 |
| 4 x R1 x 0° x 40 | 12.000 | 8.000 | 3.450 | 2.300 | 0,35 | 3 |
| 6 x R0,3 x 0° x 30 | 12.000 | 8.000 | 3.450 | 2.300 | 1,5 | 4,8 |
| 6 x R0,5 x 0° x 30 | 12.000 | 7.000 | 4.300 | 2.500 | 1,5 | 4 |
| 6 x R1 x 0° x 30 | 12.000 | 7.000 | 4.300 | 2.500 | 1,5 | 3,2 |
| 8 x R0,3 x 0° x 100 | 5.000 | 3.500 | 2.000 | 800 | 2 | 4,2 |
| 8 x R0,5 x 0° x 32 | 10.000 | 7.000 | 3.800 | 2.650 | 2 | 5,6 |
| 8 x R0,5 x 0° x 100 | 5.000 | 3.500 | 2.000 | 800 | 2 | 3,6 |
| 8 x R1 x 0° x 100 | 5.000 | 3.500 | 2.000 | 800 | 2 | 3 |
| 10 x R0,5 x 0° x 40 | 8.000 | 4.000 | 3.050 | 1.500 | 2,5 | 7,2 |
| 10 x R1 x 0° x 40 | 8.000 | 4.000 | 3.050 | 1.500 | 2,5 | 6,4 |
| 12 x R1 x 0° x 48 | 6.000 | 3.000 | 2.300 | 1.150 | 3 | 8 |

## Finishing

| R | Graphite | | | | | |
|---|---|---|---|---|---|---|
| | S (min-1) | | F (mm/min) | | ap (mm) | pf (mm) |
| | short | long | short | long | | |
| 0,5 x R0,1 x 0° x 4 | 20.000 | 16.000 | 600 | 480 | 0,05 | 0,12 |
| 0,5 x R0,1 x 0° x 6 | 20.000 | 16.000 | 600 | 480 | 0,05 | 0,12 |
| 1 x R0,1 x 0° x 10 | 16.000 | 12.000 | 960 | 720 | 0,08 | 0,24 |
| 2 x R0,2 x 0° x 10 | 16.000 | 12.000 | 1.450 | 1.100 | 0,08 | 0,64 |
| 2 x R0,2 x 0° x 20 | 11.000 | 8.000 | 990 | 720 | 0,08 | 0,64 |
| 4 x R0,3 x 0° x 40 | 12.000 | 8.000 | 2.450 | 1.650 | 0,08 | 1,4 |
| 4 x R0,5 x 0° x 25 | 12.000 | 8.000 | 2.180 | 1.180 | 0,32 | 1,5 |
| 4 x R0,5 x 0° x 40 | 12.000 | 8.000 | 2.410 | 1.650 | 0,08 | 1,7 |
| 4 x R1 x 0° x 40 | 12.000 | 8.000 | 2.410 | 1.650 | 0,08 | 2 |
| 6 x R0,3 x 0° x 30 | 12.000 | 8.000 | 2.410 | 1.650 | 0,15 | 2,4 |
| 6 x R0,5 x 0° x 30 | 12.000 | 7.000 | 3.050 | 1.800 | 0,2 | 2 |
| 6 x R1 x 0° x 30 | 12.000 | 7.000 | 3.050 | 1.800 | 0,4 | 1,6 |
| 8 x R0,3 x 0° x 100 | 5.000 | 3.500 | 1.500 | 500 | 0,1 | 2 |
| 8 x R0,5 x 0° x 32 | 10.000 | 7.000 | 2.700 | 1.900 | 0,2 | 2,8 |
| 8 x R0,5 x 0° x 100 | 5.000 | 3.500 | 1.500 | 500 | 0,1 | 1,4 |
| 8 x R1 x 0° x 100 | 5.000 | 3.500 | 1.500 | 500 | 0,2 | 1 |
| 10 x R0,5 x 0° x 40 | 8.000 | 4.000 | 2.200 | 1.100 | 0,2 | 4,4 |
| 10 x R1 x 0° x 40 | 8.000 | 4.000 | 2.200 | 1.100 | 0,4 | 3,2 |
| 12 x R1 x 0° x 48 | 6.000 | 3.000 | 1.650 | 815 | 0,4 | 4 |

Max cutting depth




Set the diagonal plunge angle to be approximately 0,5° and 1°

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
5. To mill graphite, use a dedicated milling machine. To prevent inhalation of dust, use a dust collector and a dust mask when working around graphite.
6. During milling, keep the runout at the tip of the end mill to be less than 0.01 mm.
7. To achieve efficient finishing, the feed rate may be adjusted as high as triple the rate.
8. For high-efficiency machining, lower the feed rate as far down as 30% for high-load operations such as slotting. This can minimize the amount of cutting remnants resulting from the flexing of the tool.
9. If gouging occurs while milling a flat area, raise the speed.
10. If a cut involves the shaping of a corner, use the corner radius process of the program, or adjust the speed so that it would not cause chattering, and reduce the speed at the corner at the same time (by approximately 60%).

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## DIA-BNC

**Trimming & plunging operation**

| | Side Milling ap: <1,5D / ae: <1D | | Slotting ap: 1D | |
|---|---|---|---|---|
| Vc | 120 (m/min) | 240 (m/min) | 90 (m/min) | 180 (m/min) |
| Ø | F (mm/min) | F (mm/min) | F (mm/min) | F (mm/min) |
| 6 | 770 | 1.600 | 380 | 750 |
| 8 | 900 | 1.800 | 450 | 900 |
| 10 | 1.000 | 2.000 | 510 | 1.000 |
| 12 | 1.300 | 2.600 | 630 | 1.300 |

## DIA-HBC

| | Side Milling ap: <1,5D / ae: <1D | | Slotting ap: 1D | |
|---|---|---|---|---|
| Vc | 120 (m/min) | 240 (m/min) | 90 (m/min) | 180 (m/min) |
| Ø | F (mm/min) | F (mm/min) | F (mm/min) | F (mm/min) |
| 6 | 770 | 1.600 | 380 | 750 |
| 8 | 900 | 1.800 | 450 | 900 |
| 10 | 1.000 | 2.000 | 510 | 1.000 |
| 12 | 1.300 | 2.600 | 630 | 1.300 |

Note: This table's parameters are based on common material thickness of approximately 0,250" under excellent workholding conditions and less than 20% x D depth of cut (side milling). Please adjust your parameters properly for your application or call OSG for assistanceConventional milling is recommended for better surface finishes. Higher feed rates are possible but quality of part and surface should be considered.

Feed reduction by thickness of part: Recommended feed adjustments based on thickness of part. (Above table is based on approxmately 1xD thickness.)

| | |
|---|---|
| ≤0,5D | x 150% |
| 0,5D-1D | x 120% |
| 1D-2D | x 80% |
| 3D-4D | x 50% |

## DIA-MFC

| | S ($min^{-1}$) | Feed rate (mm/rev) | Feed rate IPR |
|---|---|---|---|
| Vc | | 100~180 (m/min) | |
| 6 | 5.300 ~ 9.500 | 0,16 ~ 0,24 | 0,006 ~ 0,009 |
| 8 | 4.000 ~ 7.000 | 0,3 ~ 1 | 0,012 ~ 0,039 |
| 10 | 3.200 ~ 5.700 | 0,48 ~ 1,2 | 0,019 ~ 0,047 |

| | |
|---|---|
| ≤0,25D | x 80% |
| 0,25D-0,5D | x 150% |
| 0,5D-1D | x 120% |
| 1D-2D | x 80% |
| 2D-3D | x 50% |

## DIA-REC

| | S ($min^{-1}$) | Feed rate (mm/rev) | Feed rate IPR |
|---|---|---|---|
| Vc | | 100~180 (m/min) | |
| 6 | 5.300 ~ 9.500 | 0,1 ~ 0,12 | 0,004 ~ 0,005 |
| 8 | 4.000 ~ 7.200 | 0,16 ~ 0,25 | 0,006 ~ 0,01 |
| 10 | 3.200 ~ 5.700 | 0,24 ~ 0,3 | 0,009 ~ 0,012 |

| | |
|---|---|
| ≤0,25D | x 80% |
| 0,25D-0,5D | x 150% |
| 0,5D-1D | x 120% |
| 1D-2D | x 80% |
| 2D-3D | x 50% |

## HBC60

| | S ($min^{-1}$) | Feed rate (mm/rev) | Feed rate IPR |
|---|---|---|---|
| Vc | | 300~600 (m/min) | |
| 6 | 20.000 ~ 30.000 | 0,02 ~ 0,06 | 0,001 ~ 0,002 |
| 8 | 15.000 ~ 24.000 | 0,02 ~ 0,06 | 0,001 ~ 0,002 |
| 10 | 12.000 ~ 19.000 | 0,02 ~ 0,07 | 0,001 ~ 0,003 |
| 12 | 10.000 ~ 16.000 | 0,02 ~ 0,1 | 0,001 ~ 0,004 |

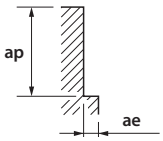
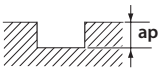
| | |
|---|---|
| ≤0,25D | x 80% |
| 0,25D-0,5D | x 150% |
| 0,5D-1D | x 120% |
| 1D-2D | x 80% |
| 2D-3D | x 50% |

# CUTTING CONDITIONS



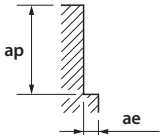
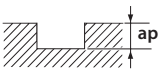
## UVX-TI-4FL / SAFE-λOCK®

**Titanium alloy (Ti-6Al-4V)**

| | Side milling | | Slotting | |
|---|---|---|---|---|
| Vc | 60 ~ 80 m/min | | 30 ~ 50 m/min | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 1.900 | 680 | 1.350 | 270 |
| 16 | 1.400 | 500 | 990 | 200 |
| 20 | 1.100 | 480 | 800 | 190 |
| 25 | 900 | 400 | 640 | 150 |
| Max cutting depth |   | ap ≤ 1,8 Dc; ae 0,2 Dc |   | ap ≤ 1 Dc |

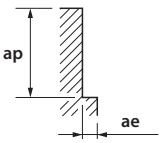
## UVX-TI-5FL / UVX-TI-5FL-HB / SAFE-λOCK®

**Titanium alloy (Ti-6Al-4V)**

| | Side milling | | Slotting | |
|---|---|---|---|---|
| Vc | 60 ~ 80 m/min | | 30 ~ 50 m/min | |
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 1.900 | 855 | 1.350 | 340 |
| 16 | 1.400 | 630 | 990 | 250 |
| 20 | 1.100 | 600 | 800 | 240 |
| 25 | 900 | 500 | 640 | 192 |
| Max cutting depth |   | ap ≤ 1,8 Dc; ae 0,2 Dc |   | ap ≤ 1 Dc |

## UVXL-TI-5FL / SAFE-λOCK®

**Titanium alloy (Ti-6Al-4V)**

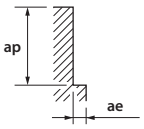
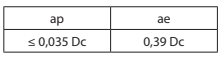
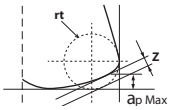
| | Side milling | |
|---|---|---|
| Vc | 60 ~ 80 m/min | |
| Ø | S ($min^{-1}$) | F (mm/min) |
| 12 | 2.100 | 1.050 |
| 16 | 1.600 | 920 |
| 20 | 1.270 | 760 |
| 25 | 1.020 | 587 |
| Max cutting depth |   | ap ≤ 3,75 Dc; ae 0,1 Dc |

# CUTTING CONDITIONS



## HFC-TI

### Titanium Alloy (Ti-6Al-4V)

| | Contour milling | | | | |
|---|---|---|---|---|---|
| Vc | 50 ~ 100 m/min | | | | |
| Ø | S ($min^{-1}$) | F (mm/min) | Ramping Angle E | rt | Z |
| 16 | 1.490 | 4.500 | 2° | 0,86 | 0,46 |
| 20 | 1.190 | 3.600 | 2° | 1,01 | 0,58 |
| 25 | 850 | 4.860 | 2° | 1,2 | 0,74 |
| Max cutting depth |   | |   |   | |

## CM-RMS

### Side milling • 4 flute type

| | Heat resistant alloys Inconel 718 | | | |
|---|---|---|---|---|
| Ø | Cutting Speed (m/min) | Feed per tooth (mm/t) | ap (mm) | ae (mm) |
| 6 | 400-800 | 0,02-0,04 | ≤4,5 (0,75D) | ≤0,6 (0,1D) |
| 8 | 400-800 | 0,02-0,04 | ≤6,0 (0,75D) | ≤0,8 (0,1D) |
| 10 | 400-800 | 0,02-0,07 | ≤7,5 (0,75D) | ≤1,0 (0,1D) |
| 12 | 400-800 | 0,02-0,07 | ≤9,0 (0,75D) | ≤1,2 (0,1D) |

### Slotting • 4 flute type

| | Heat resistant alloys Inconel 718 | | |
|---|---|---|---|
| Ø | Cutting Speed (m/min) | Feed per tooth (mm/t) | ap |
| 6 | 400-800 | 0,02-0,04 | ≤1,2 (0,2D) |
| 8 | 400-800 | 0,02-0,04 | ≤1,6 (0,2D) |
| 10 | 400-800 | 0,02-0,07 | ≤2,0 (0,2D) |
| 12 | 400-800 | 0,02-0,07 | ≤2,4 (0,2D) |

### Side milling • 6 flute type

| | Heat resistant alloys Inconel 718 | | | |
|---|---|---|---|---|
| Ø | Cutting Speed (m/min) | Feed per tooth (mm/t) | ap (mm) | ae (mm) |
| 6 | 400-800 | 0,02-0,04 | ≤4,5 (0,75D) | ≤0,6 (0,1D) |
| 8 | 400-800 | 0,02-0,04 | ≤6,0 (0,75D) | ≤0,8 (0,1D) |
| 10 | 400-800 | 0,02-0,07 | ≤7,5 (0,75D) | ≤1,0 (0,1D) |
| 12 | 400-800 | 0,02-0,07 | ≤9,5 (0,75D) | ≤1,2 (0,1D) |

## CM-CRE

### Side milling End cutting edge type*

| | Heat resistant alloys Inconel 718 | | | |
|---|---|---|---|---|
| Ø | Cutting Speed (m/min) | Feed per tooth (mm/t) | ap (mm) | ae (mm) |
| 16 | 400-800 | 0,03-0,05 | 1 | ≤9,6 (0,6D) |
| 20 | 400-800 | 0,04-0,06 | 1 | ≤12,0 (0,6D) |
| 25 | 400-800 | 0,05-0,08 | 1 | ≤15,0 (0,6D) |

*Specify a draft (at least 3°) in the milling program to avoid neck interferences .

## AE-TS-N Applies to square/sharp corner edge/radius type

### Slot Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 300 | | 300 | | 150 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 32.000 | 1.200 | 32.000 | 1.200 | 16.000 | 540 |
| 1,5 x 4,5 | 32.000 | 1.350 | 32.000 | 1.350 | 16.000 | 610 |
| 2 x 6 | 32.000 | 1.540 | 32.000 | 1.540 | 16.000 | 660 |
| 2,5 x 7,5 | 32.000 | 1.630 | 32.000 | 1.630 | 16.000 | 810 |
| 3 x 9 | 32.000 | 1.720 | 32.000 | 1.720 | 16.000 | 960 |
| 4 x 12 | 24.000 | 1.780 | 24.000 | 1.780 | 12.000 | 1.030 |
| 5 x 15 | 19.200 | 1.840 | 19.200 | 1.840 | 9.600 | 1.090 |
| 6 x 18 | 16.000 | 1.900 | 16.000 | 1.900 | 8.000 | 1.160 |
| 8 x 24 | 12.000 | 2.030 | 12.000 | 2.030 | 6.000 | 1.300 |
| 10 x 30 | 9.600 | 2.150 | 9.600 | 2.150 | 4.800 | 1.430 |
| 12 x 36 | 8.000 | 2.270 | 8.000 | 2.270 | 4.000 | 1.560 |
| 16 x 48 | 6.000 | 2.380 | 6.000 | 2.380 | 3.000 | 1.630 |
| 20 x 60 | 4.800 | 2.490 | 4.800 | 2.490 | 2.400 | 1.700 |
| 25 x 75 | 3.850 | 2.600 | 3.850 | 2.600 | 1.900 | 1.780 |
| Depth of cut | ap<br>1D | | | | ap<br>0,5D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 90 | | 70 | | 90 | | 90 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 25.500 | 1.910 | 19.100 | 1.150 | 25.500 | 1.150 | 25.500 | 1.150 |
| 1,5 x 4,5 | 17.000 | 1.530 | 12.700 | 950 | 17.000 | 770 | 17.000 | 770 |
| 2 x 6 | 12.700 | 1.330 | 9.500 | 860 | 12.700 | 760 | 12.700 | 760 |
| 2,5 x 7,5 | 10.200 | 1.220 | 7.600 | 800 | 10.200 | 610 | 10.200 | 610 |
| 3 x 9 | 8.500 | 1.150 | 6.400 | 770 | 8.500 | 510 | 8.500 | 510 |
| 4 x 12 | 6.400 | 1.090 | 4.800 | 750 | 6.400 | 480 | 6.400 | 480 |
| 5 x 15 | 5.100 | 1.070 | 3.800 | 740 | 5.100 | 460 | 5.100 | 460 |
| 6 x 18 | 4.200 | 1.010 | 3.200 | 740 | 4.200 | 440 | 4.200 | 440 |
| 8 x 24 | 3.200 | 960 | 2.600 | 740 | 3.200 | 390 | 3.200 | 390 |
| 10 x 30 | 2.900 | 870 | 2.200 | 630 | 2.900 | 390 | 2.900 | 390 |
| 12 x 36 | 2.400 | 790 | 2.000 | 630 | 2.400 | 360 | 2.400 | 360 |
| 16 x 48 | 2.000 | 720 | 1.600 | 550 | 2.000 | 360 | 2.000 | 360 |
| 20 x 60 | 1.600 | 620 | 1.300 | 490 | 1.600 | 340 | 1.600 | 340 |
| 25 x 75 | 1.300 | 590 | 1.000 | 440 | 1.300 | 310 | 1.300 | 310 |
| Depth of cut | | | DC ≤12<br>12<DC | | ap<br>1D<br>0,5D | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-TS-N Applies to square/sharp corner edge/radius type

### Side Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 300 | | 300 | | 150 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 32.000 | 1.300 | 32.000 | 1.300 | 16.000 | 600 |
| 1,5 x 4,5 | 32.000 | 1.430 | 32.000 | 1.430 | 16.000 | 660 |
| 2 x 6 | 32.000 | 1.730 | 32.000 | 1.730 | 16.000 | 720 |
| 2,5 x 7,5 | 32.000 | 1.920 | 32.000 | 1.920 | 16.000 | 900 |
| 3 x 9 | 32.000 | 2.150 | 32.000 | 2.150 | 16.000 | 1.200 |
| 4 x 12 | 24.000 | 2.230 | 24.000 | 2.230 | 12.000 | 1.290 |
| 5 x 15 | 19.200 | 2.300 | 19.200 | 2.300 | 9.600 | 1.360 |
| 6 x 18 | 16.000 | 2.380 | 16.000 | 2.380 | 8.000 | 1.450 |
| 8 x 24 | 12.000 | 2.540 | 12.000 | 2.540 | 6.000 | 1.620 |
| 10 x 30 | 9.600 | 2.690 | 9.600 | 2.690 | 4.800 | 1.780 |
| 12 x 36 | 8.000 | 2.840 | 8.000 | 2.840 | 4.000 | 1.950 |
| 16 x 48 | 6.000 | 2.980 | 6.000 | 2.980 | 3.000 | 2.040 |
| 20 x 60 | 4.800 | 3.100 | 4.800 | 3.100 | 2.400 | 2.130 |
| 25 x 75 | 3.850 | 3.200 | 3.850 | 3.200 | 1.900 | 2.200 |
| Depth of cut | | | ap: 1,5D | ae: 0,2D | | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin<br>PP • UPE • PTFE | | Thermoplastic Resin<br>POM • PVC • MC Nylon • ABS Resin | | Thermoplastic Resin<br>Acrylic | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| Vc (m/min) | 110 | | 90 | | 110 | | 110 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 31.800 | 2.390 | 25.500 | 1.530 | 31.800 | 1.430 | 31.800 | 1.430 |
| 1,5 x 4,5 | 21.200 | 1.910 | 17.000 | 1.280 | 21.200 | 950 | 21.200 | 950 |
| 2 x 6 | 15.900 | 1.670 | 12.700 | 1.140 | 15.900 | 950 | 15.900 | 950 |
| 2,5 x 7,5 | 12.700 | 1.520 | 10.200 | 1.070 | 12.700 | 760 | 12.700 | 760 |
| 3 x 9 | 10.600 | 1.430 | 8.500 | 1.020 | 10.600 | 640 | 10.600 | 640 |
| 4 x 12 | 8.000 | 1.370 | 6.400 | 1.000 | 8.000 | 600 | 8.000 | 600 |
| 5 x 15 | 6.400 | 1.340 | 5.100 | 990 | 6.400 | 580 | 6.400 | 580 |
| 6 x 18 | 5.300 | 1.270 | 4.200 | 950 | 5.300 | 560 | 5.300 | 560 |
| 8 x 24 | 4.000 | 1.200 | 3.400 | 870 | 4.000 | 480 | 4.000 | 480 |
| 10 x 30 | 3.500 | 1.050 | 2.900 | 830 | 3.500 | 470 | 3.500 | 470 |
| 12 x 36 | 2.900 | 960 | 2.500 | 790 | 2.900 | 440 | 2.900 | 440 |
| 16 x 48 | 2.400 | 860 | 2.000 | 690 | 2.400 | 430 | 2.400 | 430 |
| 20 x 60 | 1.900 | 740 | 1.600 | 600 | 1.900 | 400 | 1.900 | 400 |
| 25 x 75 | 1.500 | 680 | 1.300 | 570 | 1.500 | 360 | 1.500 | 360 |
| Depth of cut | | | | ap: 1,5D | | ae: 0,5D | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-TS-N Applies to square/sharp corner edge/radius type

### Plunging

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 80 | | 80 | | 60 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 16.000 | 350 | 16.000 | 350 | 10.000 | 100 |
| 1,5 x 4,5 | 16.000 | 350 | 16.000 | 350 | 9.000 | 100 |
| 2 x 6 | 12.750 | 350 | 12.750 | 350 | 8.500 | 100 |
| 2,5 x 7,5 | 10.000 | 350 | 10.000 | 350 | 6.400 | 100 |
| 3 x 9 | 8.500 | 400 | 8.500 | 400 | 6.400 | 120 |
| 4 x 12 | 6.400 | 400 | 6.400 | 400 | 4.800 | 120 |
| 5 x 15 | 5.100 | 400 | 5.100 | 400 | 3.800 | 120 |
| 6 x 18 | 4.200 | 450 | 4.200 | 450 | 3.100 | 130 |
| 8 x 24 | 3.200 | 500 | 3.200 | 500 | 2.400 | 150 |
| 10 x 30 | 2.550 | 500 | 2.550 | 500 | 1.900 | 150 |
| 12 x 36 | 2.100 | 500 | 2.100 | 500 | 1.600 | 150 |
| 16 x 48 | 1.600 | 550 | 1.600 | 550 | 1.200 | 170 |
| 20 x 60 | 1.300 | 550 | 1.300 | 550 | 960 | 170 |
| 25 x 75 | 1.020 | 550 | 1.020 | 550 | 770 | 170 |
| Depth of cut | ap 1D | | | | ap 0,5D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 90 | | 70 | | 90 | | 90 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 25.500 | 480 | 19.100 | 290 | 25.500 | 290 | 25.500 | 290 |
| 1,5 x 4,5 | 17.000 | 380 | 12.700 | 240 | 17.000 | 190 | 17.000 | 190 |
| 2 x 6 | 12.700 | 330 | 9.500 | 210 | 12.700 | 190 | 12.700 | 190 |
| 2,5 x 7,5 | 10.200 | 310 | 7.600 | 200 | 10.200 | 150 | 10.200 | 150 |
| 3 x 9 | 8.500 | 290 | 6.400 | 190 | 8.500 | 130 | 8.500 | 130 |
| 4 x 12 | 6.400 | 270 | 4.800 | 190 | 6.400 | 120 | 6.400 | 120 |
| 5 x 15 | 5.100 | 270 | 3.800 | 190 | 5.100 | 110 | 5.100 | 110 |
| 6 x 18 | 4.200 | 250 | 3.200 | 190 | 4.200 | 110 | 4.200 | 110 |
| 8 x 24 | 3.200 | 250 | 2.600 | 190 | 3.200 | 110 | 3.200 | 110 |
| 10 x 30 | 2.900 | 250 | 2.200 | 180 | 2.900 | 110 | 2.900 | 110 |
| 12 x 36 | 2.400 | 250 | 2.000 | 180 | 2.400 | 110 | 2.400 | 110 |
| 16 x 48 | 2.000 | 240 | 1.600 | 180 | 2.000 | 110 | 2.000 | 110 |
| 20 x 60 | 1.600 | 210 | 1.300 | 160 | 1.600 | 110 | 1.600 | 110 |
| 25 x 75 | 1.300 | 200 | 1.000 | 150 | 1.300 | 100 | 1.300 | 100 |
| Depth of cut | ap 1D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.24).
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).
9. Please step feed when processing resin by plunging.

The table above is for when using air-blow.

### Cutting Condition Guide for Changes in Overhang Length

### DC = Ø6, Ø8

| | Work Material | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|---|
| | L/D | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| Slot milling | 5 | 70% | | 70% | | 70% | |
| | 6 | 40% | | 40% | | 40% | |
| Side milling | 5 | 70% | | 70% | | 70% | |
| | 6 | 50% | | 50% | | 50% | |
| Plunging | 5 | 80% | | 80% | | 80% | |
| | 6 | 60% | | 60% | | 60% | |

# CUTTING CONDITIONS



## AE-TL-N Applies to square/sharp corner edge/chipbreaker type

### 3XD Cutting length

### Slot Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 240 | | 240 | | 120 | |
| DC x APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 25.600 | 1.380 | 25.600 | 1.380 | 12.800 | 770 |
| 4 x 12 | 19.200 | 1.420 | 19.200 | 1.420 | 9.600 | 820 |
| 5 x 15 | 15.360 | 1.470 | 15.360 | 1.470 | 7.680 | 870 |
| 6 x 18 | 12.800 | 1.520 | 12.800 | 1.520 | 6.400 | 930 |
| 8 x 24 | 9.600 | 1.620 | 9.600 | 1.620 | 4.800 | 1.040 |
| 10 x 30 | 7.680 | 1.720 | 7.680 | 1.720 | 3.840 | 1.140 |
| 12 x 36 | 6.400 | 1.820 | 6.400 | 1.820 | 3.200 | 1.250 |
| 16 x 48 | 4.800 | 1.920 | 4.800 | 1.920 | 2.400 | 1.320 |
| 20 x 60 | 3.800 | 2.020 | 3.800 | 2.020 | 1.900 | 1.390 |
| 25 x 75 | 3.060 | 2.120 | 3.060 | 2.120 | 1.530 | 1.460 |
| Depth of cut | ap<br>1D | | | | ap<br>0,5D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 90 | | 70 | | 90 | | 90 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 8.500 | 1.150 | 6.400 | 770 | 8.500 | 510 | 8.500 | 510 |
| 4 x 12 | 6.400 | 1.090 | 4.800 | 750 | 6.400 | 480 | 6.400 | 480 |
| 5 x 15 | 5.100 | 1.070 | 3.800 | 740 | 5.100 | 460 | 5.100 | 460 |
| 6 x 18 | 4.200 | 1.010 | 3.200 | 740 | 4.200 | 440 | 4.200 | 440 |
| 8 x 24 | 3.200 | 960 | 2.600 | 740 | 3.200 | 390 | 3.200 | 390 |
| 10 x 30 | 2.900 | 870 | 2.200 | 630 | 2.900 | 390 | 2.900 | 390 |
| 12 x 36 | 2.400 | 790 | 2.000 | 630 | 2.400 | 360 | 2.400 | 360 |
| 16 x 48 | 2.000 | 720 | 1.600 | 550 | 2.000 | 360 | 2.000 | 360 |
| 20 x 60 | 1.600 | 620 | 1.300 | 490 | 1.600 | 340 | 1.600 | 340 |
| 25 x 75 | 1.300 | 590 | 1.000 | 440 | 1.300 | 310 | 1.300 | 310 |
| Depth of cut | | | DC ≤12<br>12<DC | | ap<br>1D<br>0,5D | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
5. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-TL-N Applies to square/sharp corner edge/chipbreaker type

### 3XD Cutting length

### Side Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 240 | | 240 | | 120 | |
| DC x APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 25.600 | 1.720 | 25.600 | 1.720 | 12.800 | 960 |
| 4 x 12 | 19.200 | 1.780 | 19.200 | 1.780 | 9.600 | 1.020 |
| 5 x 15 | 15.360 | 1.840 | 15.360 | 1.840 | 7.680 | 1.080 |
| 6 x 18 | 12.800 | 1.900 | 12.800 | 1.900 | 6.400 | 1.160 |
| 8 x 24 | 9.600 | 2.030 | 9.600 | 2.030 | 4.800 | 1.300 |
| 10 x 30 | 7.680 | 2.150 | 7.680 | 2.150 | 3.840 | 1.420 |
| 12 x 36 | 6.400 | 2.270 | 6.400 | 2.270 | 3.200 | 1.550 |
| 16 x 48 | 4.800 | 2.390 | 4.800 | 2.390 | 2.400 | 1.630 |
| 20 x 60 | 3.800 | 2.510 | 3.800 | 2.510 | 1.900 | 1.710 |
| 25 x 75 | 3.060 | 2.640 | 3.060 | 2.640 | 1.530 | 1.800 |
| Depth of cut | ap: 3D | ae: 0,1D | | | | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 110 | | 90 | | 110 | | 110 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 10.600 | 1.430 | 8.500 | 1.020 | 10.600 | 640 | 10.600 | 640 |
| 4 x 12 | 8.000 | 1.370 | 6.400 | 1.000 | 8.000 | 600 | 8.000 | 600 |
| 5 x 15 | 6.400 | 1.340 | 5.100 | 990 | 6.400 | 580 | 6.400 | 580 |
| 6 x 18 | 5.300 | 1.270 | 4.200 | 950 | 5.300 | 560 | 5.300 | 560 |
| 8 x 24 | 4.000 | 1.200 | 3.400 | 870 | 4.000 | 480 | 4.000 | 480 |
| 10 x 30 | 3.500 | 1.050 | 2.900 | 830 | 3.500 | 470 | 3.500 | 470 |
| 12 x 36 | 2.900 | 960 | 2.500 | 790 | 2.900 | 440 | 2.900 | 440 |
| 16 x 48 | 2.400 | 860 | 2.000 | 690 | 2.400 | 430 | 2.400 | 430 |
| 20 x 60 | 1.900 | 740 | 1.600 | 600 | 1.900 | 400 | 1.900 | 400 |
| 25 x 75 | 1.500 | 680 | 1.300 | 570 | 1.500 | 360 | 1.500 | 360 |
| Depth of cut | ap: 3D | | | | ae: 0,2D | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
5. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-TL-N Applies to square/sharp corner edge/chipbreaker type

### 3XD Cutting length
### Plunging

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 70 | | 70 | | 50 | |
| DC x APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 7.500 | 350 | 7.500 | 350 | 5.300 | 100 |
| 4 x 12 | 5.600 | 350 | 5.600 | 350 | 3.980 | 100 |
| 5 x 15 | 4.460 | 350 | 4.460 | 350 | 3.180 | 100 |
| 6 x 18 | 3.680 | 400 | 3.680 | 400 | 2.650 | 110 |
| 8 x 24 | 2.800 | 450 | 2.800 | 450 | 1.990 | 120 |
| 10 x 30 | 2.230 | 450 | 2.230 | 450 | 1.590 | 120 |
| 12 x 36 | 1.840 | 450 | 1.840 | 450 | 1.330 | 120 |
| 16 x 48 | 1.400 | 500 | 1.400 | 500 | 1.000 | 130 |
| 20 x 60 | 1.100 | 500 | 1.100 | 500 | 800 | 130 |
| 25 x 75 | 890 | 500 | 890 | 500 | 640 | 130 |
| Depth of cut | ap 1D | | | | ap 0,5D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 90 | | 70 | | 90 | | 90 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 9 | 8.500 | 290 | 6.400 | 190 | 8.500 | 130 | 8.500 | 130 |
| 4 x 12 | 6.400 | 270 | 4.800 | 190 | 6.400 | 120 | 6.400 | 120 |
| 5 x 15 | 5.100 | 270 | 3.800 | 190 | 5.100 | 110 | 5.100 | 110 |
| 6 x 18 | 4.200 | 250 | 3.200 | 190 | 4.200 | 110 | 4.200 | 110 |
| 8 x 24 | 3.200 | 250 | 2.600 | 190 | 3.200 | 110 | 3.200 | 110 |
| 10 x 30 | 2.900 | 250 | 2.200 | 180 | 2.900 | 110 | 2.900 | 110 |
| 12 x 36 | 2.400 | 250 | 2.000 | 180 | 2.400 | 110 | 2.400 | 110 |
| 16 x 48 | 2.000 | 240 | 1.600 | 180 | 2.000 | 110 | 2.000 | 110 |
| 20 x 60 | 1.600 | 210 | 1.300 | 160 | 1.600 | 110 | 1.600 | 110 |
| 25 x 75 | 1.300 | 200 | 1.000 | 150 | 1.300 | 100 | 1.300 | 100 |
| Depth of cut | ap 1D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
5. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).
7. Please step feed when processing resin by plunging.

The table above is for when using air-blow.

## AE-TL-N Applies to square/sharp corner edge/chipbreaker type

**5XD Cutting length**

**Side Milling**

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 100 | | 100 | | 50 | |
| DC x APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 15 | 10.600 | 640 | 10.600 | 640 | 5.300 | 200 |
| 4 x 20 | 8.000 | 690 | 8.000 | 690 | 4.000 | 210 |
| 5 x 25 | 6.400 | 730 | 6.400 | 730 | 3.200 | 230 |
| 6 x 30 | 5.300 | 780 | 5.300 | 780 | 2.600 | 240 |
| 8 x 40 | 4.000 | 870 | 4.000 | 870 | 2.000 | 260 |
| 10 x 50 | 3.200 | 960 | 3.200 | 960 | 1.600 | 290 |
| 12 x 60 | 2.700 | 1.050 | 2.700 | 1.050 | 1.300 | 320 |
| 16 x 60 | 2.000 | 1.140 | 2.000 | 1.140 | 1.000 | 350 |
| 20 x 80 | 1.600 | 1.230 | 1.600 | 1.230 | 800 | 380 |
| 25 x 125 | 1.300 | 1.320 | 1.300 | 1.320 | 640 | 400 |
| Depth of cut | ap: 5D, ae: 0,1D | | | | | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin<br>PP • UPE • PTFE | | Thermoplastic Resin<br>POM • PVC • MC Nylon • ABS Resin | | Thermoplastic Resin<br>Acrylic | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| Vc (m/min) | 85 | | 70 | | 85 | | 85 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 3 x 15 | 8.500 | 1.150 | 6.800 | 820 | 8.500 | 510 | 8.500 | 510 |
| 4 x 20 | 6.400 | 960 | 5.100 | 770 | 6.400 | 480 | 6.400 | 480 |
| 5 x 25 | 5.100 | 900 | 4.100 | 740 | 5.100 | 460 | 5.100 | 460 |
| 6 x 30 | 4.200 | 880 | 3.400 | 710 | 4.200 | 440 | 4.200 | 440 |
| 8 x 40 | 3.200 | 770 | 2.700 | 650 | 3.200 | 380 | 3.200 | 380 |
| 10 x 50 | 2.800 | 740 | 2.300 | 620 | 2.550 | 380 | 2.550 | 380 |
| 12 x 60 | 2.300 | 660 | 2.000 | 600 | 2.300 | 350 | 2.300 | 350 |
| 16 x 60 | 1.900 | 570 | 1.600 | 480 | 1.900 | 340 | 1.900 | 340 |
| 20 x 80 | 1.500 | 450 | 1.300 | 390 | 1.500 | 270 | 1.500 | 270 |
| 25 x 125 | 1.200 | 360 | 1.000 | 300 | 1.200 | 220 | 1.200 | 220 |
| Depth of cut | ap: 5D, ae: 0,1D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
5. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-VTS-N Applies to square/sharp corner edge/radius type

### Slot Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 400 | | 400 | | 200 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 32.000 | 1.430 | 32.000 | 1.430 | 16.000 | 660 |
| 1,5 x 4,5 | 32.000 | 1.630 | 32.000 | 1.630 | 16.000 | 720 |
| 2 x 6 | 32.000 | 1.920 | 32.000 | 1.920 | 16.000 | 800 |
| 2,5 x 7,5 | 32.000 | 2.880 | 32.000 | 2.880 | 16.000 | 1.080 |
| 3 x 9 | 32.000 | 3.820 | 32.000 | 3.820 | 16.000 | 1.430 |
| 4 x 12 | 24.000 | 3.960 | 24.000 | 3.960 | 12.000 | 1.530 |
| 5 x 15 | 19.200 | 4.090 | 19.200 | 4.090 | 9.600 | 1.640 |
| 6 x 18 | 18.500 | 4.230 | 18.500 | 4.230 | 9.300 | 1.740 |
| 8 x 24 | 16.000 | 4.510 | 16.000 | 4.510 | 8.000 | 1.940 |
| 10 x 30 | 13.000 | 4.780 | 13.000 | 4.780 | 6.400 | 2.150 |
| 12 x 36 | 11.000 | 5.050 | 11.000 | 5.050 | 5.300 | 2.360 |
| Depth of cut | ap 1D | | | | ap 0,5D | |

1. The above milling condition is a guideline for the overhang length is 4×D.
2. Use a rigid and precise machine and holder.
3. The indicated speeds and feeds are for milling with water-soluble coolant.
4. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
5. Reduce speed and feed as well as depth of cut when high precision is required.
6. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.18).
7. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 95 | | 75 | | 95 | | 95 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 28.600 | 2.150 | 22.300 | 1.340 | 28.600 | 1.290 | 28.600 | 1.290 |
| 1,5 x 4,5 | 19.100 | 1.720 | 14.900 | 1.120 | 19.100 | 860 | 19.100 | 860 |
| 2 x 6 | 14.300 | 1.500 | 11.100 | 1.000 | 14.300 | 860 | 14.300 | 860 |
| 2,5 x 7,5 | 11.500 | 1.380 | 8.900 | 930 | 11.500 | 690 | 11.500 | 690 |
| 3 x 9 | 9.500 | 1.280 | 7.400 | 890 | 9.500 | 570 | 9.500 | 570 |
| 4 x 12 | 7.200 | 1.230 | 5.600 | 870 | 7.200 | 540 | 7.200 | 540 |
| 5 x 15 | 5.700 | 1.200 | 4.500 | 880 | 5.700 | 510 | 5.700 | 510 |
| 6 x 18 | 4.800 | 1.150 | 3.700 | 830 | 4.800 | 500 | 4.800 | 500 |
| 8 x 24 | 3.600 | 1.080 | 3.000 | 830 | 3.600 | 430 | 3.600 | 430 |
| 10 x 30 | 3.200 | 960 | 2.500 | 710 | 3.200 | 430 | 3.200 | 430 |
| 12 x 36 | 2.700 | 890 | 2.100 | 660 | 2.700 | 410 | 2.700 | 410 |
| Depth of cut | ap 1D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.38).
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

## AE-VTS-N Applies to square/sharp corner edge/radius type

### Side Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 400 | | 400 | | 200 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 32.000 | 1.430 | 32.000 | 1.430 | 16.000 | 720 |
| 1,5 x 4,5 | 32.000 | 1.630 | 32.000 | 1.630 | 16.000 | 800 |
| 2 x 6 | 32.000 | 1.920 | 32.000 | 1.920 | 16.000 | 1.080 |
| 2,5 x 7,5 | 32.000 | 2.880 | 32.000 | 2.880 | 16.000 | 1.200 |
| 3 x 9 | 32.000 | 3.820 | 32.000 | 3.820 | 16.000 | 1.600 |
| 4 x 12 | 24.000 | 3.960 | 24.000 | 3.960 | 12.000 | 1.700 |
| 5 x 15 | 19.200 | 4.090 | 19.200 | 4.090 | 9.600 | 1.830 |
| 6 x 18 | 18.500 | 4.230 | 18.500 | 4.230 | 9.300 | 1.950 |
| 8 x 24 | 16.000 | 4.510 | 16.000 | 4.510 | 8.000 | 2.180 |
| 10 x 30 | 13.000 | 4.780 | 13.000 | 4.780 | 6.400 | 2.400 |
| 12 x 36 | 11.000 | 5.050 | 11.000 | 5.050 | 5.300 | 2.650 |
| Depth of cut | ap: 1,5D, ae: 0,2D | | | | ap: 1,5D, ae: 0,1D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 105 | | 85 | | 105 | | 105 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 31.800 | 2.390 | 25.500 | 1.530 | 31.800 | 1.430 | 31.800 | 1.430 |
| 1,5 x 4,5 | 21.200 | 1.910 | 17.000 | 1.280 | 21.200 | 950 | 21.200 | 950 |
| 2 x 6 | 15.900 | 1.670 | 12.700 | 1.140 | 15.900 | 950 | 15.900 | 950 |
| 2,5 x 7,5 | 12.700 | 1.520 | 10.200 | 1.070 | 12.700 | 760 | 12.700 | 760 |
| 3 x 9 | 10.600 | 1.430 | 8.500 | 1.020 | 10.600 | 640 | 10.600 | 640 |
| 4 x 12 | 8.000 | 1.370 | 6.400 | 1.000 | 8.000 | 600 | 8.000 | 600 |
| 5 x 15 | 6.400 | 1.340 | 5.100 | 990 | 6.400 | 580 | 6.400 | 580 |
| 6 x 18 | 5.300 | 1.270 | 4.200 | 950 | 5.300 | 560 | 5.300 | 560 |
| 8 x 24 | 4.000 | 1.200 | 3.400 | 870 | 4.000 | 480 | 4.000 | 480 |
| 10 x 30 | 3.500 | 1.050 | 2.900 | 830 | 3.500 | 470 | 3.500 | 470 |
| 12 x 36 | 2.900 | 960 | 2.500 | 790 | 2.900 | 440 | 2.900 | 440 |
| Depth of cut | ap: 1,5D, ae: 0,5D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.38).
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

## AE-VTS-N Applies to square/sharp corner edge/radius type

### Plunging

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 150 | | 150 | | 75 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 20.000 | 400 | 20.000 | 400 | 10.000 | 120 |
| 1,5 x 4,5 | 20.000 | 400 | 20.000 | 400 | 10.000 | 120 |
| 2 x 6 | 20.000 | 400 | 20.000 | 400 | 10.000 | 120 |
| 2,5 x 7,5 | 20.000 | 400 | 20.000 | 400 | 10.000 | 120 |
| 3 x 9 | 15.900 | 500 | 15.900 | 500 | 8.000 | 150 |
| 4 x 12 | 12.000 | 500 | 12.000 | 500 | 6.000 | 150 |
| 5 x 15 | 9.600 | 500 | 9.600 | 500 | 4.800 | 150 |
| 6 x 18 | 8.000 | 600 | 8.000 | 600 | 4.000 | 180 |
| 8 x 24 | 6.000 | 700 | 6.000 | 700 | 3.000 | 210 |
| 10 x 30 | 4.800 | 700 | 4.800 | 700 | 2.400 | 210 |
| 12 x 36 | 4.000 | 700 | 4.000 | 700 | 2.000 | 210 |
| Depth of cut | ap 1D | | | | ap 0,5D | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin<br>Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 95 | | 70 | | 90 | | 90 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 x 3 | 28.600 | 540 | 22.300 | 330 | 28.600 | 320 | 28.600 | 320 |
| 1,5 x 4,5 | 19.100 | 430 | 14.900 | 280 | 19.100 | 210 | 19.100 | 210 |
| 2 x 6 | 14.300 | 380 | 11.100 | 250 | 14.300 | 210 | 14.300 | 210 |
| 2,5 x 7,5 | 11.500 | 350 | 8.900 | 230 | 11.500 | 170 | 11.500 | 170 |
| 3 x 9 | 9.500 | 320 | 7.400 | 220 | 9.500 | 140 | 9.500 | 140 |
| 4 x 12 | 7.200 | 310 | 5.600 | 220 | 7.200 | 140 | 7.200 | 140 |
| 5 x 15 | 5.700 | 300 | 4.500 | 220 | 5.700 | 130 | 5.700 | 130 |
| 6 x 18 | 4.800 | 290 | 3.700 | 210 | 4.800 | 130 | 4.800 | 130 |
| 8 x 24 | 3.600 | 280 | 2.800 | 210 | 3.600 | 110 | 3.600 | 110 |
| 10 x 30 | 3.200 | 280 | 2.200 | 180 | 2.900 | 110 | 2.900 | 110 |
| 12 x 36 | 2.700 | 280 | 1.850 | 180 | 2.400 | 110 | 2.400 | 110 |
| Depth of cut | ap 1D | | | | | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.38).
5. When the chips wind around the end mill, reduce the speed and feed.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
7. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
8. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).
9. Please step feed when processing resin by plunging.

The table above is for when using air-blow.

### Cutting Condition Guide for Changes in Overhang Length

### DC = Ø6, Ø8

| | Work Material | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|---|
| | L/D | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| Slot milling | 5 | 70% | | 70% | | 70% | |
| | 6 | 70% | 20% | 70% | 20% | 70% | 20% |
| Side milling | 5 | 70% | | 70% | | 70% | |
| | 6 | 50% | | 50% | | 50% | |
| Plunging | 5 | 80% | | 80% | | 80% | |
| | 6 | 60% | | 60% | | 60% | |

## AE-VTFE-N Applies to square/radius type

### Slot Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy<br>A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting<br>AC4C • ADC | | Copper Alloy<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 200 | | 200 | | 100 | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 8.490 | 1.530 | 8.490 | 1.530 | 4.250 | 640 |
| 8 | 6.370 | 1.150 | 6.370 | 1.150 | 3.180 | 480 |
| 10 | 6.370 | 1.910 | 6.370 | 1.910 | 3.180 | 760 |
| 12 | 5.310 | 1.910 | 5.310 | 1.910 | 2.650 | 640 |
| 14 | 4.550 | 1.640 | 4.550 | 1.640 | 2.270 | 540 |
| 18 | 3.540 | 1.270 | 3.540 | 1.270 | 1.770 | 420 |
| 22 | 2.900 | 1.040 | 2.900 | 1.040 | 1.450 | 350 |
| Depth of cut | | | | | | |

| | ap |
|---|---|
| DC≤Ø10 | 0,1D |
| 10<DC | 0,2D |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | Bakelite | |
| Vc (m/min) | 100 | | 80 | | 100 | | 100 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 4.800 | 1.150 | 3.700 | 830 | 4.800 | 500 | 4.800 | 500 |
| 8 | 3.600 | 1.080 | 3.000 | 830 | 3.600 | 430 | 3.600 | 430 |
| 10 | 3.200 | 960 | 2.500 | 710 | 3.200 | 430 | 3.200 | 430 |
| 12 | 2.700 | 890 | 2.100 | 660 | 2.700 | 410 | 2.700 | 410 |
| 14 | 2.300 | 760 | 2.000 | 630 | 2.300 | 350 | 2.300 | 350 |
| 18 | 1.900 | 680 | 1.600 | 550 | 1.900 | 340 | 1.900 | 340 |
| 22 | 1.600 | 620 | 1.300 | 490 | 1.600 | 340 | 1.600 | 340 |
| Depth of cut | | | | | | | | |

| ap |
|---|
| 0,5D |

1. The above milling condition is a guideline for the overhang length is 5×D.
2. Use a rigid and precise machine and holder.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. In resin processing, the feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
4. Reduce speed and feed as well as depth of cut when high precision is required.
5. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to p.46).
6. When the chips wind around the end mill, reduce the speed and feed.
7. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.
8. When processing resin, please remove cutting chips to prevent them from getting caught or entangled.
9. For higher quality processing of resin, the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-VTFE-N Applies to square/radius type

### Side Milling

| | Aluminum Alloy Expanding Material • Magnesium Alloy A5052 • A7075 • AZ91• AZ80A | | Aluminum Alloy Casting AC4C • ADC | | Copper Alloy C1100 | |
|---|---|---|---|---|---|---|
| Vc (m/min) | 300 | | 300 | | 150 | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 15.920 | 2.870 | 15.920 | 2.870 | 7.960 | 1.190 |
| 8 | 11.940 | 2.150 | 11.940 | 2.150 | 5.970 | 1.070 |
| 10 | 9.550 | 2.870 | 9.550 | 2.870 | 4.780 | 1.000 |
| 12 | 7.960 | 2.870 | 7.960 | 2.870 | 3.980 | 960 |
| 14 | 6.820 | 2.460 | 6.820 | 2.460 | 3.410 | 820 |
| 18 | 5.310 | 1.910 | 5.310 | 1.910 | 2.650 | 640 |
| 22 | 4.340 | 1.560 | 4.340 | 1.560 | 2.170 | 520 |
| Depth of cut | ap: 2D, ae: 0,1D | | | | | |

The table above is for when using water-soluble coolant.

| | Thermoplastic Resin | | | | | | Thermosetting Resin Bakelite | |
|---|---|---|---|---|---|---|---|---|
| | PP • UPE • PTFE | | POM • PVC • MC Nylon • ABS Resin | | Acrylic | | | |
| Vc (m/min) | 110 | | 90 | | 110 | | 110 | |
| DC X LU | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 5.300 | 1.270 | 4.200 | 950 | 5.300 | 560 | 5.300 | 560 |
| 8 | 4.000 | 1.200 | 3.400 | 870 | 4.000 | 480 | 4.000 | 480 |
| 10 | 3.500 | 1.050 | 2.900 | 830 | 3.500 | 470 | 3.500 | 470 |
| 12 | 2.900 | 960 | 2.500 | 790 | 2.900 | 440 | 2.900 | 440 |
| 14 | 2.500 | 830 | 2.300 | 720 | 2.500 | 380 | 2.500 | 380 |
| 18 | 2.100 | 760 | 1.800 | 620 | 2.100 | 380 | 2.100 | 380 |
| 22 | 1.700 | 660 | 1.400 | 530 | 1.700 | 360 | 1.700 | 360 |
| Depth of cut | ap: 0,5D | | | | | | | |

The table above is for when using air-blow.

### Cutting Condition Guide for Changes in Overhang Length

| Work Material | | Aluminum Alloy Expanding Material • Magnesium Alloy A5052 • A7075 • AZ91• AZ80A | | | | Aluminum Alloy Casting AC4C • ADC | | | | Copper Alloy C1100 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L/D | S ($min^{-1}$) | F (mm/min) | Depth of Cut ap | Depth of Cut ae | S ($min^{-1}$) | F (mm/min) | Depth of Cut ap | Depth of Cut ae | S ($min^{-1}$) | F (mm/min) | Depth of Cut ap | Depth of Cut ae |
| Slot milling | 6 | 50% | 50% | 0,015D | - | 50% | 50% | 0,015D | - | 50% | 50% | 0,015D | - |
| | 7 | 30% | 20% | 0,01D | - | 30% | 20% | 0,01D | - | 30% | 20% | 0,01D | - |
| Side milling | 6 | 65% | 60% | 2D | 0,05D | 65% | 60% | 2D | 0,05D | 90% | 90% | 2D | 0,05D |
| | 7 | 55% | 50% | 2D | 0,03D | 55% | 50% | 2D | 0,03D | 70% | 70% | 2D | 0,03D |
| | 8 | 45% | 45% | 2D | 0,025D | 45% | 45% | 2D | 0,025D | 65% | 65% | 2D | 0,01D |

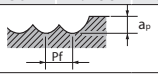
# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## AE-LNBD-N

| Work Material | | Wrought aluminium alloy A7075 | | | | Aluminium alloy casting • Die casting <Si 13% | | | | Copper C1020 - C1100 | | | | Copper Tungsten W70% - Cu30% | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RE | LU (mm) | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | |
| | | | | ap | pf | | | ap | pf | | | ap | pf | | | ap | pf |
| R0,05 | 0,3 | 50.000 | 293 | 0,005 | 0,01 | 43.800 | 257 | 0,005 | 0,01 | 38.400 | 225 | 0,005 | 0,01 | 32.000 | 120 | 0,005 | 0,008 |
| R0,05 | 0,5 | 50.000 | 234 | 0,005 | 0,01 | 43.800 | 205 | 0,005 | 0,01 | 38.400 | 180 | 0,005 | 0,01 | 32.000 | 96 | 0,005 | 0,008 |
| R0,075 | 0,3 | 50.000 | 335 | 0,008 | 0,02 | 43.800 | 293 | 0,008 | 0,02 | 38.400 | 257 | 0,008 | 0,02 | 32.000 | 137 | 0,008 | 0,015 |
| R0,075 | 0,5 | 50.000 | 293 | 0,008 | 0,02 | 43.800 | 257 | 0,008 | 0,02 | 38.400 | 225 | 0,008 | 0,02 | 32.000 | 120 | 0,008 | 0,021 |
| R0,075 | 1 | 50.000 | 234 | 0,005 | 0,01 | 43.800 | 205 | 0,005 | 0,01 | 38.400 | 180 | 0,005 | 0,01 | 32.000 | 96 | 0,005 | 0,011 |
| R0,1 | 0,3 | 50.000 | 586 | 0,020 | 0,04 | 43.800 | 513 | 0,02 | 0,04 | 38.400 | 450 | 0,02 | 0,04 | 32.000 | 240 | 0,02 | 0,03 |
| R0,1 | 0,5 | 50.000 | 586 | 0,020 | 0,04 | 43.800 | 513 | 0,02 | 0,04 | 38.400 | 450 | 0,02 | 0,04 | 32.000 | 240 | 0,02 | 0,03 |
| R0,1 | 1 | 50.000 | 293 | 0,020 | 0,04 | 43.800 | 257 | 0,02 | 0,04 | 38.400 | 225 | 0,02 | 0,04 | 32.000 | 120 | 0,02 | 0,03 |
| R0,1 | 1,5 | 50.000 | 293 | 0,020 | 0,04 | 43.800 | 257 | 0,02 | 0,04 | 38.400 | 225 | 0,02 | 0,04 | 32.000 | 120 | 0,02 | 0,03 |
| R0,15 | 0,6 | 50.000 | 1.172 | 0,020 | 0,06 | 43.800 | 1.027 | 0,02 | 0,06 | 38.400 | 900 | 0,02 | 0,06 | 32.000 | 480 | 0,02 | 0,045 |
| R0,15 | 1 | 50.000 | 879 | 0,020 | 0,06 | 43.800 | 770 | 0,02 | 0,06 | 38.400 | 675 | 0,02 | 0,06 | 32.000 | 360 | 0,02 | 0,045 |
| R0,15 | 1,5 | 50.000 | 879 | 0,020 | 0,06 | 43.800 | 770 | 0,02 | 0,06 | 38.400 | 675 | 0,02 | 0,06 | 32.000 | 360 | 0,02 | 0,045 |
| R0,15 | 2 | 50.000 | 879 | 0,020 | 0,06 | 43.800 | 770 | 0,02 | 0,06 | 38.400 | 675 | 0,02 | 0,06 | 32.000 | 360 | 0,02 | 0,045 |
| R0,2 | 1 | 50.000 | 1.172 | 0,025 | 0,1 | 43.800 | 1.027 | 0,025 | 0,1 | 38.400 | 900 | 0,025 | 0,1 | 32.000 | 480 | 0,025 | 0,075 |
| R0,2 | 2 | 41.300 | 860 | 0,025 | 0,1 | 37.000 | 771 | 0,025 | 0,1 | 32.400 | 675 | 0,025 | 0,1 | 27.000 | 360 | 0,025 | 0,075 |
| R0,2 | 3 | 41.300 | 860 | 0,025 | 0,1 | 37.000 | 771 | 0,025 | 0,1 | 32.400 | 675 | 0,025 | 0,1 | 27.000 | 360 | 0,025 | 0,075 |
| R0,2 | 4 | 41.300 | 860 | 0,01 | 0,06 | 37.000 | 771 | 0,01 | 0,06 | 32.400 | 675 | 0,01 | 0,06 | 27.000 | 360 | 0,01 | 0,045 |
| R0,25 | 1 | 50.000 | 1.465 | 0,04 | 0,1 | 43.800 | 1.283 | 0,04 | 0,1 | 38.400 | 1.125 | 0,04 | 0,1 | 32.000 | 600 | 0,04 | 0,075 |
| R0,25 | 2 | 50.000 | 1.172 | 0,04 | 0,1 | 43.800 | 1.027 | 0,04 | 0,1 | 38.400 | 900 | 0,04 | 0,1 | 32.000 | 480 | 0,04 | 0,075 |
| R0,25 | 3 | 41.300 | 860 | 0,04 | 0,1 | 37.000 | 771 | 0,04 | 0,1 | 32.400 | 675 | 0,04 | 0,1 | 27.000 | 360 | 0,04 | 0,075 |
| R0,25 | 4 | 41.300 | 860 | 0,04 | 0,1 | 37.000 | 771 | 0,04 | 0,1 | 32.400 | 675 | 0,04 | 0,1 | 27.000 | 360 | 0,04 | 0,075 |
| R0,25 | 5 | 32.100 | 573 | 0,04 | 0,1 | 28.700 | 513 | 0,04 | 0,1 | 25.200 | 450 | 0,04 | 0,1 | 21.000 | 240 | 0,04 | 0,075 |
| R0,3 | 1 | 50.000 | 2.930 | 0,09 | 0,12 | 43.800 | 2.566 | 0,09 | 0,12 | 38.400 | 2.250 | 0,09 | 0,12 | 32.000 | 1.440 | 0,08 | 0,12 |
| R0,3 | 2 | 50.000 | 2.198 | 0,09 | 0,12 | 43.800 | 1.925 | 0,09 | 0,12 | 38.400 | 1.688 | 0,09 | 0,12 | 32.000 | 1.080 | 0,08 | 0,12 |
| R0,3 | 3 | 46.000 | 1.199 | 0,09 | 0,12 | 41.000 | 1.068 | 0,09 | 0,12 | 36.000 | 938 | 0,09 | 0,12 | 30.000 | 600 | 0,08 | 0,12 |
| R0,3 | 4 | 45.900 | 1.196 | 0,09 | 0,12 | 41.000 | 1.068 | 0,09 | 0,12 | 36.000 | 938 | 0,09 | 0,12 | 30.000 | 600 | 0,08 | 0,12 |
| R0,3 | 5 | 45.900 | 1.196 | 0,09 | 0,12 | 41.000 | 1.068 | 0,09 | 0,12 | 36.000 | 938 | 0,09 | 0,12 | 30.000 | 600 | 0,08 | 0,12 |
| R0,3 | 6 | 38.300 | 719 | 0,09 | 0,12 | 34.000 | 638 | 0,09 | 0,12 | 30.000 | 563 | 0,09 | 0,12 | 25.000 | 360 | 0,08 | 0,12 |
| R0,4 | 2 | 41.300 | 2.152 | 0,12 | 0,16 | 37.000 | 1.928 | 0,12 | 0,16 | 32.400 | 1.688 | 0,12 | 0,16 | 27.000 | 1.080 | 0,11 | 0,16 |
| R0,4 | 3 | 41.300 | 2.152 | 0,12 | 0,16 | 37.000 | 1.928 | 0,12 | 0,16 | 32.400 | 1.688 | 0,12 | 0,16 | 27.000 | 1.080 | 0,11 | 0,16 |
| R0,4 | 4 | 41.300 | 2.152 | 0,12 | 0,16 | 37.000 | 1.928 | 0,12 | 0,16 | 32.400 | 1.688 | 0,12 | 0,16 | 27.000 | 1.080 | 0,11 | 0,16 |
| R0,4 | 6 | 36.700 | 1.195 | 0,12 | 0,12 | 32.800 | 1.068 | 0,12 | 0,12 | 28.800 | 938 | 0,12 | 0,12 | 24.000 | 600 | 0,11 | 0,12 |
| R0,4 | 8 | 33.700 | 719 | 0,12 | 0,12 | 30.100 | 642 | 0,12 | 0,12 | 26.400 | 563 | 0,12 | 0,12 | 22.000 | 360 | 0,11 | 0,12 |
| R0,5 | 2 | 42.800 | 2.388 | 0,15 | 0,2 | 38.300 | 2.137 | 0,15 | 0,2 | 33.600 | 1.875 | 0,15 | 0,2 | 28.000 | 1.200 | 0,14 | 0,2 |
| R0,5 | 3 | 42.800 | 2.388 | 0,15 | 0,2 | 38.300 | 2.137 | 0,15 | 0,2 | 33.600 | 1.875 | 0,15 | 0,2 | 28.000 | 1.200 | 0,14 | 0,2 |
| R0,5 | 4 | 42.800 | 2.388 | 0,15 | 0,2 | 38.300 | 2.137 | 0,15 | 0,2 | 33.600 | 1.875 | 0,15 | 0,2 | 28.000 | 1.200 | 0,14 | 0,2 |
| R0,5 | 5 | 32.100 | 1.433 | 0,15 | 0,2 | 28.700 | 1.281 | 0,15 | 0,2 | 25.200 | 1.125 | 0,15 | 0,2 | 21.000 | 720 | 0,14 | 0,2 |
| R0,5 | 6 | 32.100 | 1.433 | 0,15 | 0,2 | 28.700 | 1.281 | 0,15 | 0,2 | 25.200 | 1.125 | 0,15 | 0,2 | 21.000 | 720 | 0,14 | 0,2 |
| R0,5 | 8 | 32.100 | 1.433 | 0,15 | 0,15 | 28.700 | 1.281 | 0,15 | 0,15 | 25.200 | 1.125 | 0,15 | 0,15 | 21.000 | 720 | 0,14 | 0,15 |
| R0,5 | 10 | 27.500 | 955 | 0,12 | 0,12 | 24.600 | 854 | 0,12 | 0,12 | 21.600 | 750 | 0,12 | 0,12 | 18.000 | 480 | 0,11 | 0,12 |
| R0,5 | 12 | 27.500 | 955 | 0,12 | 0,12 | 24.600 | 854 | 0,12 | 0,12 | 21.600 | 750 | 0,12 | 0,12 | 18.000 | 480 | 0,11 | 0,12 |
| R0,75 | 4 | 30.600 | 2.869 | 0,24 | 0,3 | 27.400 | 2.569 | 0,24 | 0,3 | 24.000 | 2.250 | 0,24 | 0,3 | 20.000 | 1.440 | 0,22 | 0,3 |
| R0,75 | 6 | 27.500 | 2.387 | 0,24 | 0,3 | 24.600 | 2.135 | 0,24 | 0,3 | 21.600 | 1.875 | 0,24 | 0,3 | 18.000 | 1.200 | 0,22 | 0,3 |
| R0,75 | 12 | 26.000 | 1.434 | 0,24 | 0,24 | 23.300 | 1.285 | 0,24 | 0,24 | 20.400 | 1.125 | 0,24 | 0,24 | 17.000 | 720 | 0,22 | 0,24 |
| R0,75 | 18 | 19.900 | 957 | 0,18 | 0,18 | 17.800 | 856 | 0,18 | 0,18 | 15.600 | 750 | 0,18 | 0,18 | 13.000 | 480 | 0,16 | 0,18 |
| R1 | 4 | 25.200 | 3.341 | 0,3 | 0,56 | 22.600 | 2.996 | 0,3 | 0,56 | 19.800 | 2.625 | 0,3 | 0,56 | 16.500 | 1.680 | 0,27 | 0,56 |
| R1 | 6 | 25.200 | 3.341 | 0,3 | 0,56 | 22.600 | 2.996 | 0,3 | 0,56 | 19.800 | 2.625 | 0,3 | 0,56 | 16.500 | 1.680 | 0,27 | 0,56 |
| R1 | 8 | 25.200 | 3.341 | 0,3 | 0,56 | 22.600 | 2.996 | 0,3 | 0,56 | 19.800 | 2.625 | 0,3 | 0,56 | 16.500 | 1.680 | 0,27 | 0,56 |
| R1 | 10 | 21.400 | 2.388 | 0,3 | 0,56 | 19.200 | 2.143 | 0,3 | 0,56 | 16.800 | 1.875 | 0,3 | 0,56 | 14.000 | 1.200 | 0,27 | 0,56 |
| R1 | 12 | 21.400 | 2.388 | 0,3 | 0,56 | 19.200 | 2.143 | 0,3 | 0,56 | 16.800 | 1.875 | 0,3 | 0,56 | 14.000 | 1.200 | 0,27 | 0,56 |
| R1 | 14 | 21.400 | 2.388 | 0,3 | 0,56 | 19.200 | 2.143 | 0,3 | 0,56 | 16.800 | 1.875 | 0,3 | 0,56 | 14.000 | 1.200 | 0,27 | 0,56 |
| R1 | 16 | 21.400 | 2.388 | 0,3 | 0,42 | 19.200 | 2.143 | 0,3 | 0,42 | 16.800 | 1.875 | 0,3 | 0,42 | 14.000 | 1.200 | 0,27 | 0,42 |
| R1 | 20 | 16.800 | 1.194 | 0,3 | 0,42 | 15.000 | 1.066 | 0,3 | 0,42 | 13.200 | 938 | 0,3 | 0,42 | 11.000 | 600 | 0,27 | 0,42 |
| R1 | 25 | 16.800 | 1.194 | 0,3 | 0,42 | 15.000 | 1.066 | 0,3 | 0,42 | 13.200 | 938 | 0,3 | 0,42 | 11.000 | 600 | 0,27 | 0,42 |
| R1,5 | 10 | 18.400 | 2.875 | 0,4 | 0,84 | 16.400 | 2.563 | 0,4 | 0,84 | 14.400 | 2.250 | 0,4 | 0,84 | 12.000 | 1.440 | 0,36 | 0,84 |
| R1,5 | 12 | 15.300 | 2.869 | 0,4 | 0,84 | 13.700 | 2.569 | 0,4 | 0,84 | 12.000 | 2.250 | 0,4 | 0,84 | 10.000 | 1.440 | 0,36 | 0,84 |
| R1,5 | 14 | 15.300 | 2.869 | 0,4 | 0,84 | 13.700 | 2.569 | 0,4 | 0,84 | 12.000 | 2.250 | 0,4 | 0,84 | 10.000 | 1.440 | 0,36 | 0,84 |
| R1,5 | 16 | 15.300 | 1.434 | 0,4 | 0,84 | 13.700 | 1.284 | 0,4 | 0,84 | 12.000 | 1.125 | 0,4 | 0,84 | 10.000 | 720 | 0,36 | 0,84 |
| R1,5 | 20 | 15.300 | 1.434 | 0,4 | 0,84 | 13.700 | 1.284 | 0,4 | 0,84 | 12.000 | 1.125 | 0,4 | 0,84 | 10.000 | 720 | 0,36 | 0,84 |
| R1,5 | 25 | 15.300 | 1.434 | 0,4 | 0,84 | 13.700 | 1.284 | 0,4 | 0,84 | 12.000 | 1.125 | 0,4 | 0,84 | 10.000 | 720 | 0,36 | 0,84 |
| R1,5 | 30 | 13.800 | 1.199 | 0,4 | 0,84 | 12.300 | 1.068 | 0,4 | 0,84 | 10.800 | 938 | 0,4 | 0,84 | 9.000 | 600 | 0,36 | 0,84 |
| R2 | 10 | 13.800 | 3.833 | 1,0 | 1,28 | 12.300 | 3.417 | 1 | 1,28 | 10.800 | 3.000 | 1,0 | 1,3 | 9.000 | 1.920 | 0,9 | 1,3 |
| R2 | 15 | 13.800 | 2.875 | 1,0 | 1,28 | 12.300 | 2.563 | 1 | 1,28 | 10.800 | 2.250 | 1,0 | 1,3 | 9.000 | 1.440 | 0,9 | 1,3 |
| R2 | 20 | 10.700 | 1.911 | 1,0 | 1,28 | 9.600 | 1.714 | 1 | 1,28 | 8.400 | 1.500 | 1,0 | 1,3 | 7.000 | 960 | 0,9 | 1,3 |
| R2 | 25 | 10.700 | 1.911 | 1,0 | 1,28 | 9.600 | 1.714 | 1 | 1,28 | 8.400 | 1.500 | 1,0 | 1,3 | 7.000 | 960 | 0,9 | 1,3 |
| R2 | 30 | 10.700 | 1.911 | 0,8 | 1,28 | 9.600 | 1.714 | 0,8 | 1,28 | 8.400 | 1.500 | 0,8 | 1,3 | 7.000 | 960 | 0,7 | 1,3 |
| R2 | 40 | 7.700 | 1.204 | 0,7 | 1,28 | 6.800 | 1.063 | 0,7 | 1,28 | 6.000 | 938 | 0,7 | 1,3 | 5.000 | 600 | 0,6 | 1,3 |
| R3 | 10 | 13.800 | 4.313 | 1,2 | 1,8 | 12.300 | 3.844 | 1,2 | 1,8 | 10.800 | 3.375 | 1,2 | 1,8 | 9.000 | 2.160 | 1,1 | 1,8 |
| R3 | 15 | 13.800 | 4.313 | 1,2 | 1,8 | 12.300 | 3.844 | 1,2 | 1,8 | 10.800 | 3.375 | 1,2 | 1,8 | 9.000 | 2.160 | 1,1 | 1,8 |
| R3 | 20 | 10.700 | 2.388 | 1,2 | 1,8 | 9.600 | 2.143 | 1,2 | 1,8 | 8.400 | 1.875 | 1,2 | 1,8 | 7.000 | 1.200 | 1,1 | 1,8 |
| R3 | 30 | 9.200 | 2.396 | 1,2 | 1,8 | 8.200 | 2.135 | 1,2 | 1,8 | 7.200 | 1.875 | 1,2 | 1,8 | 6.000 | 1.200 | 1,1 | 1,8 |
| R3 | 50 | 7.700 | 1.444 | 0,8 | 1,8 | 6.800 | 1.275 | 0,8 | 1,8 | 6.000 | 1.125 | 0,8 | 1,8 | 5.000 | 720 | 0,7 | 1,8 |

Depth of cut




1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Use a water soluble fluid.
4. Use a non-water-soluble cutting fluid if the machined surface and accuracy are of critical importance. Adjust the depth of cut and feed rate as necessary.
5. Always use a cutting fluid recommended by the cutting fluid manufacturer as the workpiece may discolor.

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire. Be sure to use all proper fire-prevention measures.

# CUTTING CONDITIONS



## AE-CPR-N

| Work Material | | | Copper C1020 - C1100 | | | | Copper Tungsten W70% - Cu30% | | | | Wrought aluminium alloy A7075 | | | | Aluminium alloy casting • Die casting <SI 13% | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU (mm) | S (min-1) | F (mm/min) | Depth of cut (mm) | | S (min-1) | F (mm/min) | Depth of cut (mm) | | S (min-1) | F (mm/min) | Depth of cut (mm) | | S (min-1) | F (mm/min) | Depth of cut (mm) | |
| | | | | | ap | ae | | | ap | ae | | | ap | ae | | | ap | ae |
| 0,2 | R0,05 | 0,4 | 40.000 | 400 | 0,03 | 0,06 | 40.000 | 360 | 0,024 | 0,06 | 40.000 | 400 | 0,03 | 0,06 | 40.000 | 400 | 0,03 | 0,06 |
| 0,2 | R0,05 | 0,6 | 40.000 | 360 | 0,024 | 0,06 | 40.000 | 320 | 0,019 | 0,06 | 40.000 | 360 | 0,024 | 0,06 | 40.000 | 360 | 0,024 | 0,06 |
| 0,2 | R0,05 | 1 | 40.000 | 280 | 0,019 | 0,06 | 40.000 | 250 | 0,015 | 0,06 | 40.000 | 280 | 0,019 | 0,06 | 40.000 | 280 | 0,019 | 0,06 |
| 0,2 | R0,05 | 1,5 | 40.000 | 180 | 0,015 | 0,06 | 40.000 | 160 | 0,012 | 0,06 | 40.000 | 180 | 0,015 | 0,06 | 40.000 | 180 | 0,015 | 0,06 |
| 0,3 | R0,05 | 0,6 | 40.000 | 480 | 0,03 | 0,12 | 40.000 | 430 | 0,024 | 0,12 | 40.000 | 480 | 0,03 | 0,12 | 40.000 | 480 | 0,03 | 0,12 |
| 0,3 | R0,05 | 1 | 40.000 | 430 | 0,023 | 0,12 | 40.000 | 380 | 0,018 | 0,12 | 40.000 | 430 | 0,023 | 0,12 | 40.000 | 430 | 0,023 | 0,12 |
| 0,3 | R0,05 | 1,5 | 40.000 | 360 | 0,019 | 0,12 | 40.000 | 320 | 0,015 | 0,12 | 40.000 | 360 | 0,019 | 0,12 | 40.000 | 360 | 0,019 | 0,12 |
| 0,3 | R0,05 | 2 | 40.000 | 290 | 0,016 | 0,12 | 40.000 | 260 | 0,013 | 0,12 | 40.000 | 290 | 0,016 | 0,12 | 40.000 | 290 | 0,016 | 0,12 |
| 0,4 | R0,02 | 0,8 | 40.000 | 640 | 0,01 | 0,22 | 40.000 | 580 | 0,008 | 0,22 | 40.000 | 640 | 0,01 | 0,22 | 40.000 | 640 | 0,01 | 0,22 |
| 0,4 | R0,02 | 2 | 40.000 | 520 | 0,006 | 0,22 | 35.000 | 410 | 0,005 | 0,22 | 40.000 | 520 | 0,006 | 0,22 | 40.000 | 520 | 0,006 | 0,22 |
| 0,4 | R0,05 | 0,8 | 40.000 | 640 | 0,03 | 0,18 | 40.000 | 580 | 0,024 | 0,18 | 40.000 | 640 | 0,03 | 0,18 | 40.000 | 640 | 0,03 | 0,18 |
| 0,4 | R0,05 | 1,2 | 40.000 | 600 | 0,024 | 0,18 | 40.000 | 540 | 0,019 | 0,18 | 40.000 | 600 | 0,024 | 0,18 | 40.000 | 600 | 0,024 | 0,18 |
| 0,4 | R0,05 | 2 | 40.000 | 520 | 0,019 | 0,18 | 35.000 | 410 | 0,015 | 0,18 | 40.000 | 520 | 0,019 | 0,18 | 40.000 | 520 | 0,019 | 0,18 |
| 0,4 | R0,05 | 3 | 30.000 | 370 | 0,015 | 0,18 | 25.000 | 300 | 0,012 | 0,18 | 39.000 | 480 | 0,015 | 0,18 | 34.500 | 430 | 0,015 | 0,18 |
| 0,4 | R0,05 | 4 | 25.000 | 240 | 0,013 | 0,18 | 20.000 | 190 | 0,01 | 0,18 | 32.500 | 310 | 0,013 | 0,18 | 28.750 | 280 | 0,013 | 0,18 |
| 0,4 | R0,1 | 0,8 | 40.000 | 640 | 0,06 | 0,12 | 40.000 | 580 | 0,048 | 0,12 | 40.000 | 640 | 0,06 | 0,12 | 40.000 | 640 | 0,06 | 0,12 |
| 0,4 | R0,1 | 1,2 | 40.000 | 600 | 0,049 | 0,12 | 40.000 | 540 | 0,039 | 0,12 | 40.000 | 600 | 0,049 | 0,12 | 40.000 | 600 | 0,049 | 0,12 |
| 0,4 | R0,1 | 2 | 40.000 | 520 | 0,038 | 0,12 | 35.000 | 410 | 0,03 | 0,12 | 40.000 | 520 | 0,038 | 0,12 | 40.000 | 520 | 0,038 | 0,12 |
| 0,4 | R0,1 | 3 | 30.000 | 370 | 0,031 | 0,12 | 25.000 | 300 | 0,025 | 0,12 | 39.000 | 480 | 0,031 | 0,12 | 34.500 | 430 | 0,031 | 0,12 |
| 0,4 | R0,1 | 4 | 25.000 | 240 | 0,027 | 0,12 | 20.000 | 190 | 0,022 | 0,12 | 32.500 | 310 | 0,027 | 0,12 | 28.750 | 280 | 0,027 | 0,12 |
| 0,5 | R0,05 | 1 | 40.000 | 880 | 0,03 | 0,24 | 40.000 | 790 | 0,024 | 0,24 | 40.000 | 880 | 0,03 | 0,24 | 40.000 | 880 | 0,03 | 0,24 |
| 0,5 | R0,05 | 2 | 40.000 | 770 | 0,023 | 0,24 | 35.000 | 690 | 0,018 | 0,24 | 40.000 | 770 | 0,023 | 0,24 | 40.000 | 770 | 0,023 | 0,24 |
| 0,5 | R0,05 | 3 | 35.000 | 650 | 0,019 | 0,24 | 30.000 | 510 | 0,015 | 0,24 | 40.000 | 740 | 0,019 | 0,24 | 40.000 | 740 | 0,019 | 0,24 |
| 0,5 | R0,05 | 4 | 30.000 | 540 | 0,017 | 0,24 | 25.000 | 420 | 0,014 | 0,24 | 39.000 | 700 | 0,017 | 0,24 | 34.500 | 620 | 0,017 | 0,24 |
| 0,5 | R0,05 | 5 | 25.000 | 370 | 0,016 | 0,24 | 20.000 | 300 | 0,013 | 0,24 | 32.500 | 480 | 0,016 | 0,24 | 28.750 | 430 | 0,016 | 0,24 |
| 0,5 | R0,1 | 1 | 40.000 | 880 | 0,06 | 0,18 | 40.000 | 790 | 0,048 | 0,18 | 40.000 | 880 | 0,06 | 0,18 | 40.000 | 880 | 0,06 | 0,18 |
| 0,5 | R0,1 | 2 | 40.000 | 770 | 0,045 | 0,18 | 35.000 | 690 | 0,036 | 0,18 | 40.000 | 770 | 0,045 | 0,18 | 40.000 | 770 | 0,045 | 0,18 |
| 0,5 | R0,1 | 3 | 35.000 | 650 | 0,039 | 0,18 | 30.000 | 510 | 0,031 | 0,18 | 40.000 | 740 | 0,039 | 0,18 | 40.000 | 740 | 0,039 | 0,18 |
| 0,5 | R0,1 | 4 | 30.000 | 540 | 0,034 | 0,18 | 25.000 | 420 | 0,027 | 0,18 | 39.000 | 700 | 0,034 | 0,18 | 34.500 | 620 | 0,034 | 0,18 |
| 0,5 | R0,1 | 5 | 25.000 | 370 | 0,032 | 0,18 | 20.000 | 300 | 0,026 | 0,18 | 32.500 | 480 | 0,032 | 0,18 | 28.750 | 430 | 0,032 | 0,18 |
| 0,6 | R0,05 | 1,2 | 40.000 | 1.120 | 0,03 | 0,3 | 35.000 | 880 | 0,024 | 0,3 | 40.000 | 1120 | 0,03 | 0,3 | 40.000 | 1120 | 0,03 | 0,3 |
| 0,6 | R0,05 | 2 | 37.000 | 1.030 | 0,024 | 0,3 | 35.000 | 810 | 0,019 | 0,3 | 40.000 | 1110 | 0,024 | 0,3 | 40.000 | 1110 | 0,024 | 0,3 |
| 0,6 | R0,05 | 4 | 29.000 | 710 | 0,019 | 0,3 | 26.000 | 580 | 0,015 | 0,3 | 37.700 | 920 | 0,019 | 0,3 | 33.350 | 820 | 0,019 | 0,3 |
| 0,6 | R0,05 | 6 | 22.000 | 440 | 0,016 | 0,3 | 20.000 | 280 | 0,013 | 0,3 | 28.600 | 570 | 0,016 | 0,3 | 25.300 | 510 | 0,016 | 0,3 |
| 0,6 | R0,1 | 1,2 | 40.000 | 1.120 | 0,06 | 0,24 | 35.000 | 880 | 0,048 | 0,24 | 40.000 | 1120 | 0,06 | 0,24 | 40.000 | 1120 | 0,06 | 0,24 |
| 0,6 | R0,1 | 2 | 37.000 | 1.030 | 0,049 | 0,24 | 35.000 | 810 | 0,039 | 0,24 | 40.000 | 1110 | 0,049 | 0,24 | 40.000 | 1110 | 0,049 | 0,24 |
| 0,6 | R0,1 | 3 | 33.000 | 800 | 0,042 | 0,24 | 30.000 | 660 | 0,034 | 0,24 | 40.000 | 970 | 0,042 | 0,24 | 37.950 | 920 | 0,042 | 0,24 |
| 0,6 | R0,1 | 4 | 29.000 | 710 | 0,037 | 0,24 | 26.000 | 580 | 0,03 | 0,24 | 37.700 | 920 | 0,037 | 0,24 | 33.350 | 820 | 0,037 | 0,24 |
| 0,6 | R0,1 | 6 | 22.000 | 440 | 0,032 | 0,24 | 20.000 | 280 | 0,026 | 0,24 | 28.600 | 570 | 0,032 | 0,24 | 25.300 | 510 | 0,032 | 0,24 |
| 0,6 | R0,2 | 1,2 | 40.000 | 1.120 | 0,12 | 0,12 | 35.000 | 880 | 0,096 | 0,12 | 40.000 | 1120 | 0,12 | 0,12 | 40.000 | 1120 | 0,12 | 0,12 |
| 0,6 | R0,2 | 4 | 29.000 | 710 | 0,074 | 0,12 | 26.000 | 580 | 0,059 | 0,12 | 37.700 | 920 | 0,074 | 0,12 | 33.350 | 820 | 0,074 | 0,12 |
| 0,8 | R0,05 | 1,6 | 36.000 | 1.580 | 0,03 | 0,42 | 32.000 | 1.270 | 0,024 | 0,42 | 40.000 | 1760 | 0,03 | 0,42 | 40.000 | 1760 | 0,03 | 0,42 |
| 0,8 | R0,05 | 4 | 30.000 | 1.390 | 0,021 | 0,42 | 27.000 | 1.010 | 0,017 | 0,42 | 39.000 | 1810 | 0,021 | 0,42 | 34.500 | 1600 | 0,021 | 0,42 |
| 0,8 | R0,05 | 6 | 25.000 | 1.000 | 0,018 | 0,42 | 23.000 | 800 | 0,014 | 0,42 | 32.500 | 1300 | 0,018 | 0,42 | 28.750 | 1150 | 0,018 | 0,42 |
| 0,8 | R0,05 | 8 | 20.000 | 750 | 0,016 | 0,42 | 18.000 | 620 | 0,013 | 0,42 | 26.000 | 980 | 0,016 | 0,42 | 23.000 | 860 | 0,016 | 0,42 |
| 0,8 | R0,1 | 1,6 | 36.000 | 1.580 | 0,06 | 0,36 | 32.000 | 1.270 | 0,048 | 0,36 | 40.000 | 1760 | 0,06 | 0,36 | 40.000 | 1760 | 0,06 | 0,36 |
| 0,8 | R0,1 | 4 | 30.000 | 1.240 | 0,042 | 0,36 | 27.000 | 1.010 | 0,034 | 0,36 | 39.000 | 1610 | 0,042 | 0,36 | 34.500 | 1430 | 0,042 | 0,36 |
| 0,8 | R0,1 | 6 | 25.000 | 1.000 | 0,035 | 0,36 | 23.000 | 800 | 0,028 | 0,36 | 32.500 | 1300 | 0,035 | 0,36 | 28.750 | 1150 | 0,035 | 0,36 |
| 0,8 | R0,1 | 8 | 20.000 | 750 | 0,032 | 0,36 | 18.000 | 620 | 0,026 | 0,36 | 26.000 | 980 | 0,032 | 0,36 | 23.000 | 860 | 0,032 | 0,36 |
| 1 | R0,02 | 2 | 32.000 | 2.880 | 0,01 | 0,6 | 29.000 | 2.350 | 0,008 | 0,6 | 40.000 | 3600 | 0,01 | 0,6 | 36.800 | 3310 | 0,01 | 0,6 |
| 1 | R0,02 | 3 | 30.000 | 2.690 | 0,009 | 0,6 | 27.000 | 2.180 | 0,007 | 0,6 | 39.000 | 3500 | 0,009 | 0,6 | 34.500 | 3090 | 0,009 | 0,6 |
| 1 | R0,1 | 2 | 32.000 | 2.880 | 0,06 | 0,5 | 29.000 | 2.350 | 0,05 | 0,5 | 40.000 | 3600 | 0,06 | 0,5 | 36.800 | 3310 | 0,06 | 0,5 |
| 1 | R0,1 | 3 | 30.000 | 2.690 | 0,053 | 0,5 | 27.000 | 2.180 | 0,042 | 0,5 | 39.000 | 3500 | 0,053 | 0,5 | 34.500 | 3090 | 0,053 | 0,5 |
| 1 | R0,1 | 4 | 28.000 | 2.500 | 0,049 | 0,5 | 25.000 | 1.940 | 0,039 | 0,5 | 36.400 | 3250 | 0,049 | 0,5 | 32.200 | 2880 | 0,049 | 0,5 |
| 1 | R0,1 | 5 | 27.000 | 2.240 | 0,046 | 0,5 | 24.000 | 1.800 | 0,037 | 0,5 | 35.100 | 2910 | 0,046 | 0,5 | 31.050 | 2580 | 0,046 | 0,5 |
| 1 | R0,1 | 6 | 25.000 | 2.070 | 0,043 | 0,5 | 23.000 | 1.650 | 0,034 | 0,5 | 32.500 | 2690 | 0,043 | 0,5 | 28.750 | 2380 | 0,043 | 0,5 |
| 1 | R0,1 | 8 | 21.000 | 1.740 | 0,04 | 0,5 | 19.000 | 1.440 | 0,032 | 0,5 | 27.300 | 2260 | 0,04 | 0,5 | 24.150 | 2000 | 0,04 | 0,5 |
| 1 | R0,1 | 10 | 18.000 | 1.390 | 0,037 | 0,5 | 16.000 | 1.130 | 0,03 | 0,5 | 23.400 | 1810 | 0,037 | 0,5 | 20.700 | 1600 | 0,037 | 0,5 |
| 1 | R0,2 | 2 | 32.000 | 2.880 | 0,12 | 0,4 | 29.000 | 2.350 | 0,1 | 0,4 | 40.000 | 3600 | 0,12 | 0,4 | 36.800 | 3310 | 0,12 | 0,4 |
| 1 | R0,2 | 3 | 30.000 | 2.690 | 0,11 | 0,4 | 27.000 | 2.180 | 0,08 | 0,4 | 39.000 | 3500 | 0,106 | 0,4 | 34.500 | 3090 | 0,106 | 0,4 |
| 1 | R0,2 | 4 | 28.000 | 2.500 | 0,1 | 0,4 | 25.000 | 1.940 | 0,08 | 0,4 | 36.400 | 3250 | 0,097 | 0,4 | 32.200 | 2880 | 0,097 | 0,4 |
| 1 | R0,2 | 5 | 27.000 | 2.240 | 0,09 | 0,4 | 24.000 | 1.800 | 0,07 | 0,4 | 35.100 | 2910 | 0,091 | 0,4 | 31.050 | 2580 | 0,091 | 0,4 |
| 1 | R0,2 | 6 | 25.000 | 2.070 | 0,09 | 0,4 | 23.000 | 1.650 | 0,07 | 0,4 | 32.500 | 2690 | 0,086 | 0,4 | 28.750 | 2380 | 0,086 | 0,4 |
| 1 | R0,2 | 8 | 21.000 | 1.740 | 0,08 | 0,4 | 19.000 | 1.440 | 0,06 | 0,4 | 27.300 | 2260 | 0,079 | 0,4 | 24.150 | 2000 | 0,079 | 0,4 |
| 1 | R0,2 | 10 | 18.000 | 1.390 | 0,07 | 0,4 | 16.000 | 1.130 | 0,06 | 0,4 | 23.400 | 1810 | 0,074 | 0,4 | 20.700 | 1600 | 0,074 | 0,4 |
| 1 | R0,3 | 2 | 32.000 | 2.880 | 0,2 | 0,3 | 29.000 | 2.350 | 0,16 | 0,3 | 40.000 | 3600 | 0,2 | 0,3 | 36.800 | 3310 | 0,2 | 0,3 |
| 1 | R0,3 | 3 | 30.000 | 2.690 | 0,18 | 0,3 | 27.000 | 2.180 | 0,14 | 0,3 | 39.000 | 3500 | 0,177 | 0,3 | 34.500 | 3090 | 0,177 | 0,3 |
| 1,5 | R0,3 | 3 | 22.000 | 2.970 | 0,12 | 0,6 | 20.000 | 2.410 | 0,1 | 0,6 | 28.600 | 3860 | 0,12 | 0,6 | 25.300 | 3420 | 0,12 | 0,6 |
| 1,5 | R0,5 | 3 | 22.000 | 2.970 | 0,3 | 0,3 | 20.000 | 2.410 | 0,24 | 0,3 | 28.600 | 3860 | 0,3 | 0,3 | 25.300 | 3420 | 0,3 | 0,3 |
| 1,5 | R0,5 | 10 | 16.000 | 2.030 | 0,21 | 0,3 | 14.000 | 1.650 | 0,17 | 0,3 | 20.800 | 2640 | 0,209 | 0,3 | 18.400 | 2330 | 0,209 | 0,3 |
| 1,5 | R0,5 | 12 | 15.000 | 1.810 | 0,2 | 0,3 | 14.000 | 1.470 | 0,16 | 0,3 | 19.500 | 2350 | 0,198 | 0,3 | 17.250 | 2080 | 0,198 | 0,3 |
| 1,5 | R0,5 | 20 | 8.000 | 1.060 | 0,17 | 0,3 | 7.000 | 860 | 0,14 | 0,3 | 10.400 | 1380 | 0,17 | 0,3 | 9.200 | 1220 | 0,17 | 0,3 |
| 2 | R0,1 | 4 | 17.500 | 3.150 | 0,06 | 1,1 | 16.000 | 2.560 | 0,048 | 1,1 | 22.750 | 4100 | 0,06 | 1,1 | 20.125 | 3620 | 0,06 | 1,1 |
| 2 | R0,1 | 6 | 16.500 | 2.930 | 0,054 | 1,1 | 15.000 | 2.370 | 0,043 | 1,1 | 21.450 | 3810 | 0,054 | 1,1 | 18.975 | 3370 | 0,054 | 1,1 |
| 2 | R0,1 | 8 | 15.500 | 2.630 | 0,05 | 1,1 | 14.000 | 2.130 | 0,04 | 1,1 | 20.150 | 3420 | 0,05 | 1,1 | 17.825 | 3020 | 0,05 | 1,1 |
| 2 | R0,1 | 10 | 14.500 | 2.420 | 0,048 | 1,1 | 13.000 | 1.970 | 0,038 | 1,1 | 18.850 | 3150 | 0,048 | 1,1 | 16.675 | 2780 | 0,048 | 1,1 |
| 2 | R0,1 | 15 | 12.000 | 1.910 | 0,043 | 1,1 | 11.000 | 1.550 | 0,034 | 1,1 | 15.600 | 2480 | 0,043 | 1,1 | 13.800 | 2200 | 0,043 | 1,1 |
| 2 | R0,1 | 16 | 11.500 | 1.790 | 0,042 | 1,1 | 10.500 | 1.460 | 0,034 | 1,1 | 14.950 | 2330 | 0,042 | 1,1 | 13.225 | 2060 | 0,042 | 1,1 |
| 2 | R0,1 | 20 | 9.500 | 1.460 | 0,04 | 1,1 | 8.500 | 1.190 | 0,032 | 1,1 | 12.350 | 1900 | 0,04 | 1,1 | 10.925 | 1680 | 0,04 | 1,1 |
| 2 | R0,2 | 4 | 17.500 | 3.150 | 0,12 | 1 | 16.000 | 2.560 | 0,1 | 1 | 22.750 | 4100 | 0,12 | 1 | 20.125 | 3620 | 0,12 | 1 |
| 2 | R0,2 | 10 | 14.500 | 2.420 | 0,1 | 1 | 13.000 | 1.970 | 0,08 | 1 | 18.850 | 3150 | 0,095 | 1 | 16.675 | 2780 | 0,095 | 1 |

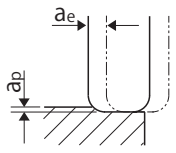
# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## AE-CPR-N

| Work Material | | | Copper C1020 - C1100 | | | | Copper Tungsten W70% - Cu30% | | | | Wrought aluminium alloy A7075 | | | | Aluminium alloy casting • Die casting <SI 13% | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DC | RE | LU (mm) | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | | S ($min^{-1}$) | F (mm/min) | Depth of cut (mm) | |
| | | | | | ap | ae | | | ap | ae | | | ap | ae | | | ap | ae |
| 2 | R0,2 | 16 | 11.500 | 1.790 | 0,09 | 1 | 10.500 | 1.460 | 0,07 | 1 | 14.950 | 2330 | 0,085 | 1 | 13.225 | 2060 | 0,085 | 1 |
| 2 | R0,2 | 20 | 9.500 | 1.460 | 0,08 | 1 | 8.500 | 1.190 | 0,06 | 1 | 12.350 | 1900 | 0,08 | 1 | 10.925 | 1680 | 0,08 | 1 |
| 2 | R0,3 | 4 | 17.500 | 3.150 | 0,2 | 0,9 | 16.000 | 2.560 | 0,16 | 0,9 | 22.750 | 4100 | 0,2 | 0,9 | 20.125 | 3620 | 0,2 | 0,9 |
| 2 | R0,3 | 6 | 16.500 | 2.930 | 0,18 | 0,9 | 15.000 | 2.370 | 0,14 | 0,9 | 21.450 | 3810 | 0,181 | 0,9 | 18.975 | 3370 | 0,181 | 0,9 |
| 2 | R0,3 | 8 | 15.500 | 2.630 | 0,17 | 0,9 | 14.000 | 2.130 | 0,13 | 0,9 | 20.150 | 3420 | 0,168 | 0,9 | 17.825 | 3020 | 0,168 | 0,9 |
| 2 | R0,3 | 10 | 14.500 | 2.420 | 0,16 | 0,9 | 13.000 | 1.970 | 0,13 | 0,9 | 18.850 | 3150 | 0,159 | 0,9 | 16.675 | 2780 | 0,159 | 0,9 |
| 2 | R0,3 | 15 | 12.000 | 1.910 | 0,14 | 0,9 | 11.000 | 1.550 | 0,12 | 0,9 | 15.600 | 2480 | 0,144 | 0,9 | 13.800 | 2200 | 0,144 | 0,9 |
| 2 | R0,3 | 16 | 11.500 | 1.790 | 0,14 | 0,9 | 10.500 | 1.460 | 0,11 | 0,9 | 14.950 | 2330 | 0,141 | 0,9 | 13.225 | 2060 | 0,141 | 0,9 |
| 2 | R0,3 | 20 | 9.500 | 1.460 | 0,13 | 0,9 | 8.500 | 1.190 | 0,11 | 0,9 | 12.350 | 1900 | 0,134 | 0,9 | 10.925 | 1680 | 0,134 | 0,9 |
| 2,5 | R0,5 | 5 | 15.000 | 3.600 | 0,3 | 0,9 | 13.500 | 2.920 | 0,24 | 0,9 | 19.500 | 4680 | 0,3 | 0,9 | 17.250 | 4140 | 0,3 | 0,9 |
| 2,5 | R0,5 | 20 | 11.500 | 2.040 | 0,21 | 0,9 | 10.500 | 1.660 | 0,17 | 0,9 | 14.950 | 2650 | 0,212 | 0,9 | 13.225 | 2350 | 0,212 | 0,9 |
| 3 | R0,2 | 6 | 12.500 | 3.750 | 0,12 | 1,6 | 11.500 | 3.050 | 0,1 | 1,6 | 16.250 | 4880 | 0,12 | 1,6 | 14.375 | 4310 | 0,12 | 1,6 |
| 3 | R0,2 | 12 | 11.500 | 3.190 | 0,1 | 1,6 | 10.500 | 2.600 | 0,08 | 1,6 | 14.950 | 4150 | 0,104 | 1,6 | 13.225 | 3670 | 0,104 | 1,6 |
| 3 | R0,2 | 18 | 10.500 | 2.680 | 0,1 | 1,6 | 9.500 | 2.180 | 0,08 | 1,6 | 13.650 | 3480 | 0,096 | 1,6 | 12.075 | 3080 | 0,096 | 1,6 |
| 3 | R0,2 | 21 | 10.000 | 2.440 | 0,09 | 1,6 | 9.000 | 1.970 | 0,07 | 1,6 | 13.000 | 3170 | 0,093 | 1,6 | 11.500 | 2810 | 0,093 | 1,6 |
| 3 | R0,2 | 24 | 9.500 | 2.210 | 0,09 | 1,6 | 8.500 | 1.800 | 0,07 | 1,6 | 12.350 | 2870 | 0,091 | 1,6 | 10.925 | 2540 | 0,091 | 1,6 |
| 3 | R0,3 | 6 | 12.500 | 3.750 | 0,2 | 1,5 | 11.500 | 3.050 | 0,16 | 1,5 | 16.250 | 4880 | 0,2 | 1,5 | 14.375 | 4310 | 0,2 | 1,5 |
| 3 | R0,3 | 8 | 12.000 | 3.510 | 0,19 | 1,5 | 11.000 | 2.840 | 0,15 | 1,5 | 15.600 | 4560 | 0,189 | 1,5 | 13.800 | 4040 | 0,189 | 1,5 |
| 3 | R0,3 | 12 | 11.500 | 3.190 | 0,17 | 1,5 | 10.500 | 2.600 | 0,14 | 1,5 | 14.950 | 4150 | 0,174 | 1,5 | 13.225 | 3670 | 0,174 | 1,5 |
| 3 | R0,3 | 20 | 10.500 | 2.600 | 0,16 | 1,5 | 9.500 | 2.120 | 0,13 | 1,5 | 13.650 | 3380 | 0,157 | 1,5 | 12.075 | 2990 | 0,157 | 1,5 |
| 3 | R0,5 | 6 | 12.500 | 3.750 | 0,3 | 1,2 | 11.500 | 3.050 | 0,24 | 1,2 | 16.250 | 4880 | 0,3 | 1,2 | 14.375 | 4310 | 0,3 | 1,2 |
| 3 | R0,5 | 12 | 11.500 | 3.190 | 0,26 | 1,2 | 10.500 | 2.600 | 0,21 | 1,2 | 14.950 | 4150 | 0,261 | 1,2 | 13.225 | 3670 | 0,261 | 1,2 |
| 3 | R0,5 | 15 | 11.000 | 2.930 | 0,25 | 1,2 | 10.000 | 2.370 | 0,2 | 1,2 | 14.300 | 3810 | 0,25 | 1,2 | 12.650 | 3370 | 0,25 | 1,2 |
| 3 | R0,5 | 18 | 10.500 | 2.680 | 0,24 | 1,2 | 9.500 | 2.180 | 0,19 | 1,2 | 13.650 | 3480 | 0,241 | 1,2 | 12.075 | 3080 | 0,241 | 1,2 |
| 3 | R0,5 | 21 | 10.000 | 2.440 | 0,23 | 1,2 | 9.000 | 1.970 | 0,19 | 1,2 | 13.000 | 3170 | 0,234 | 1,2 | 11.500 | 2810 | 0,234 | 1,2 |
| 3 | R0,5 | 25 | 9.500 | 2.170 | 0,23 | 1,2 | 8.500 | 1.770 | 0,18 | 1,2 | 12.350 | 2820 | 0,226 | 1,2 | 10.925 | 2500 | 0,226 | 1,2 |
| 3 | R0,5 | 30 | 8.500 | 1.790 | 0,22 | 1,2 | 8.000 | 1.460 | 0,17 | 1,2 | 11.050 | 2330 | 0,217 | 1,2 | 9.775 | 2060 | 0,217 | 1,2 |
| 4 | R0,2 | 8 | 9.500 | 3.710 | 0,12 | 2,2 | 8.600 | 3.020 | 0,1 | 2,2 | 12.350 | 4820 | 0,12 | 2,2 | 10.925 | 4270 | 0,12 | 2,2 |
| 4 | R0,2 | 16 | 8.800 | 3.220 | 0,1 | 2,2 | 7.900 | 2.600 | 0,08 | 2,2 | 11.440 | 4190 | 0,104 | 2,2 | 10.120 | 3700 | 0,104 | 2,2 |
| 4 | R0,2 | 20 | 8.500 | 3.000 | 0,1 | 2,2 | 7.700 | 2.450 | 0,08 | 2,2 | 11.050 | 3900 | 0,1 | 2,2 | 9.775 | 3450 | 0,1 | 2,2 |
| 4 | R0,2 | 24 | 8.100 | 2.760 | 0,1 | 2,2 | 7.300 | 2.240 | 0,08 | 2,2 | 10.530 | 3590 | 0,096 | 2,2 | 9.315 | 3170 | 0,096 | 2,2 |
| 4 | R0,2 | 28 | 7.700 | 2.530 | 0,09 | 2,2 | 6.900 | 2.040 | 0,07 | 2,2 | 10.010 | 3290 | 0,093 | 2,2 | 8.855 | 2910 | 0,093 | 2,2 |
| 4 | R0,2 | 32 | 7.400 | 2.350 | 0,09 | 2,2 | 6.700 | 1.910 | 0,07 | 2,2 | 9.620 | 3060 | 0,091 | 2,2 | 8.510 | 2700 | 0,091 | 2,2 |
| 4 | R0,3 | 8 | 9.500 | 3.710 | 0,2 | 2,1 | 8.600 | 3.020 | 0,16 | 2,1 | 12.350 | 4820 | 0,2 | 2,1 | 10.925 | 4270 | 0,2 | 2,1 |
| 4 | R0,3 | 20 | 8.400 | 2.970 | 0,17 | 2,1 | 7.600 | 2.420 | 0,13 | 2,1 | 10.920 | 3860 | 0,167 | 2,1 | 9.660 | 3420 | 0,167 | 2,1 |
| 4 | R0,5 | 8 | 9.500 | 3.710 | 0,3 | 1,8 | 8.600 | 3.020 | 0,24 | 1,8 | 12.350 | 4820 | 0,3 | 1,8 | 10.925 | 4270 | 0,3 | 1,8 |
| 4 | R0,5 | 12 | 9.100 | 3.440 | 0,28 | 1,8 | 8.200 | 2.790 | 0,22 | 1,8 | 11.830 | 4470 | 0,277 | 1,8 | 10.465 | 3960 | 0,277 | 1,8 |
| 4 | R0,5 | 16 | 8.800 | 3.220 | 0,26 | 1,8 | 7.900 | 2.600 | 0,21 | 1,8 | 11.440 | 4190 | 0,261 | 1,8 | 10.120 | 3700 | 0,261 | 1,8 |
| 4 | R0,5 | 20 | 8.400 | 2.970 | 0,25 | 1,8 | 7.600 | 2.420 | 0,2 | 1,8 | 10.920 | 3860 | 0,25 | 1,8 | 9.660 | 3420 | 0,25 | 1,8 |
| 4 | R0,5 | 24 | 8.100 | 2.760 | 0,24 | 1,8 | 7.300 | 2.240 | 0,19 | 1,8 | 10.530 | 3590 | 0,241 | 1,8 | 9.315 | 3170 | 0,241 | 1,8 |
| 4 | R0,5 | 25 | 8.000 | 2.710 | 0,24 | 1,8 | 7.200 | 2.190 | 0,19 | 1,8 | 10.400 | 3520 | 0,239 | 1,8 | 9.200 | 3120 | 0,239 | 1,8 |
| 4 | R0,5 | 28 | 7.700 | 2.530 | 0,23 | 1,8 | 6.900 | 2.040 | 0,19 | 1,8 | 10.010 | 3290 | 0,234 | 1,8 | 8.855 | 2910 | 0,234 | 1,8 |
| 4 | R0,5 | 32 | 7.400 | 2.350 | 0,23 | 1,8 | 6.700 | 1.910 | 0,18 | 1,8 | 9.620 | 3060 | 0,227 | 1,8 | 8.510 | 2700 | 0,227 | 1,8 |
| 4 | R1 | 8 | 9.500 | 3.710 | 0,6 | 1,2 | 8.600 | 3.020 | 0,48 | 1,2 | 12.350 | 4820 | 0,6 | 1,2 | 10.925 | 4270 | 0,6 | 1,2 |
| 4 | R1 | 16 | 8.800 | 3.220 | 0,52 | 1,2 | 7.900 | 2.600 | 0,42 | 1,2 | 11.440 | 4190 | 0,522 | 1,2 | 10.120 | 3700 | 0,522 | 1,2 |
| 4 | R1 | 24 | 8.100 | 2.760 | 0,48 | 1,2 | 7.300 | 2.240 | 0,39 | 1,2 | 10.530 | 3590 | 0,482 | 1,2 | 9.315 | 3170 | 0,482 | 1,2 |
| 4 | R1 | 28 | 7.700 | 2.530 | 0,47 | 1,2 | 6.900 | 2.040 | 0,37 | 1,2 | 10.010 | 3290 | 0,467 | 1,2 | 8.855 | 2910 | 0,467 | 1,2 |
| 4 | R1 | 32 | 7.400 | 2.350 | 0,46 | 1,2 | 6.700 | 1.910 | 0,36 | 1,2 | 9.620 | 3060 | 0,455 | 1,2 | 8.510 | 2700 | 0,455 | 1,2 |
| 6 | R0,1 | 12 | 6.500 | 3.900 | 0,06 | 3,5 | 5.900 | 3.190 | 0,05 | 3,5 | 8.450 | 5070 | 0,06 | 3,5 | 7.475 | 4490 | 0,06 | 3,5 |
| 6 | R0,1 | 24 | 6.000 | 3.380 | 0,05 | 3,5 | 5.400 | 2.730 | 0,04 | 3,5 | 7.800 | 4390 | 0,052 | 3,5 | 6.900 | 3890 | 0,052 | 3,5 |
| 6 | R0,2 | 12 | 6.500 | 3.900 | 0,12 | 3,4 | 5.900 | 3.190 | 0,1 | 3,4 | 8.450 | 5070 | 0,12 | 3,4 | 7.475 | 4490 | 0,12 | 3,4 |
| 6 | R0,2 | 24 | 6.000 | 3.380 | 0,1 | 3,4 | 5.400 | 2.730 | 0,08 | 3,4 | 7.800 | 4390 | 0,104 | 3,4 | 6.900 | 3890 | 0,104 | 3,4 |
| 6 | R0,2 | 32 | 5.700 | 3.060 | 0,1 | 3,4 | 5.100 | 2.470 | 0,08 | 3,4 | 7.410 | 3980 | 0,099 | 3,4 | 6.555 | 3520 | 0,099 | 3,4 |
| 6 | R0,2 | 48 | 5.000 | 2.440 | 0,09 | 3,4 | 4.500 | 1.980 | 0,07 | 3,4 | 6.500 | 3170 | 0,091 | 3,4 | 5.750 | 2810 | 0,091 | 3,4 |
| 6 | R0,5 | 12 | 6.500 | 3.900 | 0,3 | 3 | 5.900 | 3.190 | 0,24 | 3 | 8.450 | 5070 | 0,3 | 3 | 7.475 | 4490 | 0,3 | 3 |
| 6 | R0,5 | 24 | 6.000 | 3.380 | 0,26 | 3 | 5.400 | 2.730 | 0,21 | 3 | 7.800 | 4390 | 0,261 | 3 | 6.900 | 3890 | 0,261 | 3 |
| 6 | R0,5 | 30 | 5.800 | 3.150 | 0,25 | 3 | 5.200 | 2.550 | 0,2 | 3 | 7.540 | 4100 | 0,25 | 3 | 6.670 | 3620 | 0,25 | 3 |
| 6 | R0,5 | 32 | 5.700 | 3.060 | 0,25 | 3 | 5.100 | 2.470 | 0,2 | 3 | 7.410 | 3980 | 0,247 | 3 | 6.555 | 3520 | 0,247 | 3 |
| 6 | R0,5 | 48 | 5.000 | 2.440 | 0,23 | 3 | 4.500 | 1.980 | 0,18 | 3 | 6.500 | 3170 | 0,227 | 3 | 5.750 | 2810 | 0,227 | 3 |
| 6 | R1 | 12 | 6.500 | 3.900 | 0,6 | 2,4 | 5.900 | 3.190 | 0,48 | 2,4 | 8.450 | 5070 | 0,6 | 2,4 | 7.475 | 4490 | 0,6 | 2,4 |
| 6 | R1 | 24 | 6.000 | 3.380 | 0,52 | 2,4 | 5.400 | 2.730 | 0,42 | 2,4 | 7.800 | 4390 | 0,522 | 2,4 | 6.900 | 3890 | 0,522 | 2,4 |
| 6 | R1 | 32 | 5.700 | 3.060 | 0,49 | 2,4 | 5.100 | 2.470 | 0,39 | 2,4 | 7.410 | 3980 | 0,493 | 2,4 | 6.555 | 3520 | 0,493 | 2,4 |
| 6 | R1 | 48 | 5.000 | 2.440 | 0,46 | 2,4 | 4.500 | 1.980 | 0,36 | 2,4 | 6.500 | 3170 | 0,455 | 2,4 | 5.750 | 2810 | 0,455 | 2,4 |

Depth of cut

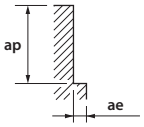



1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Use a water soluble fluid.
4. Use a non-water-soluble cutting fluid if the machined surface and accuracy are of critical importance. Adjust the depth of cut and feed rate as necessary.
5. Always use a cutting fluid recommended by the cutting fluid manufacturer as the workpiece may discolor.

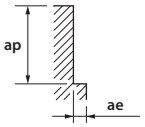
# CUTTING CONDITIONS



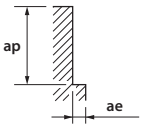
## DLC-AIR-EDS

| | Aluminium alloy | |
|---|---|---|
| Vc | 1000 ~ 3000 m/min | |
| Ø | S (min-1) | F (mm/min) |
| 12 | 33.000 | ≤ 9.100 |
| 16 | 33.000 | ≤ 12.000 |
| 20 | 33.000 | ≤ 15.000 |
| 25 | 33.000 | ≤ 15.000 |
| Max cutting depth |   | ap ≤ 0,6 Dc; ae 1,0 Dc |

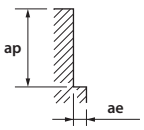
## AERO-LN-EDS

| | Aluminium alloy | |
|---|---|---|
| Ø | S (min-1) | F (mm/min) |
| 16 | ≤ 33.000 | ≤ 12.000 |
| 20 | ≤ 33.000 | ≤ 15.000 |
| 25 | ≤ 33.000 | ≤ 15.000 |
| Max cutting depth |   | ap ≤ 0,4 D; ae 0,6 D |

## AERO-ETS

| | Aluminium alloy | |
|---|---|---|
| Ø | S (min-1) | F (mm/min) |
| 12 | ≤ 33.000 | ≤ 15.000 |
| 16 | ≤ 33.000 | ≤ 20.000 |
| 20 | ≤ 33.000 | ≤ 25.700 |
| 25 | ≤ 33.000 | ≤ 32.600 |
| Max cutting depth |   | ap ≤ 0,4 Dc; ae 1 Dc |

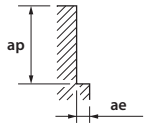
## AERO-LN-ETS

| | Aluminium alloy | |
|---|---|---|
| Ø | S (min-1) | F (mm/min) |
| 16 | ≤ 33.000 | ≤ 20.000 |
| 20 | ≤ 33.000 | ≤ 25.700 |
| 25 | ≤ 33.000 | ≤ 32.600 |
| Max cutting depth |   | ap ≤ 0,2 D; ae 1 D |

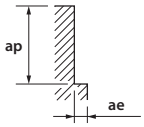
# CUTTING CONDITIONS



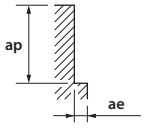
## AERO-O-ETS

| | Aluminium alloy | |
|---|---|---|
| Vc | 1000 ~ 3000 m/min | |
| Ø | S (min-1) | F (mm/min) |
| 12 | ≤ 33.000 | ≤ 25.700 |
| 25 | ≤ 33.000 | ≤ 32.600 |
| Max cutting depth |   | ap: ≤ 0,4 Dc; ae: 1 Dc |

## AERO-ETL

| | Aluminium alloy | | | |
|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | ap (mm) | ae (mm) |
| 12 | ≤ 14.000 | ≤ 4.000 | ≤ 45 | ≤ 0,15 |
| 16 | ≤ 14.000 | ≤ 5.000 | ≤ 45 | ≤ 0,2 |
| 20 | ≤ 14.000 | ≤ 6.000 | ≤ 45 | ≤ 0,3 |
| Max cutting depth |   | | | |

## AERO-EXTL

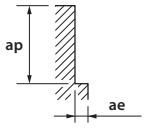
| | Aluminium alloy | | | |
|---|---|---|---|---|
| Ø | S (min-1) | F (mm/min) | ap (mm) | ae (mm) |
| 20 | ≤ 14.000 | ≤ 6.000 | ≤ 95 | ≤ 0,2 |
| Max cutting depth |   | | | |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

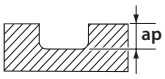
## UP-PHS

### Side milling

| | C≤0,2% - GG<br>SS400 • S55C • FC250<br>~750 N/mm2 | | ~30 HRC<br>SCM • SKT • SKS • SKD | | 30~38 HRC<br>SKT • SKD • NAK55 • HPM1 | | 38~45 HRC-SUS<br>SUS304 • SKD | | 45~55 HRC<br>Tiall | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 100<br>(m/min) | | 78<br>(m/min) | | 66<br>(m/min) | | 62<br>(m/min) | | 60<br>(m/min) | |
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 3 | 10.600 | 1.170 | 8.300 | 900 | 7.000 | 650 | 6.600 | 670 | 6.350 | 580 |
| 4 | 7.950 | 1.200 | 6.200 | 980 | 5.250 | 650 | 4.950 | 700 | 4.750 | 620 |
| 5 | 6.350 | 1.260 | 4.950 | 1.000 | 4.200 | 700 | 3.950 | 750 | 3.800 | 640 |
| 6 | 5.300 | 1.500 | 4.150 | 1.100 | 3.500 | 840 | 3.300 | 800 | 3.200 | 650 |
| 8 | 4.000 | 1.500 | 3.100 | 1.100 | 2.650 | 790 | 2.450 | 770 | 2.400 | 660 |
| 10 | 3.200 | 1.320 | 2.500 | 1.000 | 2.100 | 720 | 1.950 | 700 | 1.900 | 630 |
| 12 | 2.650 | 1.320 | 2.050 | 1.000 | 1.750 | 680 | 1.650 | 650 | 1.600 | 570 |
| Max cutting depth |  | | ap / ae<br>1,5D / 0,2D | | | | ap / ae<br>1,5D / 0,1D | | ap / ae<br>1D / 0,05D | |

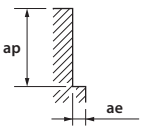
1. Use a rigid and precise machine and holder.
2. Adjust speed and feed when cutting depth is large or when machining with low rigidity tooling.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

### Slotting

| | C≤0,2% - GG<br>SS400 • S55C • FC250<br>~750 N/mm2 | | ~30 HRC<br>SCM • SKT • SKS • SKD | | 30~38 HRC<br>SKT • SKD • NAK55 • HPM1 | | 38~45 HRC-SUS<br>SUS304 • SKD | | 45~55 HRC<br>Tiall | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 72<br>(m/min) | | 54<br>(m/min) | | 41<br>(m/min) | | 47<br>(m/min) | | 42<br>(m/min) | |
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 3 | 7.600 | 570 | 5.700 | 480 | 4.400 | 315 | 4.950 | 360 | 4.450 | 380 |
| 4 | 5.700 | 570 | 4.300 | 480 | 3.300 | 315 | 3.750 | 400 | 3.350 | 430 |
| 5 | 4.600 | 650 | 3.400 | 500 | 2.600 | 330 | 2.950 | 430 | 2.650 | 460 |
| 6 | 3.800 | 650 | 2.900 | 500 | 2.200 | 350 | 2.500 | 450 | 2.250 | 480 |
| 8 | 2.900 | 660 | 2.200 | 520 | 1.650 | 380 | 1.850 | 465 | 1.650 | 480 |
| 10 | 2.300 | 610 | 1.700 | 480 | 1.300 | 330 | 1.500 | 430 | 1.350 | 450 |
| 12 | 1.900 | 610 | 1.400 | 430 | 1.100 | 315 | 1.200 | 400 | 1.100 | 420 |
| Max cutting depth |  ap = 1D | | | | | | | | ap = 0,2D | |

## NEO-PHS / NEO-CR-PHS

### Side milling

| | C≤0,2% - GG<br>S55C · SS400 · FC250<br>~750 N/mm² | | SCM - SKD<br>SKT · SKS · SCM<br>~30 N/mm² | | 30~38 HRC<br>NAK55 · HPM1 · SKT · SKD<br>30~38 N/mm² | | 38~45 HRC - SUS<br>SUS304 · SKD<br>38~45 N/mm² | | 45~55 HRC - HRS<br>Titanium alloy<br>45~55 N/mm² | | Heat resistant<br>alloy steel<br>Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 3 | 12,500 | 1,100 | 9,550 | 840 | 8,100 | 625 | 7,650 | 615 | 7,400 | 545 | 3,800 | 220 |
| 4 | 9,750 | 1,200 | 7,550 | 985 | 6,400 | 680 | 6,050 | 710 | 5,850 | 630 | 3,000 | 240 |
| 5 | 7,950 | 1,300 | 6,150 | 1,050 | 5,250 | 725 | 4,950 | 775 | 4,800 | 670 | 2,450 | 245 |
| 6 | 6,750 | 1,600 | 5,250 | 1,200 | 4,450 | 890 | 4,200 | 835 | 4,050 | 695 | 2,100 | 250 |
| 8 | 5,050 | 1,550 | 3,950 | 1,100 | 3,350 | 815 | 3,150 | 810 | 3,050 | 675 | 1,600 | 225 |
| 10 | 4,100 | 1,450 | 3,200 | 1,050 | 2,700 | 725 | 2,550 | 715 | 2,450 | 635 | 1,250 | 215 |
| 12 | 3,400 | 1,400 | 2,650 | 1,000 | 2,250 | 720 | 2,100 | 675 | 2,050 | 605 | 1,050 | 210 |
| 16 | 2,550 | 1,200 | 2,000 | 940 | 1,700 | 635 | 1,600 | 555 | 1,550 | 505 | 765 | 210 |
| 20 | 2,050 | 985 | 1,600 | 755 | 1,350 | 590 | 1,250 | 515 | 1,250 | 460 | 635 | 200 |
| Max cutting depth |  | | ap / ae<br>≤ 1,5 D / ≤ 0,2 D | | | | ap / ae<br>≤ 1,5 D / ≤ 0,1 D | | ap / ae<br>≤ 1,5 D / ≤ 0,05 D | | | |

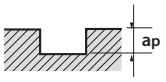
1. Use a rigid and precise machine and holder,
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## NEO-PHS / NEO-CR-PHS

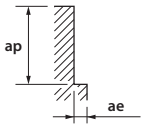
### Slotting

| | C≤0,2% - GG<br>S55C · SS400 · FC250<br>~750 N/mm² | | SCM - SKD<br>SKT · SKS · SCM<br>~30 N/mm² | | 30~38 HRC<br>NAK55 · HPM1 · SKT · SKD<br>30~38 N/mm² | | 38~45 HRC - SUS<br>SUS304 · SKD<br>38~45 N/mm² | | 45~55 HRC - HRS<br>Titanium alloy<br>45~55 N/mm² | | Heat resistant alloy steel<br>Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 10,500 | 730 | 8,550 | 680 | 7,850 | 520 | 7,450 | 460 | 7,200 | 440 | 2,500 | 125 |
| 4 | 7,750 | 730 | 6,400 | 775 | 5,900 | 520 | 5,550 | 515 | 5,400 | 495 | 1,900 | 135 |
| 5 | 6,200 | 735 | 5,100 | 755 | 4,700 | 545 | 4,450 | 545 | 4,300 | 535 | 1,500 | 145 |
| 6 | 5,150 | 740 | 4,250 | 635 | 3,950 | 575 | 3,700 | 570 | 3,600 | 545 | 1,250 | 145 |
| 8 | 3,850 | 600 | 3,200 | 550 | 2,950 | 550 | 2,800 | 525 | 2,700 | 510 | 945 | 155 |
| 10 | 3,100 | 580 | 2,550 | 540 | 2,350 | 480 | 2,250 | 475 | 2,150 | 455 | 760 | 145 |
| 12 | 2,600 | 560 | 2,150 | 475 | 1,950 | 460 | 1,850 | 440 | 1,800 | 435 | 630 | 145 |
| 16 | 1,950 | 555 | 1,600 | 430 | 1,500 | 370 | 1,400 | 370 | 1,350 | 365 | 475 | 110 |
| 20 | 1,550 | 475 | 1,300 | 380 | 1,200 | 355 | 1,100 | 330 | 1,100 | 330 | 380 | 110 |
| Max cutting depth |  | | ap<br>≤ 1 D | | | | ap<br>≤ 0,5 D | | ap<br>≤ 0,2 D | | | |

1. Use a rigid and precise machine and holder,
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing

## NEO-EMS / NEO-CR-EMS

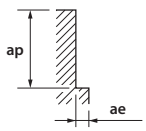
### Side milling

| | C≤0,2% - GG<br>S55C · SS400 · FC250<br>~750 N/mm² | | SCM - SKD<br>SKT · SKS · SCM<br>~30 N/mm² | | 30~38 HRC<br>NAK55 · HPM1 · SKT · SKD<br>30~38 N/mm² | | 38~45 HRC - SUS<br>SUS304 · SKD<br>38~45 N/mm² | | 45~55 HRC - HRS<br>Titanium alloy<br>45~55 N/mm² | | Heat resistant alloy steel<br>Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 6 | 7,100 | 2,300 | 5,500 | 1,750 | 4,700 | 1,300 | 4,400 | 1,250 | 4,300 | 1,050 | 2,200 | 360 |
| 8 | 5,350 | 2,250 | 4,150 | 1,600 | 3,500 | 1,200 | 3,300 | 1,200 | 3,200 | 1,000 | 1,650 | 330 |
| 10 | 4,300 | 2,100 | 3,350 | 1,550 | 2,850 | 1,100 | 2,650 | 1,050 | 2,600 | 925 | 1,350 | 310 |
| 12 | 3,600 | 2,000 | 2,800 | 1,500 | 2,350 | 1,050 | 2,250 | 980 | 2,150 | 875 | 1,100 | 305 |
| 16 | 2,700 | 1,750 | 2,100 | 1,350 | 1,750 | 925 | 1,650 | 805 | 1,600 | 735 | 835 | 305 |
| 20 | 2,150 | 1,450 | 1,650 | 1,100 | 1,400 | 850 | 1,350 | 745 | 1,300 | 665 | 670 | 300 |
| Max cutting depth |  | | ap / ae<br>≤ 1,5 D / ≤ 0,2 D | | | | ap / ae<br>≤ 1,5 D / ≤ 0,1 D | | ap / ae<br>≤ 1,5 D / ≤ 0,05 D | | | |

1. Use a rigid and precise machine and holder
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing

## NEO-EMS / NEO-CR-EMS

### High speed side milling

| | C≤0,2% - GG<br>S55C · SS400 · FC250<br>~750 N/mm² | | SCM - SKD<br>SKT · SKS · SCM<br>~30 N/mm² | | 30~38 HRC<br>NAK55 · HPM1 · SKT · SKD<br>30~38 N/mm² | | 38~45 HRC - SUS<br>SUS304 · SKD<br>38~45 N/mm² | | 45~55 HRC - HRS<br>Titanium alloy<br>45~55 N/mm² | | Heat resistant alloy steel<br>Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 6 | 14,000 | 4,750 | 11,000 | 3,550 | 9,150 | 2,650 | 8,600 | 2,500 | 8,350 | 2,100 | 4,300 | 745 |
| 8 | 10,500 | 4,600 | 8,050 | 3,300 | 6,850 | 2,450 | 6,450 | 2,400 | 6,250 | 2,050 | 3,250 | 675 |
| 10 | 8,400 | 3,900 | 6,500 | 3,000 | 5,550 | 2,200 | 5,200 | 2,100 | 5,050 | 1,900 | 2,600 | 640 |
| 12 | 7,000 | 3,800 | 5,450 | 2,900 | 4,600 | 2,150 | 4,350 | 2,000 | 4,200 | 1,800 | 2,150 | 625 |
| 16 | 5,250 | 3,550 | 4,100 | 2,800 | 3,450 | 1,900 | 3,250 | 1,650 | 3,150 | 1,500 | 1,650 | 620 |
| 20 | 4,200 | 2,900 | 3,250 | 2,250 | 2,750 | 1,750 | 2,600 | 1,550 | 2,550 | 1,350 | 1,300 | 610 |
| Max cutting depth |  | | ap / ae<br>≤ 1,5 D / ≤ 0,05 D<br>ae max = 0,5mm | | | | ap / ae<br>≤ 1,5 D / ≤ 0,02 D | | ap / ae<br>≤ 1 D / ≤ 0,02 D<br>ae max = 0,5mm | | | |

1. Use a rigid and precise machine and holder
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing

# CUTTING CONDITIONS

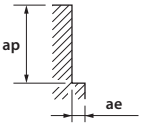


## FX-CR-MG-EMS

### Side milling

| Ø | Cast Iron | | Mild Steel, Carbon Steel | | Alloy Steel • Tool Steel | | Hardened Steel • Prehardened Steel | | Stainless Steel • Hardened Steel Z38CDV5 | | Hardened Steel Heat Resistant Alloy Steel | | Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 2 | 15,500 | 370 | 13,000 | 310 | 11,000 | 280 | 7,000 | 110 | 6,350 | 100 | 3,950 | 60 | 2,750 | 40 |
| 3 | 10,500 | 595 | 8,900 | 505 | 7,400 | 355 | 5,300 | 125 | 4,750 | 110 | 2,750 | 60 | 2,000 | 45 |
| 4 | 7,950 | 635 | 6,650 | 530 | 5,550 | 370 | 4,250 | 135 | 3,700 | 115 | 2,200 | 70 | 1,550 | 45 |
| 5 | 6,350 | 740 | 5,300 | 620 | 4,450 | 425 | 3,550 | 140 | 3,150 | 125 | 1,900 | 75 | 1,250 | 40 |
| 6 | 5,300 | 735 | 4,450 | 615 | 3,700 | 425 | 2,950 | 145 | 2,650 | 130 | 1,550 | 70 | 1,050 | 40 |
| 8 | 3,950 | 710 | 3,300 | 590 | 2,750 | 420 | 2,200 | 145 | 1,950 | 130 | 1,150 | 65 | 795 | 35 |
| 10 | 3,150 | 710 | 2,650 | 590 | 2,200 | 420 | 1,750 | 145 | 1,550 | 130 | 955 | 65 | 635 | 35 |
| 12 | 2,650 | 710 | 2,200 | 590 | 1,850 | 420 | 1,450 | 145 | 1,300 | 130 | 795 | 60 | 530 | 30 |
| 14 | 2,250 | 680 | 1,900 | 575 | 1,550 | 415 | 1,250 | 145 | 1,100 | 125 | 680 | 50 | 455 | 25 |
| 16 | 1,950 | 655 | 1,650 | 550 | 1,350 | 415 | 1,100 | 130 | 995 | 115 | 595 | 45 | 395 | 20 |
| 18 | 1,750 | 655 | 1,450 | 540 | 1,200 | 405 | 990 | 115 | 880 | 105 | 530 | 40 | 350 | 20 |
| 20 | 1,550 | 620 | 1,300 | 520 | 1,100 | 370 | 890 | 105 | 795 | 95 | 475 | 35 | 315 | 19 |
| 22 | 1,400 | 560 | 1,200 | 480 | 1,000 | 340 | 810 | 95 | 720 | 85 | 430 | 30 | 285 | 17 |
| 24 | 1,300 | 520 | 1,100 | 440 | 925 | 315 | 740 | 85 | 660 | 75 | 395 | 30 | 265 | 16 |
| 25 | 1,250 | 500 | 1,050 | 420 | 890 | 300 | 710 | 85 | 635 | 75 | 380 | 30 | 255 | 15 |
| 30 | 1,050 | 420 | 890 | 355 | 740 | 250 | 590 | 70 | 530 | 60 | 315 | 25 | 210 | 13 |

Max cutting depth




| D | ap | ae |
|---|---|---|
| < 3 | 1,5D | 0,05D |
| ≥ 3 | 1,5D | 0,1D |

| ap | ae |
|---|---|
| 1D | 0,02D |

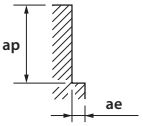
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. When FX-MG-EDSS and FX-MG-EDS are used, please reduce the feed rate to half of the above.

## FX-CR-MG-EMS

### High speed light milling

| Ø | Mild steel • Carbon steel Cast iron | | Alloy Steel • Tool Steel | | Hardened steel • Prehardened steel (free-cutting) | | Hardened Steel • Prehardened Steel (non-free cutting) | | Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 21,000 | 2,450 | 18,500 | 2,150 | 13,000 | 1,500 | 7,950 | 795 | 4,200 | 420 |
| 8 | 15,500 | 2,450 | 13,500 | 2,100 | 9,900 | 1,450 | 5,950 | 795 | 3,150 | 425 |
| 10 | 12,500 | 2,500 | 11,000 | 2,100 | 7,950 | 1,450 | 4,750 | 800 | 2,500 | 420 |
| 12 | 10,500 | 2,450 | 9,250 | 2,100 | 6,600 | 1,450 | 3,950 | 790 | 2,100 | 410 |
| 14 | 9,050 | 2,350 | 7,950 | 2,000 | 5,650 | 1,350 | 3,400 | 740 | 1,800 | 390 |
| 16 | 7,950 | 2,250 | 6,950 | 1,950 | 4,950 | 1,350 | 2,950 | 715 | 1,550 | 375 |
| 18 | 7,050 | 2,250 | 6,150 | 1,900 | 4,400 | 1,300 | 2,650 | 705 | 1,400 | 375 |
| 20 | 6,350 | 2,100 | 5,550 | 1,850 | 3,950 | 1,300 | 2,350 | 665 | 1,250 | 355 |
| 22 | 5,750 | 1,950 | 5,050 | 1,700 | 3,600 | 1,200 | 2,150 | 635 | 1,150 | 325 |
| 24 | 5,300 | 1,800 | 4,600 | 1,550 | 3,300 | 1,100 | 1,950 | 575 | 1,050 | 295 |
| 25 | 5,050 | 1,700 | 4,450 | 1,500 | 3,150 | 1,050 | 1,900 | 560 | 1,000 | 280 |
| 30 | 4,200 | 1,400 | 3,700 | 1,250 | 2,650 | 890 | 1,550 | 455 | 845 | 240 |

Max cutting depth




| D | ap | ae |
|---|---|---|
| ≤ 8 | 1,5D | 0,01D |
| 8 - 16 | 1,5D | 0,02D |
| > 16 | 1,5D | 0,05D |

| D | ap | ae |
|---|---|---|
| ≤ 8 | 1D | 0,01D |
| > 8 | 1D | 0,02D |

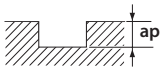
1. The indicated speeds and feeds are for high speed light milling with high speed / high precision machining centers.
2. Tools can cause sparks. Do not use flammable fluids.
3. We recommend using an air blow. When using cutting fluids, use a high-quality fluid with high smoke retardant properties.
4. In general, use FX End Mills for milling less hard materials. For harder materials, use FXS End Mills (FXS-EMS).

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

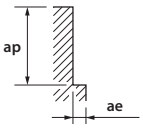
## FXS-PKE

### Slotting milling

| | C≤0,2% S55C • SS400 • FC250 ~750 N/mm² | | ~30 HRC SKD • SKS • SNCM | | 30~38 HRC NAK55 • HPM1 • SKT | | 38~45 HRC SUS SUS304 • X210CR12 X40CRMOV51 | | 45~55 HRC HRS | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 m/min | | 60 m/min | | 50 m/min | | 40 m/min | | 30 m/min | | 20 m/min | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 8.900 | 665 | 6.650 | 595 | 5.900 | 350 | 3.800 | 90 | 3.150 | 55 | 2.000 | 30 |
| 4 | 6.650 | 695 | 5.000 | 675 | 4.450 | 400 | 2.850 | 100 | 2.350 | 70 | 1.550 | 35 |
| 5 | 5.300 | 715 | 4.000 | 660 | 3.550 | 360 | 2.250 | 105 | 1.900 | 70 | 1.250 | 35 |
| 6 | 4.450 | 740 | 3.300 | 550 | 2.950 | 345 | 1.900 | 110 | 1.600 | 90 | 1.050 | 35 |
| 8 | 3.300 | 660 | 2.500 | 500 | 2.200 | 360 | 1.400 | 115 | 1.200 | 95 | 795 | 35 |
| 10 | 2.650 | 630 | 2.000 | 475 | 1.750 | 325 | 1.100 | 115 | 955 | 95 | 635 | 35 |
| 12 | 2.200 | 590 | 1.650 | 440 | 1.450 | 300 | 955 | 110 | 800 | 95 | 530 | 35 |
| 16 | 1.650 | 640 | 1.250 | 480 | 1.100 | 335 | 720 | 120 | 600 | 95 | 400 | 40 |
| 20 | 1.350 | 535 | 1.000 | 400 | 875 | 280 | 570 | 120 | 480 | 80 | 320 | 40 |
| Max cutting depth |   | | | | ap: 0,5D | | | | ap: 0,05D | | | |

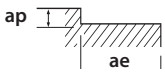
1. Conditions to be used if slant is = 3 x dia. If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes. If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.

### High speed side milling

| | C≤0,2% S55C • SS400 • FC250 ~750 N/mm² | | ~30 HRC SKD • SKS • SNCM | | 30~38 HRC NAK55 • HPM1 • SKT | | 38~45 HRC SUS SUS304 • X210CR12 X40CRMOV51 | | 45~55 HRC HRS | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 200 m/min | | 200 m/min | | 200 m/min | | 150 m/min | | 150 m/min | | 100 m/min | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 6 | 10.600 | 2.650 | 10.600 | 2.200 | 10.600 | 1.350 | 8.000 | 1.000 | 8.000 | 800 | 5.300 | 530 |
| 8 | 8.000 | 2.650 | 8.000 | 2.200 | 8.000 | 1.350 | 6.000 | 1.000 | 6.000 | 800 | 4.000 | 530 |
| 10 | 6.400 | 2.100 | 6.400 | 1.700 | 6.400 | 1.050 | 4.800 | 800 | 4.800 | 640 | 3.200 | 420 |
| 12 | 5.300 | 2.100 | 5.300 | 1.700 | 5.300 | 1.050 | 4.000 | 800 | 4.000 | 640 | 2.650 | 420 |
| 16 | 4.000 | 2.150 | 4.000 | 1.700 | 4.000 | 1.100 | 3.000 | 805 | 3.000 | 665 | 2.000 | 420 |
| 20 | 3.200 | 2.100 | 3.200 | 1.700 | 3.200 | 1.100 | 2.400 | 805 | 2.400 | 665 | 1.600 | 420 |
| Max cutting depth |   | | | | ap: 1D; ae: 0,1D | | | | | | ap: 1,D; ae: 0,02D | |

1. Conditions to be used if slant is = 3 x dia. If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes. If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.

### High speed contouring

| | C≤0,2% S55C • SS400 • FC250 ~750 N/mm² | | ~30 HRC SKD • SKS • SNCM | | 30~38 HRC NAK55 • HPM1 • SKT | | 38~45 HRC SUS SUS304 • X210CR12 X40CRMOV51 | | 45~55 HRC HRS | | 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 200 m/min | | 200 m/min | | 200 m/min | | 150 m/min | | 150 m/min | | 100 m/min | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 6 | 10.600 | 1.600 | 10.600 | 1.300 | 10.600 | 1.000 | 8.000 | 1.000 | 8.000 | 500 | 5.300 | 310 |
| 8 | 8.000 | 1.600 | 8.000 | 1.300 | 8.000 | 1.000 | 6.000 | 1.000 | 6.000 | 500 | 4.000 | 310 |
| 10 | 6.400 | 1.300 | 6.400 | 1.000 | 6.400 | 800 | 4.800 | 700 | 4.800 | 400 | 3.200 | 250 |
| 12 | 5.300 | 1.300 | 5.300 | 1.000 | 5.300 | 800 | 4.000 | 700 | 4.000 | 400 | 2.650 | 250 |
| 16 | 4.000 | 1.300 | 4.000 | 1.050 | 4.000 | 795 | 3.000 | 690 | 3.000 | 405 | 2.000 | 255 |
| 20 | 3.200 | 1.050 | 3.200 | 1.050 | 3.200 | 795 | 2.400 | 580 | 2.400 | 405 | 1.600 | 255 |
| Max cutting depth |   | | | | ap: 0,1D; ae: 0,3~0,5D | | | | ap: 0,05D; ae: 0,2-0,3D | | ap: 0,02D; ae: 0,2-0,3D | |

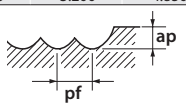
1. Conditions to be used if slant is = 3 x dia. If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes. If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.

# CUTTING CONDITIONS



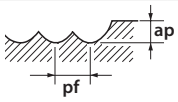
## FXS-HS-EBM

### High speed milling roughing

| | SKD - GG<br>S55C • SS400<br>~750 N/mm² | | 30~38 HRC | | 38~45 HRC | | 45~55 HRC<br>HRS | | 55~60 HRC | | 60~65 HRC | | 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| R 3 | 16.700 | 6.100 | 16.200 | 5.900 | 15.900 | 5.200 | 13.300 | 3.800 | 10.100 | 2.700 | 9.000 | 2.250 | 6.350 | 1.600 |
| R 4 | 12.500 | 5.950 | 12.100 | 5.750 | 11.900 | 5.050 | 9.950 | 3.700 | 7.550 | 2.600 | 6.750 | 2.150 | 4.750 | 1.550 |
| R 5 | 10.000 | 5.800 | 9.700 | 5.590 | 9.550 | 4.900 | 7.950 | 3.550 | 6.050 | 2.500 | 5.400 | 2.100 | 3.800 | 1.450 |
| R 6 | 8.350 | 5.350 | 8.100 | 5.200 | 7.950 | 4.300 | 6.650 | 3.300 | 5.050 | 2.300 | 4.500 | 1.750 | 3.200 | 1.200 |
| R 8 | 6.250 | 4.000 | 6.050 | 3.900 | 5.950 | 3.800 | 4.950 | 2.550 | 3.800 | 1.800 | 3.400 | 1.300 | 2.400 | 915 |
| R 10 | 5.000 | 3.200 | 4.850 | 3.100 | 4.750 | 3.050 | 4.000 | 2.050 | 3.000 | 1.450 | 2.700 | 1.050 | 1.900 | 735 |
| Max cutting depth |  | | ap: 0,1D; pf: 0,2D<br>**aeMAX = 1mm** | | | | ap: 0,08D; pf: 0,2D<br>**aeMAX = 0,8mm** | | ap: 0,05D; pf: 0,1D<br>**aeMAX = 0,5mm** | | | | ap: 0,03D; pf: 0,1D<br>**aeMAX = 0,3mm** | |

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

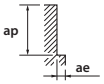
### High speed milling finishing

| | SKD - GG | | 30~38 HRC | | 38~45 HRC | | 45~55 HRC<br>HRS | | 55~60 HRC | | 60~65 HRC | | 65~70 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S55C • SS400<br>~750 N/mm² | | | | | | | | | | | | | |
| mm | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| R 3 | 18.000 | 7.950 | 17.000 | 7.200 | 16.400 | 6.650 | 13.800 | 5.050 | 11.100 | 3.650 | 10.100 | 3.100 | 6.900 | 2.000 |
| R 4 | 13.500 | 6.950 | 12.700 | 6.500 | 12.300 | 5.700 | 10.300 | 4.250 | 8.350 | 3.200 | 7.550 | 2.700 | 5.150 | 1.700 |
| R 5 | 10.800 | 6.250 | 10.200 | 5.850 | 9.850 | 5.050 | 8.300 | 3.700 | 6.700 | 2.800 | 6.050 | 2.300 | 4.150 | 1.600 |
| R 6 | 9.000 | 5.750 | 8.500 | 5.450 | 8.200 | 4.750 | 6.900 | 3.450 | 5.550 | 2.550 | 5.050 | 1.950 | 3.450 | 1.300 |
| R 8 | 6.750 | 4.350 | 6.350 | 4.050 | 6.150 | 3.550 | 5.150 | 2.650 | 4.200 | 2.000 | 3.800 | 1.450 | 2.600 | 995 |
| R 10 | 5.400 | 3.450 | 5.100 | 3.250 | 4.950 | 2.850 | 4.150 | 2.100 | 3.350 | 1.600 | 3.000 | 1.150 | 2.050 | 795 |
| Max cutting depth |  | | ap: 0,02D; pf: 0,05D | | | | | | | | | | | |

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

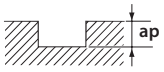
# CA-RG-EDS

## Side milling

| | AL A7075 | | Cu C1100 | |
|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 32.000 | 220 | 23.500 | 220 |
| 2 | 32.000 | 420 | 11.500 | 215 |
| 3 | 21.000 | 700 | 7.950 | 250 |
| 4 | 15.500 | 725 | 5.950 | 280 |
| 5 | 12.500 | 760 | 4.750 | 295 |
| 6 | 10.500 | 830 | 3.950 | 310 |
| 8 | 7.950 | 890 | 2.950 | 350 |
| 10 | 6.350 | 995 | 2.350 | 365 |
| 12 | 5.300 | 1.050 | 1.950 | 390 |
| 14 | 4.500 | 1.050 | 1.700 | 395 |
| 16 | 3.950 | 1.050 | 1.450 | 390 |
| 18 | 3.500 | 1.050 | 1.300 | 390 |
| 20 | 3.150 | 1.050 | 1.150 | 385 |
| Max cutting depth | ap 1,5D / ae 0,1D |   | | |

1. Use a high rigidity machine set up.
2. Use soluble oil.

## Slotting

| | AL A7075 | | Cu C1100 | |
|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 1 | 32.000 | 220 | 23.500 | 220 |
| 2 | 23.500 | 310 | 11.500 | 215 |
| 3 | 15.500 | 515 | 7.950 | 250 |
| 4 | 11.500 | 540 | 5.950 | 280 |
| 5 | 9.500 | 575 | 4.750 | 295 |
| 6 | 7.950 | 630 | 3.950 | 310 |
| 8 | 5.950 | 665 | 2.950 | 350 |
| 10 | 4.750 | 745 | 2.350 | 365 |
| 12 | 3.950 | 790 | 1.950 | 390 |
| 14 | 3.400 | 795 | 1.700 | 395 |
| 16 | 2.950 | 795 | 1.450 | 390 |
| 18 | 2.650 | 795 | 1.300 | 390 |
| 20 | 2.350 | 785 | 1.150 | 385 |
| Max cutting depth | ap 1D |   | | |

1. Use a high rigidity machine set up.
2. Use soluble oil.

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

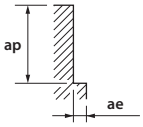
## CA-ETS

### Side milling

| | AL<br>A7075 | | AC<br><Si 13% | | CU<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc | 200<br>(m/min) | | 200<br>(m/min) | | 75<br>(m/min) | |
| Ø | S<br>(min-1) | F<br>(mm/min) | S<br>(min-1) | F<br>(mm/min) | S<br>(min-1) | F<br>(mm/min) |
| 3 | 21.000 | 950 | 21.000 | 950 | 7.950 | 320 |
| 4 | 15.500 | 1.100 | 15.500 | 1.100 | 5.950 | 350 |
| 5 | 12.500 | 1.100 | 12.500 | 1.100 | 4.750 | 380 |
| 6 | 10.500 | 1.200 | 10.500 | 1.200 | 3.950 | 400 |
| 8 | 7.950 | 1.300 | 7.950 | 1.300 | 2.950 | 450 |
| 10 | 6.350 | 1.500 | 6.350 | 1.500 | 2.350 | 480 |
| 12 | 5.300 | 1.550 | 5.300 | 1.550 | 1.950 | 510 |
| 16 | 3.950 | 1.550 | 3.950 | 1.550 | 1.450 | 510 |
| 20 | 3.150 | 1.550 | 3.150 | 1.550 | 1.150 | 510 |

Max cutting depth

| ap | ae |
|---|---|
| 1,5D | 0,1D |




1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

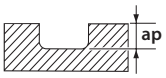
## CA-ETS

### Slotting

| | AL<br>A7075 | | AC<br><Si 13% | | CU<br>C1100 | |
|---|---|---|---|---|---|---|
| Vc | 200<br>(m/min) | | 200<br>(m/min) | | 75<br>(m/min) | |
| Ø | S<br>(min-1) | F<br>(mm/min) | S<br>(min-1) | F<br>(mm/min) | S<br>(min-1) | F<br>(mm/min) |
| 3 | 21.000 | 670 | 21.000 | 670 | 7.950 | 325 |
| 4 | 15.500 | 700 | 15.500 | 700 | 5.950 | 365 |
| 5 | 12.500 | 745 | 12.500 | 745 | 4.750 | 385 |
| 6 | 10.500 | 820 | 10.500 | 820 | 3.950 | 405 |
| 8 | 7.950 | 865 | 7.950 | 865 | 2.950 | 455 |
| 10 | 6.350 | 970 | 6.350 | 970 | 2.350 | 475 |
| 12 | 5.300 | 1.050 | 5.300 | 1.050 | 1.950 | 510 |
| 16 | 3.950 | 1.050 | 3.950 | 1.050 | 1.450 | 510 |
| 20 | 3.150 | 1.050 | 3.150 | 1.050 | 1.150 | 500 |

Max cutting depth

| ap |
|---|
| 0,5D |




1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

## EPL-TI-7FL

### Side Milling

7 flute variable lead carbide endmill

| | | Mild Steels - Carbon Steels - Cast Iron<br>Ap = up to Max LOC, Ae= 0.15xD | | | Tool Steel - Alloy Steel <30 HRC<br>Ap = up to Max LOC, Ae= 0.15xD | | | Stainless Steel<br>Ap = up to Max LOC, Ae= 0.1xD | | | Titanium<br>Ap = up to Max LOC, Ae= 0.1xD | | | Inconel<br>Ap = up to Max LOC, Ae= 0.1xD | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120<br>m/min | | | 120<br>m/min | | | 120<br>m/min | | | 100<br>m/min | | | 50<br>m/min | | |
| Ø | Z | S<br>(min-1) | F<br>(mm/min) | fz<br>(mm) | S<br>(min-1) | F<br>(mm/min) | fz<br>(mm) | S<br>(min-1) | F<br>(mm/min) | fz<br>(mm) | S<br>(min-1) | F<br>(mm/min) | fz<br>(mm) | S<br>(min-1) | F<br>(mm/min) | fz<br>(mm) |
| 10 | 7 | 3.820 | 2.675 | 0,100 | 3.820 | 2.675 | 0,100 | 3.180 | 1.560 | 0,070 | 3.180 | 1.560 | 0,070 | 1.590 | 780 | 0,070 |
| 12 | 7 | 3.180 | 2.450 | 0,110 | 3.180 | 2.450 | 0,110 | 2.650 | 1.575 | 0,085 | 2.650 | 1.575 | 0,085 | 1.330 | 700 | 0,075 |
| 16 | 7 | 2.390 | 2.010 | 0,120 | 2.390 | 2.010 | 0,120 | 1.990 | 1.395 | 0,100 | 1.990 | 1.395 | 0,100 | 990 | 555 | 0,080 |
| 20 | 7 | 1.910 | 1.740 | 0,130 | 1.910 | 1.740 | 0,130 | 1.590 | 1.335 | 0,120 | 1.590 | 1.335 | 0,120 | 800 | 505 | 0,090 |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

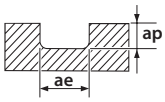
## EPL-HP-4FL

### Slotting

| | Steels St-52 • C45 • GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6Al4V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 120 m/min | | | 120 m/min | | | 70 m/min | | | 60 m/min | | | 50 m/min | | |
| Ø | Z | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 3 | 4 | 12.739 | 1.325 | 0,026 | 12.739 | 1.325 | 0,026 | 7.431 | 773 | 0,026 | 6.369 | 535 | 0,018 | 5.308 | 382 | 0,018 |
| 4 | 4 | 9.549 | 1.146 | 0,030 | 9.549 | 1.146 | 0,030 | 5.570 | 668 | 0,030 | 4.775 | 382 | 0,020 | 3.979 | 318 | 0,020 |
| 5 | 4 | 7.639 | 1.146 | 0,038 | 7.639 | 1.146 | 0,038 | 4.456 | 668 | 0,038 | 3.820 | 382 | 0,025 | 3.183 | 318 | 0,025 |
| 6 | 4 | 6.366 | 1.146 | 0,045 | 6.366 | 1.146 | 0,045 | 3.714 | 668 | 0,045 | 3.183 | 382 | 0,030 | 2.653 | 318 | 0,030 |
| 8 | 4 | 4.775 | 1.146 | 0,060 | 4.775 | 1.146 | 0,060 | 2.785 | 668 | 0,060 | 2.387 | 382 | 0,040 | 1.989 | 318 | 0,040 |
| 10 | 4 | 3.820 | 1.146 | 0,075 | 3.820 | 1.146 | 0,075 | 2.228 | 668 | 0,075 | 1.910 | 382 | 0,050 | 1.592 | 318 | 0,050 |
| 12 | 4 | 3.183 | 1.146 | 0,090 | 3.183 | 1.146 | 0,090 | 1.857 | 668 | 0,090 | 1.592 | 382 | 0,060 | 1.326 | 318 | 0,060 |
| 14 | 4 | 2.728 | 1.146 | 0,105 | 2.728 | 1.146 | 0,105 | 1.592 | 668 | 0,105 | 1.364 | 382 | 0,070 | 1.137 | 318 | 0,070 |
| 16 | 4 | 2.387 | 1.146 | 0,120 | 2.387 | 1.146 | 0,120 | 1.393 | 668 | 0,120 | 1.194 | 382 | 0,080 | 995 | 318 | 0,080 |
| 20 | 4 | 1.910 | 1.146 | 0,150 | 1.910 | 1.146 | 0,150 | 1.114 | 668 | 0,150 | 955 | 382 | 0,100 | 796 | 318 | 0,100 |

ap x d

F(fz) correction




| ae |
|---|
| 1xd |

| ap | Fakt. |
|---|---|
| **0,5** | **1,0** |
| 1,0 | 0,7 |
| 1,5 | 0,5 |
| 2,0 | 0,3 |

The above stated application data are as per **RED** marked parameters.

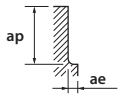
## EPL-HP-4FL

### Side milling

| | Steels St-52 • C45 • GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6Al4V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 140 m/min | | | 140 m/min | | | 80 m/min | | | 70 m/min | | | 60 m/min | | |
| Ø | Z | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 3 | 4 | 14.862 | 3.567 | 0,060 | 14.862 | 3.567 | 0,060 | 8.493 | 2.038 | 0,060 | 7.431 | 1.019 | 0,030 | 6.369 | 764 | 0,030 |
| 4 | 4 | 11.141 | 3.565 | 0,080 | 11.141 | 3.565 | 0,080 | 6.366 | 2.037 | 0,080 | 5.570 | 891 | 0,040 | 4.775 | 764 | 0,040 |
| 5 | 4 | 8.913 | 3.565 | 0,100 | 8.913 | 3.565 | 0,100 | 5.093 | 2.037 | 0,100 | 4.456 | 891 | 0,050 | 3.820 | 764 | 0,050 |
| 6 | 4 | 7.427 | 3.565 | 0,120 | 7.427 | 3.565 | 0,120 | 4.244 | 2.037 | 0,120 | 3.714 | 891 | 0,060 | 3.183 | 764 | 0,060 |
| 8 | 4 | 5.570 | 3.565 | 0,160 | 5.570 | 3.565 | 0,160 | 3.183 | 2.037 | 0,160 | 2.785 | 891 | 0,080 | 2.387 | 764 | 0,080 |
| 10 | 4 | 4.456 | 3.565 | 0,200 | 4.456 | 3.565 | 0,200 | 2.546 | 2.037 | 0,200 | 2.228 | 891 | 0,100 | 1.910 | 764 | 0,100 |
| 12 | 4 | 3.714 | 3.565 | 0,240 | 3.714 | 3.565 | 0,240 | 2.122 | 2.037 | 0,240 | 1.857 | 891 | 0,120 | 1.592 | 764 | 0,120 |
| 14 | 4 | 3.183 | 3.565 | 0,280 | 3.183 | 3.565 | 0,280 | 1.819 | 2.037 | 0,280 | 1.592 | 891 | 0,140 | 1.364 | 764 | 0,140 |
| 16 | 4 | 2.785 | 3.565 | 0,320 | 2.785 | 3.565 | 0,320 | 1.592 | 2.037 | 0,320 | 1.393 | 891 | 0,160 | 1.194 | 764 | 0,160 |
| 20 | 4 | 2.228 | 3.565 | 0,400 | 2.228 | 3.565 | 0,400 | 1.273 | 2.037 | 0,400 | 1.114 | 891 | 0,200 | 955 | 764 | 0,200 |

ap x d

F(fz) correction




| ae |
|---|
| 0,2xd |

| ap | Fakt. |
|---|---|
| 0,5 | 1,3 |
| **1,0** | **1,2** |
| 1,5 | 1,0 |
| 2,0 | 0,8 |

| ae |
|---|
| 0,5xd |

| ap | Fakt. |
|---|---|
| 0,5 | 1,2 |
| 1,0 | 1,0 |
| **1,5** | **0,7** |
| 2,0 | 0,5 |

The above stated application data are as per **RED** marked parameters.

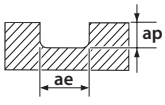
## EPL-HP-5FL

### Slotting

| | Steels St-52 • C45 • GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6Al4V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 120 m/min | | | 120 m/min | | | 70 m/min | | | 60 m/min | | | 50 m/min | | |
| Ø | Z | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 6 | 5 | 6.369 | 1.433 | 0,045 | 6.369 | 1.433 | 0,045 | 3.715 | 836 | 0,045 | 3.185 | 650 | 0,035 | 2.654 | 464 | 0,035 |
| 8 | 5 | 4.775 | 1.432 | 0,060 | 4.775 | 1.432 | 0,060 | 2.785 | 836 | 0,060 | 2.387 | 477 | 0,040 | 1.989 | 398 | 0,040 |
| 10 | 5 | 3.820 | 1.432 | 0,075 | 3.820 | 1.432 | 0,075 | 2.228 | 836 | 0,075 | 1.910 | 477 | 0,050 | 1.592 | 398 | 0,050 |
| 12 | 5 | 3.183 | 1.432 | 0,090 | 3.183 | 1.432 | 0,090 | 1.857 | 836 | 0,090 | 1.592 | 477 | 0,060 | 1.326 | 398 | 0,060 |
| 16 | 5 | 2.387 | 1.432 | 0,120 | 2.387 | 1.432 | 0,120 | 1.393 | 836 | 0,120 | 1.194 | 477 | 0,080 | 995 | 398 | 0,080 |
| 20 | 5 | 1.910 | 1.432 | 0,150 | 1.910 | 1.432 | 0,150 | 1.114 | 836 | 0,150 | 955 | 477 | 0,100 | 796 | 398 | 0,100 |

ap x d

F(fz) correction




| ae |
|---|
| 1xd |

| ap | Fakt. |
|---|---|
| **0,5** | **1,0** |
| 1,0 | 0,7 |
| 1,5 | 0,5 |
| 2,0 | 0,3 |

The above stated application data are as per **RED** marked parameters.

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

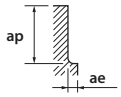
## EPL-HP-5FL

### Side milling

| | | Steels St-52 • C45 • GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6Al4V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 140 m/min | | | 140 m/min | | | 80 m/min | | | 70 m/min | | | 60 m/min | | |
| Ø | Z | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 6 | 5 | 7.431 | 4.459 | 0,120 | 7.431 | 4.459 | 0,120 | 4,246 | 2.548 | 0,120 | 3.715 | 1.274 | 0,060 | 3.185 | 955 | 0,060 |
| 8 | 5 | 5.570 | 4.456 | 0,160 | 5.570 | 4.456 | 0,160 | 3.183 | 2.546 | 0,160 | 2.785 | 1.114 | 0,080 | 2.387 | 955 | 0,080 |
| 10 | 5 | 4.456 | 4.456 | 0,200 | 4.456 | 4.456 | 0,200 | 2.546 | 2.546 | 0,200 | 2.228 | 1.114 | 0,100 | 1.910 | 955 | 0,100 |
| 12 | 5 | 3.714 | 4.456 | 0,240 | 3.714 | 4.456 | 0,240 | 2.122 | 2.546 | 0,240 | 1.857 | 1.114 | 0,120 | 1.592 | 955 | 0,120 |
| 16 | 5 | 2.785 | 4.456 | 0,320 | 2.785 | 4.456 | 0,320 | 1.592 | 2.546 | 0,320 | 1.393 | 1.114 | 0,160 | 1.194 | 955 | 0,160 |
| 20 | 5 | 2.228 | 4.456 | 0,400 | 2.228 | 4.456 | 0,400 | 1.273 | 2.546 | 0,400 | 1.114 | 1.114 | 0,200 | 955 | 955 | 0,200 |

ap x d

F(fz) correction




| ae |
|---|
| 0,2xd |

| ap | Fakt. |
|---|---|
| 0,5 | 1,3 |
| 1 | 1,2 |
| **1,5** | **1,0** |
| 2 | 0,8 |

| ae |
|---|
| 0,5xd |

| ap | Fakt. |
|---|---|
| 0,5 | 1,2 |
| **1,0** | **1,0** |
| 1,5 | 0,7 |
| 2,0 | 0,5 |

The above stated application data are as per **RED** marked parameters.

## EPL-HI-EMS/EPL-HI-WEMS

| | Carbon Steel / Allowed Steel / Tool Steel | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~ 20 HRC | | | | 20 - 35 HRC | | | | 35 - 45 HRC | | | |
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 180 | 14.320 | 1.720 | 0,03 | 160 | 12.730 | 1.370 | 0,03 | 140 | 11.140 | 1.080 | 0,02 |
| 5 | 180 | 11.460 | 1.380 | 0,03 | 160 | 10.190 | 1.220 | 0,03 | 140 | 8.920 | 1.070 | 0,03 |
| 6 | 180 | 9.550 | 1.240 | 0,03 | 160 | 8.490 | 990 | 0,03 | 140 | 7.430 | 780 | 0,03 |
| 8 | 180 | 7.160 | 1.110 | 0,04 | 160 | 6.370 | 890 | 0,03 | 140 | 5.570 | 700 | 0,03 |
| 10 | 180 | 5.730 | 1.110 | 0,05 | 160 | 5.090 | 890 | 0,04 | 140 | 4.460 | 700 | 0,04 |
| 12 | 180 | 4.770 | 1.110 | 0,06 | 160 | 4.240 | 890 | 0,05 | 140 | 3.710 | 700 | 0,05 |
| 16 | 180 | 3.580 | 1.020 | 0,07 | 160 | 3.180 | 820 | 0,06 | 140 | 2.790 | 640 | 0,06 |
| 20 | 180 | 2.860 | 960 | 0,08 | 141 | 2.250 | 770 | 0,09 | 140 | 2.230 | 610 | 0,07 |

| | GG / GGG / GTW | | | | INOX | | | | Aluminium / Mg | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unalloyed | | | | ~ 20 HRC | | | | Wrought alloy | | | |
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 145 | 11.540 | 1.300 | 0,03 | 45 | 3.580 | 310 | 0,02 | 180 | 14.320 | 1.720 | 0,03 |
| 5 | 145 | 9.240 | 1.110 | 0,03 | 45 | 2.870 | 230 | 0,02 | 180 | 11.460 | 1.380 | 0,03 |
| 6 | 145 | 7.690 | 1.100 | 0,04 | 45 | 2.390 | 230 | 0,02 | 180 | 9.550 | 1.240 | 0,03 |
| 8 | 145 | 5.770 | 1.000 | 0,04 | 45 | 1.790 | 200 | 0,03 | 180 | 7.160 | 1.110 | 0,04 |
| 10 | 145 | 4.620 | 1.000 | 0,05 | 45 | 1.430 | 200 | 0,03 | 180 | 5.730 | 1.110 | 0,05 |
| 12 | 145 | 3.850 | 1.000 | 0,06 | 45 | 1.190 | 200 | 0,04 | 180 | 4.770 | 1.110 | 0,06 |
| 16 | 145 | 2.880 | 900 | 0,08 | 45 | 900 | 190 | 0,05 | 180 | 3.580 | 1.020 | 0,07 |
| 20 | 147 | 2.340 | 800 | 0,09 | 45 | 720 | 180 | 0,06 | 180 | 2.860 | 960 | 0,08 |

## EPL-HI-CR-EMS / EPL-HI-CR-WEMS

| | Carbon Steel / Alloyed Steel / Tool Steel | | | | | | | | | GG-GGG-GTW | | | INOX | | | Aluminium / Mg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~20 HRC | | | 20 - 35 HRC | | | 35 - 45 HRC | | | Unalloyed | | | ~20HRC | | | Wrought Alloy | | |
| Vc | 180 m/min | | | 160 m/min | | | 140 m/min | | | 145 m/min | | | 45 m/min | | | 180 m/min | | |
| Ø | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 14.320 | 1.720 | 0,03 | 12.730 | 1.370 | 0,03 | 11.140 | 1.080 | 0,02 | 11.540 | 1.300 | 0,03 | 3.580 | 310 | 0,02 | 14.320 | 1.720 | 0,03 |
| 5 | 11.460 | 1.380 | 0,03 | 10.190 | 1.220 | 0,03 | 8.920 | 1.070 | 0,03 | 9.240 | 1.110 | 0,03 | 2.870 | 230 | 0,02 | 11.460 | 1.380 | 0,03 |
| 6 | 9.550 | 1.240 | 0,03 | 8.490 | 990 | 0,03 | 7.430 | 780 | 0,03 | 7.690 | 1.100 | 0,04 | 2.390 | 230 | 0,02 | 9.550 | 1.240 | 0,03 |
| 8 | 7.160 | 1.110 | 0,04 | 6.370 | 890 | 0,03 | 5.570 | 700 | 0,03 | 5.770 | 1.000 | 0,04 | 1.790 | 200 | 0,03 | 7.160 | 1.110 | 0,04 |
| 10 | 5.730 | 1.110 | 0,05 | 5.090 | 890 | 0,04 | 4.460 | 700 | 0,04 | 4.620 | 1.000 | 0,05 | 1.430 | 200 | 0,03 | 5.730 | 1.110 | 0,05 |
| 12 | 4.770 | 1.110 | 0,06 | 4.240 | 890 | 0,05 | 3.710 | 700 | 0,05 | 3.850 | 1.000 | 0,06 | 1.190 | 200 | 0,04 | 4.770 | 1.110 | 0,06 |
| 16 | 3.580 | 1.020 | 0,07 | 3.180 | 820 | 0,06 | 2.790 | 640 | 0,06 | 2.880 | 900 | 0,08 | 900 | 190 | 0,05 | 3.580 | 1.020 | 0,07 |
| 20 | 2.860 | 960 | 0,08 | 2.250 | 770 | 0,09 | 2.230 | 610 | 0,07 | 2.340 | 800 | 0,09 | 720 | 180 | 0,06 | 2.860 | 960 | 0,08 |

# CUTTING CONDITIONS



## EPL-WRESF

| | GG | | | C < 0,2% | | | SCM - SKD | | | 25 - 35 HRC | | | 35 - 45 HRC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 | | | 70 | | | 45 | | | 35 | | | 27 | | |
| Ø | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) |
| 4 | 6.370 | 380 | 0,02 | 5.570 | 340 | 0,02 | 3.580 | 220 | 0,02 | 2.790 | 170 | 0,02 | 2.150 | 130 | 0,02 |
| 5 | 5.100 | 460 | 0,03 | 4.460 | 270 | 0,02 | 2.870 | 170 | 0,02 | 2.230 | 160 | 0,02 | 1.720 | 100 | 0,02 |
| 6 | 4.250 | 430 | 0,03 | 3.720 | 370 | 0,02 | 2.390 | 240 | 0,03 | 1.860 | 190 | 0,03 | 1.430 | 90 | 0,02 |
| 8 | 3.190 | 510 | 0,04 | 2.790 | 510 | 0,05 | 1.790 | 290 | 0,04 | 1.390 | 220 | 0,04 | 1.080 | 90 | 0,02 |
| 10 | 2.550 | 610 | 0,06 | 2.230 | 610 | 0,07 | 1.430 | 340 | 0,06 | 1.120 | 270 | 0,06 | 860 | 100 | 0,03 |
| 12 | 2.120 | 680 | 0,08 | 1.860 | 680 | 0,09 | 1.190 | 380 | 0,08 | 930 | 300 | 0,08 | 720 | 120 | 0,04 |
| 16 | 1.590 | 700 | 0,11 | 1.390 | 700 | 0,13 | 900 | 390 | 0,11 | 700 | 310 | 0,11 | 540 | 130 | 0,06 |
| 20 | 1.270 | 710 | 0,14 | 1.120 | 710 | 0,16 | 720 | 400 | 0,14 | 560 | 290 | 0,13 | 430 | 140 | 0,08 |
| 25 | 1.020 | 650 | 0,16 | 890 | 650 | 0,18 | 570 | 370 | 0,16 | 450 | 290 | 0,16 | 340 | 140 | 0,10 |

| ap | ae |
|---|---|
| 1D | 0,5D |

| | GG | | | C < 0,2% | | | SCM - SKD | | | 25 - 35 HRC | | | 35 - 45 HRC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 65 | | | 40 | | | 35 | | | 30 | | | 20 | | |
| Ø | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) |
| 4 | 5.180 | 310 | 0,02 | 3.180 | 190 | 0,02 | 2.790 | 170 | 0,02 | 2.390 | 140 | 0,02 | 1.590 | 70 | 0,01 |
| 5 | 4.140 | 250 | 0,02 | 2.550 | 150 | 0,02 | 2.230 | 130 | 0,02 | 1.910 | 110 | 0,02 | 1.270 | 50 | 0,01 |
| 6 | 3.450 | 350 | 0,03 | 2.129 | 210 | 0,02 | 1.860 | 190 | 0,03 | 1.590 | 160 | 0,03 | 1.060 | 50 | 0,01 |
| 8 | 2.590 | 410 | 0,04 | 1.590 | 250 | 0,04 | 1.390 | 220 | 0,04 | 1.190 | 190 | 0,04 | 800 | 70 | 0,02 |
| 10 | 2.070 | 500 | 0,06 | 1.270 | 310 | 0,06 | 1.120 | 270 | 0,06 | 960 | 230 | 0,06 | 640 | 60 | 0,02 |
| 12 | 1.730 | 550 | 0,08 | 1.060 | 340 | 0,08 | 930 | 300 | 0,08 | 800 | 240 | 0,08 | 530 | 90 | 0,04 |
| 16 | 1.290 | 570 | 0,11 | 800 | 350 | 0,11 | 700 | 310 | 0,11 | 600 | 260 | 0,11 | 400 | 100 | 0,06 |
| 20 | 1.040 | 580 | 0,14 | 640 | 360 | 0,14 | 560 | 310 | 0,14 | 480 | 250 | 0,13 | 320 | 100 | 0,08 |
| 25 | 830 | 530 | 0,16 | 510 | 330 | 0,16 | 450 | 290 | 0,16 | 380 | 250 | 0,16 | 260 | 100 | 0,10 |

| ap | ae |
|---|---|
| 1D | 1D |

## EPL-ETS

### Side milling

| | C≤0,2% - GG<br>E24 • XC48 • GG25<br>750 N/mm² | | | SCM - SK<br>350NCD16 • 40CMD8<br>~30 HRC | | | SUS<br>316 • 304<br>800 N/mm² | | | 30~38 HRC<br>Z38CDV5 • Z40CDV5<br>30~38 HRC | | | 45~55 HRC<br>Z38CDV5<br>45~55 HRC | | | 55~60 HRC<br>Z160CDV12<br>55~60 HRC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 100 (m/min) | | | 80 (m/min) | | | 60 (m/min) | | | 60 (m/min) | | | 60 (m/min) | | | 30 (m/min) | | |
| Ø | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) |
| 3 | 10.610 | 859 | 0,027 | 8.488 | 458 | 0,018 | 6.366 | 267 | 0,014 | 6.366 | 344 | 0,018 | 6.366 | 210 | 0,011 | 3.183 | 105 | 0,011 |
| 4 | 7.958 | 907 | 0,038 | 6.366 | 477 | 0,025 | 4.775 | 272 | 0,019 | 4.775 | 358 | 0,025 | 4.775 | 229 | 0,016 | 2.387 | 107 | 0,015 |
| 5 | 6.366 | 955 | 0,050 | 5.093 | 519 | 0,034 | 3.820 | 298 | 0,026 | 3.820 | 390 | 0,034 | 3.820 | 241 | 0,021 | 1.910 | 115 | 0,020 |
| 6 | 5.305 | 987 | 0,062 | 4.244 | 547 | 0,043 | 3.183 | 306 | 0,032 | 3.183 | 411 | 0,043 | 3.183 | 248 | 0,026 | 1.592 | 119 | 0,025 |
| 8 | 3.979 | 883 | 0,074 | 3.183 | 535 | 0,056 | 2.387 | 272 | 0,038 | 2.387 | 401 | 0,056 | 2.387 | 222 | 0,031 | 1.194 | 107 | 0,030 |
| 10 | 3.183 | 793 | 0,083 | 2.546 | 519 | 0,068 | 1.910 | 241 | 0,042 | 1.910 | 390 | 0,068 | 1.910 | 195 | 0,034 | 955 | 95 | 0,033 |
| 12 | 2.653 | 796 | 0,100 | 2.122 | 497 | 0,078 | 1.592 | 239 | 0,050 | 1.592 | 372 | 0,078 | 1.592 | 196 | 0,041 | 796 | 95 | 0,040 |
| 16 | 1.989 | 657 | 0,110 | 1.592 | 525 | 0,110 | 1.194 | 286 | 0,080 | 1.194 | 394 | 0,110 | 1.194 | 190 | 0,053 | 597 | 90 | 0,050 |

### Slotting

| | C≤0,2% - GG<br>E24 • XC48 • GG25<br>750 N/mm² | | | SCM - SK<br>350NCD16 • 40CMD8<br>~30 HRC | | | SUS<br>316 • 304<br>800 N/mm² | | | 30~38 HRC<br>Z38CDV5 • Z40CDV5<br>30~38 HRC | | | 45~55 HRC<br>Z38CDV5<br>45~55 HRC | | | 55~60 HRC<br>Z160CDV12<br>55~60 HRC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80 (m/min) | | | 65 (m/min) | | | 50 (m/min) | | | 55 (m/min) | | | 45 (m/min) | | | 20 (m/min) | | |
| Ø | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) | S (min-1) | F (mm/min) | fz (mm) |
| 3 | 8.488 | 688 | 0,027 | 6.897 | 372 | 0,018 | 5.305 | 223 | 0,014 | 5.836 | 245 | 0,014 | 4.775 | 158 | 0,011 | 2.122 | 70 | 0,011 |
| 4 | 6.366 | 726 | 0,038 | 5.173 | 388 | 0,025 | 3.979 | 227 | 0,019 | 4.377 | 249 | 0,019 | 3.581 | 172 | 0,016 | 1.592 | 72 | 0,015 |
| 5 | 5.093 | 764 | 0,05 | 4.138 | 422 | 0,034 | 3.183 | 248 | 0,026 | 3.501 | 273 | 0,026 | 2.865 | 180 | 0,021 | 1.273 | 76 | 0,02 |
| 6 | 4.244 | 789 | 0,062 | 3.448 | 445 | 0,043 | 2.653 | 255 | 0,032 | 2.918 | 280 | 0,032 | 2.387 | 186 | 0,026 | 1.061 | 80 | 0,025 |
| 8 | 3.183 | 707 | 0,074 | 2.586 | 434 | 0,056 | 1.989 | 233 | 0,039 | 2.188 | 256 | 0,039 | 1.790 | 167 | 0,031 | 796 | 72 | 0,03 |
| 10 | 2.546 | 672 | 0,088 | 2.069 | 422 | 0,068 | 1.592 | 224 | 0,047 | 1.751 | 247 | 0,047 | 1.432 | 146 | 0,034 | 637 | 63 | 0,033 |
| 12 | 2.122 | 637 | 0,1 | 1.724 | 403 | 0,078 | 1.326 | 215 | 0,054 | 1.459 | 236 | 0,054 | 1.194 | 147 | 0,041 | 531 | 64 | 0,04 |
| 16 | 1.592 | 573 | 0,12 | 1.293 | 388 | 0,1 | 995 | 239 | 0,08 | 1.094 | 263 | 0,08 | 895 | 142 | 0,053 | 398 | 60 | 0,05 |

# CUTTING CONDITIONS



## EPL-SB-EBD

### High speed milling roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 120 | 38.220 | 1.530 | 0,02 | 120 | 38.220 | 1.530 | 0,02 | 110 | 35.030 | 1.400 | 0,02 | 100 | 31.850 | 1.270 | 0,02 |
| 2 | 210 | 33.440 | 2.010 | 0,03 | 210 | 33.440 | 2.010 | 0,03 | 174 | 27.660 | 1.720 | 0,03 | 160 | 25.480 | 1.530 | 0,03 |
| 3 | 290 | 30.790 | 2.960 | 0,05 | 280 | 29.720 | 2.850 | 0,05 | 250 | 26.540 | 2.550 | 0,05 | 220 | 23.360 | 2.240 | 0,05 |
| 4 | 340 | 27.070 | 3.900 | 0,07 | 330 | 26.270 | 3.780 | 0,07 | 260 | 20.700 | 2.980 | 0,07 | 230 | 18.310 | 2.640 | 0,07 |
| 5 | 380 | 24.200 | 4.360 | 0,09 | 380 | 24.200 | 4.360 | 0,09 | 300 | 19.110 | 3.440 | 0,09 | 250 | 15.920 | 2.870 | 0,09 |
| 6 | 350 | 18.580 | 4.010 | 0,11 | 400 | 21.230 | 4.590 | 0,11 | 380 | 20.170 | 4.360 | 0,11 | 380 | 20.170 | 4.360 | 0,11 |
| 8 | 350 | 13.930 | 4.240 | 0,15 | 360 | 14.330 | 4.360 | 0,15 | 350 | 13.930 | 4.240 | 0,15 | 270 | 10.750 | 3.270 | 0,15 |
| 10 | 350 | 11.150 | 4.010 | 0,18 | 300 | 9.550 | 3.440 | 0,18 | 280 | 8.920 | 3.210 | 0,18 | 250 | 7.960 | 2.870 | 0,18 |
| 12 | 350 | 9.290 | 3.570 | 0,19 | 300 | 7.962 | 3.060 | 0,19 | 280 | 7.430 | 2.850 | 0,19 | 250 | 6.640 | 2.550 | 0,19 |
| 16 | 350 | 6.970 | 3.120 | 0,22 | 300 | 5.970 | 2.680 | 0,22 | 280 | 5.570 | 2.500 | 0,22 | 250 | 4.980 | 2.230 | 0,22 |
| 20 | 350 | 5.570 | 3.120 | 0,28 | 300 | 4.780 | 2.680 | 0,28 | 280 | 4.460 | 2.500 | 0,28 | 250 | 3.980 | 2.230 | 0,28 |
| | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,04 - 0,05 D<br>ae = 0,22 D | | | | ap = 0,03 - 0,04 D<br>ae = 0,20 D | | | |

### High speed milling finishing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 130 | 41.400 | 1.660 | 0,02 | 120 | 38.220 | 1.530 | 0,02 | 110 | 35.030 | 1.400 | 0,02 | 100 | 31.850 | 1.270 | 0,02 |
| 2 | 220 | 35.030 | 2.100 | 0,03 | 210 | 33.440 | 2.010 | 0,03 | 174 | 27.660 | 1.720 | 0,03 | 160 | 25.480 | 1.530 | 0,03 |
| 3 | 330 | 31.850 | 3.060 | 0,05 | 280 | 29.720 | 2.850 | 0,05 | 250 | 26.540 | 2.550 | 0,05 | 220 | 23.360 | 2.240 | 0,05 |
| 4 | 350 | 27.870 | 4.010 | 0,07 | 330 | 26.270 | 3.780 | 0,07 | 260 | 20.700 | 2.980 | 0,07 | 230 | 18.310 | 2.640 | 0,07 |
| 5 | 390 | 24.840 | 4.470 | 0,09 | 380 | 24.200 | 4.360 | 0,09 | 300 | 19.110 | 3.440 | 0,09 | 250 | 15.920 | 2.870 | 0,09 |
| 6 | 360 | 19.110 | 4.130 | 0,11 | 400 | 21.230 | 4.590 | 0,11 | 380 | 20.170 | 4.360 | 0,11 | 380 | 20.170 | 4.360 | 0,11 |
| 8 | 360 | 14.330 | 4.360 | 0,15 | 360 | 14.330 | 4.360 | 0,15 | 350 | 13.930 | 4.240 | 0,15 | 270 | 10.750 | 3.270 | 0,15 |
| 10 | 360 | 11.470 | 4.130 | 0,18 | 300 | 9.550 | 3.440 | 0,18 | 280 | 8.920 | 3.210 | 0,18 | 250 | 7.960 | 2.870 | 0,18 |
| 12 | 360 | 9.550 | 3.670 | 0,19 | 300 | 7.962 | 3.060 | 0,19 | 280 | 7.430 | 2.850 | 0,19 | 250 | 6.640 | 2.550 | 0,19 |
| 16 | 360 | 7.170 | 3.210 | 0,22 | 300 | 5.970 | 2.680 | 0,22 | 280 | 5.570 | 2.500 | 0,22 | 250 | 4.980 | 2.230 | 0,22 |
| 20 | 360 | 5.730 | 3.210 | 0,28 | 300 | 4.780 | 2.680 | 0,28 | 280 | 4.460 | 2.500 | 0,28 | 250 | 3.980 | 2.230 | 0,28 |
| | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

### Conventional roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 60 | 19.110 | 760 | 0,02 | 60 | 19.110 | 760 | 0,02 | 55 | 17.520 | 700 | 0,02 | 50 | 15.920 | 640 | 0,02 |
| 2 | 105 | 16.720 | 1.000 | 0,03 | 105 | 16.720 | 1.000 | 0,03 | 90 | 14.330 | 860 | 0,03 | 80 | 12.740 | 760 | 0,03 |
| 3 | 145 | 15.390 | 1.480 | 0,05 | 140 | 14.860 | 1.430 | 0,05 | 125 | 13.270 | 1.270 | 0,05 | 110 | 11.680 | 1.120 | 0,05 |
| 4 | 170 | 13.540 | 1.950 | 0,07 | 165 | 13.140 | 1.890 | 0,07 | 130 | 10.350 | 1.490 | 0,07 | 115 | 9.160 | 1.320 | 0,07 |
| 5 | 190 | 12.100 | 2.180 | 0,09 | 190 | 12.100 | 2.180 | 0,09 | 150 | 9.550 | 1.720 | 0,09 | 125 | 7.960 | 1.430 | 0,09 |
| 6 | 175 | 9.290 | 2.010 | 0,11 | 200 | 10.610 | 2.290 | 0,11 | 190 | 10.090 | 2.180 | 0,11 | 190 | 10.090 | 2.180 | 0,11 |
| 8 | 175 | 6.970 | 2.120 | 0,15 | 180 | 7.170 | 2.180 | 0,15 | 175 | 6.970 | 2.120 | 0,15 | 135 | 5.370 | 1.630 | 0,15 |
| 10 | 175 | 5.570 | 2.010 | 0,18 | 150 | 4.780 | 1.720 | 0,18 | 140 | 4.460 | 1.610 | 0,18 | 125 | 3.980 | 1.430 | 0,18 |
| 12 | 175 | 4.640 | 1.780 | 0,19 | 150 | 3.980 | 1.530 | 0,19 | 140 | 3.720 | 1.430 | 0,19 | 125 | 3.320 | 1.270 | 0,19 |
| 16 | 175 | 3.480 | 1.560 | 0,22 | 150 | 2.990 | 1.340 | 0,22 | 140 | 2.790 | 1.250 | 0,22 | 125 | 2.490 | 1.120 | 0,22 |
| 20 | 175 | 2.790 | 1.560 | 0,28 | 150 | 2.390 | 1.340 | 0,28 | 140 | 2.230 | 1.250 | 0,28 | 125 | 1.990 | 1.120 | 0,28 |
| | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,04 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

### Conventional finishing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 65 | 20.700 | 830 | 0,02 | 65 | 20.700 | 830 | 0,02 | 60 | 19.110 | 760 | 0,02 | 55 | 17.520 | 700 | 0,02 |
| 2 | 110 | 17.520 | 1.050 | 0,03 | 110 | 17.520 | 1.050 | 0,03 | 95 | 15.130 | 910 | 0,03 | 85 | 13.540 | 810 | 0,03 |
| 3 | 150 | 15.920 | 1.530 | 0,05 | 145 | 15.390 | 1.480 | 0,05 | 130 | 13.800 | 1.330 | 0,05 | 115 | 12.210 | 1.170 | 0,05 |
| 4 | 175 | 13.930 | 2.010 | 0,07 | 170 | 13.540 | 1.950 | 0,07 | 135 | 10.750 | 1.550 | 0,07 | 120 | 9.550 | 1.380 | 0,07 |
| 5 | 195 | 12.420 | 2.240 | 0,09 | 195 | 12.420 | 2.240 | 0,09 | 155 | 9.870 | 1.780 | 0,09 | 130 | 8.280 | 1.490 | 0,09 |
| 6 | 180 | 9.550 | 2.060 | 0,11 | 205 | 10.880 | 2.350 | 0,11 | 195 | 10.350 | 2.240 | 0,11 | 195 | 10.350 | 2.240 | 0,11 |
| 8 | 180 | 7.170 | 2.180 | 0,15 | 185 | 7.360 | 2.240 | 0,15 | 179 | 7.120 | 2.180 | 0,15 | 140 | 5.570 | 1.690 | 0,15 |
| 10 | 180 | 5.730 | 2.060 | 0,18 | 155 | 4.940 | 1.780 | 0,18 | 145 | 4.620 | 1.660 | 0,18 | 130 | 4.140 | 1.490 | 0,18 |
| 12 | 180 | 4.780 | 1.830 | 0,19 | 155 | 4.110 | 1.580 | 0,19 | 145 | 3.850 | 1.480 | 0,19 | 130 | 3.450 | 1.330 | 0,19 |
| 16 | 180 | 3.580 | 1.610 | 0,22 | 155 | 3.090 | 1.380 | 0,22 | 145 | 2.890 | 1.290 | 0,22 | 130 | 2.590 | 1.160 | 0,22 |
| 20 | 180 | 2.870 | 1.610 | 0,28 | 155 | 2.470 | 1.380 | 0,28 | 145 | 2.310 | 1.290 | 0,28 | 130 | 2.070 | 1.160 | 0,28 |
| | ap = 0,02 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

# EPL-SB-LN-EBD

## High speed milling roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 120 | 30.580 | 1.220 | 0,02 | 120 | 30.580 | 1.220 | 0,02 | 110 | 28.020 | 1.120 | 0,02 | 100 | 25.480 | 1.020 | 0,02 |
| 2 | 210 | 26.750 | 1.610 | 0,03 | 210 | 26.750 | 1.610 | 0,03 | 174 | 22.130 | 1.380 | 0,03 | 160 | 20.380 | 1.220 | 0,03 |
| 3 | 290 | 24.630 | 2.370 | 0,05 | 280 | 23.780 | 2.280 | 0,05 | 250 | 21.230 | 2.040 | 0,05 | 220 | 18.690 | 1.790 | 0,05 |
| 4 | 340 | 21.660 | 3.120 | 0,07 | 330 | 21.020 | 3.020 | 0,07 | 260 | 16.560 | 2.380 | 0,07 | 230 | 14.650 | 2.110 | 0,07 |
| 5 | 380 | 19.360 | 3.490 | 0,09 | 380 | 19.360 | 3.490 | 0,09 | 300 | 15.290 | 2.750 | 0,09 | 250 | 12.740 | 2.300 | 0,09 |
| 6 | 350 | 14.860 | 3.210 | 0,11 | 400 | 16.980 | 3.670 | 0,11 | 380 | 16.140 | 3.490 | 0,11 | 380 | 16.140 | 3.490 | 0,11 |
| 8 | 350 | 11.140 | 3.390 | 0,15 | 360 | 11.460 | 3.490 | 0,15 | 350 | 11.140 | 3.390 | 0,15 | 270 | 8.600 | 2.620 | 0,15 |
| 10 | 350 | 8.920 | 3.210 | 0,18 | 300 | 7.640 | 2.750 | 0,18 | 280 | 7.140 | 2.570 | 0,18 | 250 | 6.370 | 2.300 | 0,18 |
| 12 | 350 | 7.430 | 2.860 | 0,19 | 300 | 6.370 | 2.450 | 0,19 | 280 | 5.940 | 2.280 | 0,19 | 250 | 5.310 | 2.040 | 0,19 |
| 16 | 350 | 5.580 | 2.500 | 0,22 | 300 | 4.780 | 2.140 | 0,22 | 280 | 4.460 | 2.000 | 0,22 | 250 | 3.980 | 1.780 | 0,22 |
| 20 | 350 | 4.460 | 2.500 | 0,28 | 300 | 3.820 | 2.140 | 0,28 | 280 | 3.570 | 2.000 | 0,28 | 250 | 3.180 | 1.780 | 0,28 |
| | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,04 - 0,06 D<br>ae = 0,22 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,20 D | | | |

## High speed milling finishing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 130 | 33.120 | 1.330 | 0,02 | 120 | 30.580 | 1.220 | 0,02 | 110 | 28.020 | 1.120 | 0,02 | 100 | 25.480 | 1.020 | 0,02 |
| 2 | 220 | 28.020 | 1.680 | 0,03 | 210 | 26.750 | 1.610 | 0,03 | 174 | 22.130 | 1.380 | 0,03 | 160 | 20.380 | 1.220 | 0,03 |
| 3 | 300 | 25.480 | 2.450 | 0,05 | 280 | 23.780 | 2.280 | 0,05 | 250 | 21.230 | 2.040 | 0,05 | 220 | 18.690 | 1.790 | 0,05 |
| 4 | 350 | 22.300 | 3.210 | 0,07 | 330 | 21.020 | 3.020 | 0,07 | 260 | 16.560 | 2.380 | 0,07 | 230 | 14.650 | 2.110 | 0,07 |
| 5 | 390 | 19.870 | 3.580 | 0,09 | 380 | 19.360 | 3.490 | 0,09 | 300 | 15.290 | 2.750 | 0,09 | 250 | 12.740 | 2.300 | 0,09 |
| 6 | 360 | 15.290 | 3.300 | 0,11 | 400 | 16.980 | 3.670 | 0,11 | 380 | 16.140 | 3.490 | 0,11 | 380 | 16.140 | 3.490 | 0,11 |
| 8 | 360 | 11.460 | 3.490 | 0,15 | 360 | 11.460 | 3.490 | 0,15 | 350 | 11.140 | 3.390 | 0,15 | 270 | 8.600 | 2.620 | 0,15 |
| 10 | 360 | 9.180 | 3.300 | 0,18 | 300 | 7.640 | 2.750 | 0,18 | 280 | 7.140 | 2.570 | 0,18 | 250 | 6.370 | 2.300 | 0,18 |
| 12 | 360 | 7.640 | 2.940 | 0,19 | 300 | 6.370 | 2.450 | 0,19 | 280 | 5.940 | 2.280 | 0,19 | 250 | 5.310 | 2.040 | 0,19 |
| 16 | 360 | 5.740 | 2.570 | 0,22 | 300 | 4.780 | 2.140 | 0,22 | 280 | 4.460 | 2.000 | 0,22 | 250 | 3.980 | 1.780 | 0,22 |
| 20 | 360 | 4.580 | 2.570 | 0,28 | 300 | 3.820 | 2.140 | 0,28 | 280 | 3.570 | 2.000 | 0,28 | 250 | 3.180 | 1.780 | 0,28 |
| | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

## Conventional roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 60 | 15.290 | 610 | 0,02 | 60 | 15.290 | 610 | 0,02 | 55 | 14.020 | 560 | 0,02 | 50 | 12.740 | 510 | 0,02 |
| 2 | 105 | 13.380 | 800 | 0,03 | 105 | 13.380 | 800 | 0,03 | 90 | 11.460 | 690 | 0,03 | 80 | 10.190 | 610 | 0,03 |
| 3 | 145 | 12.310 | 1.180 | 0,05 | 140 | 11.890 | 1.140 | 0,05 | 125 | 10.620 | 1.020 | 0,05 | 110 | 9.340 | 900 | 0,05 |
| 4 | 170 | 10.830 | 1.560 | 0,07 | 165 | 10.510 | 1.510 | 0,07 | 130 | 8.280 | 1.190 | 0,07 | 115 | 7.330 | 1.060 | 0,07 |
| 5 | 190 | 9.680 | 1.740 | 0,09 | 190 | 9.680 | 1.740 | 0,09 | 150 | 7.640 | 1.380 | 0,09 | 125 | 6.370 | 1.140 | 0,09 |
| 6 | 175 | 7.430 | 1.610 | 0,11 | 200 | 8.490 | 1.830 | 0,11 | 190 | 8.070 | 1.740 | 0,11 | 190 | 8.070 | 1.740 | 0,11 |
| 8 | 175 | 5.580 | 1.700 | 0,15 | 180 | 5.740 | 1.740 | 0,15 | 175 | 5.580 | 1.700 | 0,15 | 135 | 4.300 | 1.300 | 0,15 |
| 10 | 175 | 4.460 | 1.610 | 0,18 | 150 | 3.820 | 1.380 | 0,18 | 140 | 3.570 | 1.290 | 0,18 | 125 | 3.180 | 1.140 | 0,18 |
| 12 | 175 | 3.710 | 1.420 | 0,19 | 150 | 3.180 | 1.220 | 0,19 | 140 | 2.980 | 1.140 | 0,19 | 125 | 2.660 | 1.020 | 0,19 |
| 16 | 175 | 2.780 | 1.250 | 0,22 | 150 | 2.390 | 1.070 | 0,22 | 140 | 2.230 | 1.000 | 0,22 | 125 | 1.990 | 900 | 0,22 |
| 20 | 175 | 2.230 | 1.250 | 0,28 | 150 | 1.910 | 1.070 | 0,28 | 140 | 1.780 | 1.000 | 0,28 | 125 | 1.590 | 900 | 0,28 |
| | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,04 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

## Conventional finishing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) | Vc | S ($min^{-1}$) | F (mm/min) | fz (mm) |
| 1 | 65 | 16.560 | 660 | 0,02 | 65 | 16.560 | 660 | 0,02 | 60 | 15.290 | 610 | 0,02 | 55 | 14.020 | 560 | 0,02 |
| 2 | 110 | 14.020 | 840 | 0,03 | 110 | 14.020 | 840 | 0,03 | 95 | 12.100 | 730 | 0,03 | 85 | 10.830 | 650 | 0,03 |
| 3 | 150 | 12.740 | 1.220 | 0,05 | 145 | 12.310 | 1.180 | 0,05 | 130 | 11.040 | 1.060 | 0,05 | 115 | 9.770 | 940 | 0,05 |
| 4 | 175 | 11.140 | 1.610 | 0,07 | 170 | 10.830 | 1.560 | 0,07 | 135 | 8.600 | 1.240 | 0,07 | 120 | 7.640 | 1.100 | 0,07 |
| 5 | 195 | 9.940 | 1.790 | 0,09 | 195 | 9.940 | 1.790 | 0,09 | 155 | 7.900 | 1.420 | 0,09 | 130 | 6.620 | 1.190 | 0,09 |
| 6 | 180 | 7.640 | 1.650 | 0,11 | 205 | 8.700 | 1.880 | 0,11 | 195 | 8.280 | 1.790 | 0,11 | 195 | 8.280 | 1.790 | 0,11 |
| 8 | 180 | 5.740 | 1.740 | 0,15 | 185 | 5.890 | 1.790 | 0,15 | 179 | 5.700 | 1.740 | 0,15 | 140 | 4.460 | 1.350 | 0,15 |
| 10 | 180 | 4.580 | 1.650 | 0,18 | 155 | 3.950 | 1.420 | 0,18 | 145 | 3.700 | 1.330 | 0,18 | 130 | 3.310 | 1.190 | 0,18 |
| 12 | 180 | 3.820 | 1.460 | 0,19 | 155 | 3.290 | 1.260 | 0,19 | 145 | 3.080 | 1.180 | 0,19 | 130 | 2.760 | 1.060 | 0,19 |
| 16 | 180 | 2.860 | 1.290 | 0,22 | 155 | 2.470 | 1.100 | 0,22 | 145 | 2.310 | 1.030 | 0,22 | 130 | 2.070 | 930 | 0,22 |
| 20 | 180 | 2.300 | 1.290 | 0,28 | 155 | 1.980 | 1.100 | 0,28 | 145 | 1.850 | 1.030 | 0,28 | 130 | 1.660 | 930 | 0,28 |
| | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

# CUTTING CONDITIONS



# EPL-SB-EBM

## High speed milling roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 340 | 27.070 | 5.850 | 0,05 | 330 | 26.270 | 5.680 | 0,05 | 260 | 20.700 | 4.470 | 0,05 | 230 | 18.310 | 3.960 | 0,05 |
| 5 | 380 | 24.200 | 6.540 | 0,07 | 380 | 24.200 | 6.540 | 0,07 | 300 | 19.110 | 5.160 | 0,07 | 250 | 15.920 | 4.300 | 0,07 |
| 6 | 350 | 18.580 | 6.020 | 0,08 | 400 | 21.230 | 6.880 | 0,08 | 380 | 20.170 | 6.540 | 0,08 | 380 | 20.170 | 6.540 | 0,08 |
| 8 | 350 | 13.930 | 6.350 | 0,11 | 360 | 14.330 | 6.540 | 0,11 | 350 | 13.930 | 6.350 | 0,11 | 270 | 10.750 | 4.900 | 0,11 |
| 10 | 350 | 11.150 | 6.020 | 0,13 | 300 | 9.550 | 5.160 | 0,14 | 280 | 8.920 | 4.820 | 0,14 | 250 | 7.960 | 4.300 | 0,14 |
| 12 | 350 | 9.290 | 5.350 | 0,14 | 300 | 7.962 | 4.590 | 0,14 | 280 | 7.430 | 4.280 | 0,14 | 250 | 6.640 | 3.820 | 0,14 |
| | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,25 D | | | | ap = 0,04 - 0,06 D<br>ae = 0,22 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,20 D | | | |

## High speed milling finishing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 350 | 27.870 | 6.020 | 0,05 | 340 | 27.070 | 5.850 | 0,05 | 270 | 21.500 | 4.640 | 0,05 | 240 | 19.110 | 4.130 | 0,05 |
| 5 | 390 | 24.840 | 6.710 | 0,07 | 390 | 24.840 | 6.710 | 0,07 | 310 | 19.750 | 5.330 | 0,07 | 260 | 16.560 | 4.470 | 0,07 |
| 6 | 360 | 19.110 | 6.190 | 0,08 | 410 | 21.760 | 7.050 | 0,08 | 390 | 20.700 | 6.710 | 0,08 | 390 | 20.700 | 6.710 | 0,08 |
| 8 | 360 | 14.330 | 6.540 | 0,11 | 370 | 14.730 | 6.720 | 0,11 | 360 | 14.330 | 6.540 | 0,11 | 280 | 11.150 | 5.080 | 0,11 |
| 10 | 360 | 11.470 | 6.190 | 0,13 | 310 | 9.870 | 5.330 | 0,14 | 290 | 9.240 | 4.990 | 0,14 | 260 | 8.280 | 4.470 | 0,14 |
| 12 | 360 | 9.550 | 5.500 | 0,14 | 310 | 8.230 | 4.740 | 0,14 | 290 | 7.700 | 4.430 | 0,14 | 260 | 6.900 | 3.980 | 0,14 |
| | ap = 0,02 - 0,10 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,02 - 0,10 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,02 - 0,10 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,10 D<br>ae = 0,02 - 0,08 D | | | |

## Conventional roughing

| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 170 | 13.540 | 2.920 | 0,05 | 165 | 13.140 | 2.840 | 0,05 | 130 | 10.350 | 2.240 | 0,05 | 115 | 9.160 | 1.980 | 0,05 |
| 5 | 190 | 12.100 | 3.270 | 0,07 | 190 | 12.100 | 3.270 | 0,07 | 150 | 9.550 | 2.580 | 0,07 | 125 | 7.960 | 2.150 | 0,07 |
| 6 | 175 | 9.290 | 3.010 | 0,08 | 200 | 10.620 | 3.440 | 0,08 | 190 | 10.090 | 3.270 | 0,08 | 190 | 10.090 | 3.270 | 0,08 |
| 8 | 175 | 6.970 | 3.180 | 0,11 | 180 | 7.170 | 3.270 | 0,11 | 175 | 6.970 | 3.180 | 0,11 | 135 | 5.370 | 2.450 | 0,11 |
| 10 | 175 | 5.570 | 3.010 | 0,14 | 150 | 4.780 | 2.580 | 0,13 | 140 | 4.460 | 2.410 | 0,14 | 125 | 3.980 | 2.150 | 0,14 |
| 12 | 175 | 4.640 | 2.680 | 0,14 | 150 | 3.980 | 2.290 | 0,14 | 140 | 3.720 | 2.140 | 0,14 | 125 | 3.320 | 1.910 | 0,14 |
| | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,05 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,04 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

## Conventional finishing

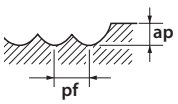
| | 25 - 30 HRC | | | | 30~38 HRC | | | | 38~45 HRC | | | | 45~55 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) | Vc | S (min$^{-1}$) | F (mm/min) | fz (mm) |
| 4 | 175 | 13.930 | 3.010 | 0,05 | 170 | 13.540 | 2.920 | 0,05 | 135 | 10.750 | 2.320 | 0,05 | 120 | 9.550 | 2.060 | 0,05 |
| 5 | 195 | 12.420 | 3.350 | 0,07 | 195 | 12.420 | 3.350 | 0,07 | 155 | 9.870 | 2.670 | 0,07 | 130 | 8.280 | 2.240 | 0,07 |
| 6 | 180 | 9.550 | 3.100 | 0,08 | 205 | 10.880 | 3.530 | 0,08 | 195 | 10.350 | 3.350 | 0,08 | 195 | 10.350 | 3.350 | 0,08 |
| 8 | 180 | 7.170 | 3.270 | 0,11 | 185 | 7.370 | 3.360 | 0,11 | 180 | 7.170 | 3.270 | 0,11 | 140 | 5.570 | 2.540 | 0,11 |
| 10 | 180 | 5.730 | 3.100 | 0,14 | 155 | 4.940 | 2.670 | 0,14 | 145 | 4.620 | 2.490 | 0,13 | 130 | 4.140 | 2.240 | 0,14 |
| 12 | 180 | 4.780 | 2.750 | 0,14 | 155 | 4.110 | 2.370 | 0,14 | 145 | 3.850 | 2.220 | 0,14 | 130 | 3.450 | 1.990 | 0,14 |
| | ap = 0,02 - 0,07 D<br>ae = 0,03 - 0,10 D | | | | ap = 0,02 - 0,07 D<br>ae = 0,02 - 0,10 D | | | | ap = 0,02 - 0,06 D<br>ae = 0,02 - 0,08 D | | | | ap = 0,02 - 0,04 D<br>ae = 0,02 - 0,08 D | | | |

## EPS-LN-EBD

**High speed milling • (1/2)**

| | | C≤0,2% - GG | | | | ~30 HRC | | | | 30~38 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,15 | 0,6 | 50000 | 250 | 0,004 | 0,004 | 50000 | 250 | 0,004 | 0,004 | 50000 | 240 | 0,004 | 0,004 |
| 0,15 | 1 | 50000 | 230 | 0,004 | 0,004 | 50000 | 230 | 0,004 | 0,004 | 50000 | 220 | 0,004 | 0,004 |
| 0,15 | 1,5 | 50000 | 200 | 0,004 | 0,004 | 50000 | 200 | 0,004 | 0,004 | 50000 | 190 | 0,004 | 0,004 |
| 0,2 | 0,8 | 50000 | 360 | 0,005 | 0,005 | 50000 | 360 | 0,005 | 0,005 | 50000 | 340 | 0,005 | 0,005 |
| 0,2 | 1 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 360 | 0,005 | 0,005 | 50.000 | 340 | 0,005 | 0,005 |
| 0,2 | 1,25 | 47.000 | 320 | 0,005 | 0,005 | 47.000 | 320 | 0,005 | 0,005 | 47.000 | 300 | 0,005 | 0,005 |
| 0,2 | 1,5 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 300 | 0,005 | 0,005 | 45.000 | 280 | 0,005 | 0,005 |
| 0,2 | 2 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 230 | 0,005 | 0,005 | 38.000 | 210 | 0,005 | 0,005 |
| 0,25 | 1 | 50000 | 500 | 0,005 | 0,008 | 50000 | 500 | 0,005 | 0,008 | 50000 | 470 | 0,005 | 0,008 |
| 0,25 | 1,5 | 50000 | 500 | 0,005 | 0,008 | 50000 | 500 | 0,005 | 0,008 | 50000 | 470 | 0,005 | 0,008 |
| 0,25 | 2 | 50000 | 480 | 0,005 | 0,007 | 50000 | 480 | 0,005 | 0,007 | 50000 | 440 | 0,005 | 0,007 |
| 0,25 | 2,5 | 45000 | 460 | 0,005 | 0,006 | 45000 | 460 | 0,005 | 0,006 | 45000 | 420 | 0,005 | 0,006 |
| 0,25 | 3,5 | 45000 | 440 | 0,005 | 0,005 | 45000 | 440 | 0,005 | 0,005 | 45000 | 390 | 0,005 | 0,005 |
| 0,25 | 4 | 45000 | 400 | 0,005 | 0,005 | 45000 | 400 | 0,005 | 0,005 | 45000 | 360 | 0,005 | 0,005 |
| 0,25 | 6 | 40000 | 260 | 0,005 | 0,005 | 40000 | 260 | 0,005 | 0,005 | 40000 | 240 | 0,005 | 0,005 |
| 0,3 | 1,2 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 570 | 0,005 | 0,01 |
| 0,3 | 2 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 570 | 0,005 | 0,01 |
| 0,3 | 3 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 600 | 0,005 | 0,01 | 50.000 | 570 | 0,005 | 0,01 |
| 0,3 | 4 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 480 | 0,005 | 0,005 | 45.000 | 450 | 0,005 | 0,005 |
| 0,3 | 5 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 300 | 0,005 | 0,005 | 40.000 | 280 | 0,005 | 0,005 |
| 0,4 | 2 | 50.000 | 700 | 0,01 | 0,02 | 50.000 | 700 | 0,01 | 0,02 | 50.000 | 660 | 0,01 | 0,02 |
| 0,4 | 3 | 43.000 | 500 | 0,005 | 0,01 | 43.000 | 500 | 0,005 | 0,01 | 43.000 | 470 | 0,005 | 0,01 |
| 0,4 | 4 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 370 | 0,005 | 0,005 | 36.000 | 350 | 0,005 | 0,005 |
| 0,4 | 5 | 32.000 | 280 | 0,004 | 0,005 | 32.000 | 280 | 0,004 | 0,005 | 32.000 | 260 | 0,004 | 0,005 |
| 0,5 | 2 | 50.000 | 1.000 | 0,015 | 0,03 | 50.000 | 1.000 | 0,015 | 0,03 | 50.000 | 950 | 0,015 | 0,03 |
| 0,5 | 3 | 48.000 | 900 | 0,01 | 0,02 | 48.000 | 900 | 0,01 | 0,02 | 48.000 | 850 | 0,01 | 0,02 |
| 0,5 | 4 | 43.000 | 600 | 0,01 | 0,01 | 43.000 | 600 | 0,01 | 0,01 | 43.000 | 570 | 0,01 | 0,01 |
| 0,5 | 6 | 26.000 | 250 | 0,004 | 0,005 | 26.000 | 250 | 0,004 | 0,005 | 26.000 | 230 | 0,004 | 0,005 |
| 0,5 | 8 | 22.000 | 160 | 0,004 | 0,005 | 22.000 | 160 | 0,004 | 0,005 | 22.000 | 150 | 0,004 | 0,005 |
| 0,5 | 10 | 20.000 | 100 | 0,004 | 0,005 | 20.000 | 100 | 0,004 | 0,005 | 20.000 | 95 | 0,004 | 0,005 |
| 0,5 | 12 | 20000 | 90 | 0,004 | 0,005 | 20000 | 90 | 0,004 | 0,005 | 20000 | 80 | 0,004 | 0,005 |
| 0,75 | 3 | 45000 | 2400 | 0,04 | 0,08 | 45000 | 2400 | 0,04 | 0,08 | 45000 | 2200 | 0,04 | 0,08 |
| 0,75 | 4 | 42000 | 1900 | 0,04 | 0,08 | 42000 | 1900 | 0,04 | 0,08 | 42000 | 1700 | 0,04 | 0,08 |
| 0,75 | 6 | 28000 | 1400 | 0,04 | 0,08 | 28000 | 1400 | 0,04 | 0,08 | 28000 | 1150 | 0,04 | 0,08 |
| 0,75 | 8 | 24000 | 800 | 0,02 | 0,05 | 24000 | 800 | 0,02 | 0,05 | 24000 | 650 | 0,02 | 0,05 |
| 0,75 | 12 | 21000 | 680 | 0,008 | 0,01 | 21000 | 680 | 0,008 | 0,01 | 21000 | 540 | 0,008 | 0,01 |
| 1 | 4 | 40.000 | 3.000 | 0,05 | 0,1 | 40.000 | 3.000 | 0,05 | 0,1 | 40.000 | 2.850 | 0,05 | 0,1 |
| 1 | 6 | 30.000 | 2.000 | 0,05 | 0,1 | 30.000 | 2.000 | 0,05 | 0,1 | 30 | 1900 | 0,05 | 0,1 |
| 1 | 8 | 26.000 | 1.600 | 0,05 | 0,1 | 26.000 | 1.600 | 0,05 | 0,1 | 26.000 | 1.500 | 0,05 | 0,1 |
| 1 | 10 | 22.000 | 1.100 | 0,01 | 0,02 | 22.000 | 1.100 | 0,01 | 0,02 | 22.000 | 1.000 | 0,01 | 0,02 |
| 1 | 12 | 20.000 | 800 | 0,01 | 0,01 | 20.000 | 800 | 0,01 | 0,01 | 20.000 | 760 | 0,01 | 0,01 |
| 1 | 14 | 18.000 | 600 | 0,005 | 0,01 | 18.000 | 600 | 0,005 | 0,01 | 18.000 | 570 | 0,005 | 0,01 |
| 1 | 16 | 16.000 | 420 | 0,005 | 0,01 | 16.000 | 420 | 0,005 | 0,01 | 16.000 | 400 | 0,005 | 0,01 |
| 1,25 | 10 | 21000 | 1700 | 0,01 | 0,01 | 21000 | 1700 | 0,01 | 0,01 | 21000 | 1500 | 0,01 | 0,01 |
| 1,5 | 6 | 30.000 | 2.900 | 0,075 | 0,15 | 30.000 | 2.900 | 0,075 | 0,15 | 30.000 | 2.700 | 0,075 | 0,15 |
| 1,5 | 8 | 24.000 | 2.300 | 0,075 | 0,15 | 24.000 | 2.300 | 0,075 | 0,15 | 24.000 | 2.100 | 0,075 | 0,15 |
| 1,5 | 10 | 24.000 | 2.000 | 0,075 | 0,15 | 24.000 | 2.000 | 0,075 | 0,15 | 24.000 | 1.900 | 0,075 | 0,15 |
| 1,5 | 12 | 21.000 | 1.400 | 0,075 | 0,1 | 21.000 | 1.400 | 0,075 | 0,1 | 21.000 | 1.300 | 0,075 | 0,1 |
| 1,5 | 15 | 17000 | 1000 | 0,06 | 0,1 | 17000 | 1000 | 0,06 | 0,1 | 17000 | 940 | 0,06 | 0,1 |
| 1,5 | 16 | 16.000 | 800 | 0,05 | 0,1 | 16.000 | 800 | 0,05 | 0,1 | 16.000 | 760 | 0,05 | 0,1 |
| 1,5 | 20 | 13.000 | 360 | 0,02 | 0,05 | 13.000 | 360 | 0,02 | 0,05 | 13.000 | 340 | 0,02 | 0,05 |
| 2 | 8 | 25.000 | 2.600 | 0,1 | 0,2 | 25.000 | 2.600 | 0,1 | 0,2 | 25.000 | 2.400 | 0,1 | 0,2 |
| 2 | 10 | 20.000 | 2.400 | 0,1 | 0,2 | 20.000 | 2.400 | 0,1 | 0,2 | 20.000 | 2.200 | 0,1 | 0,2 |
| 2 | 12 | 16.000 | 2.000 | 0,1 | 0,2 | 16.000 | 2.000 | 0,1 | 0,2 | 16.000 | 1.900 | 0,1 | 0,2 |
| 2 | 16 | 14.000 | 1.700 | 0,1 | 0,1 | 14.000 | 1.700 | 0,1 | 0,1 | 14.000 | 1.600 | 0,1 | 0,1 |
| 2 | 20 | 12.000 | 1.200 | 0,05 | 0,1 | 12.000 | 1.200 | 0,05 | 0,1 | 12.000 | 1.100 | 0,05 | 0,1 |
| 3 | 12 | 20.000 | 3.000 | 0,15 | 0,3 | 20.000 | 3.000 | 0,15 | 0,3 | 20.000 | 2.800 | 0,15 | 0,3 |

Max cutting depth



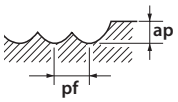

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.
* Modified parameters

## EPS-LN-EBD

**High speed milling • (2/2)**

| | | 38 ~ 45 HRC | | | | 45 ~ 55 HRC | | | | 55 ~ 60 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 120 (m/min) | | | | 110 (m/min) | | | | 100 (m/min) | | | |
| R | l1 (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) | S ($min^{-1}$) | F (mm/min) | ap (mm) | pf (mm) |
| 0,15 | 0,6 | 50000 | 240 | 0,004 | 0,004 | 50000 | 230 | 0,004 | 0,004 | 50000 | 220 | 0,004 | 0,004 |
| 0,15 | 1 | 50000 | 220 | 0,004 | 0,004 | 50000 | 200 | 0,004 | 0,004 | 50000 | 180 | 0,004 | 0,004 |
| 0,15 | 1,5 | 50000 | 190 | 0,004 | 0,004 | 50000 | 170 | 0,004 | 0,004 | 50000 | 150 | 0,004 | 0,004 |
| 0,2 | 0,8 | 50000 | 340 | 0,005 | 0,005 | 50000 | 230 | 0,005 | 0,005 | 50000 | 180 | 0,005 | 0,005 |
| 0,2 | 1 | 50.000 | 340 | 0,005 | 0,005 | 50.000 | 230 | 0,005 | 0,005 | 50.000 | 180 | 0,004 | 0,005 |
| 0,2 | 1,25 | 47.000 | 300 | 0,005 | 0,005 | 47.000 | 210 | 0,005 | 0,005 | 43.000 | 150 | 0,004 | 0,005 |
| 0,2 | 1,5 | 45.000 | 280 | 0,005 | 0,005 | 45.000 | 190 | 0,005 | 0,005 | 41.000 | 130 | 0,004 | 0,005 |
| 0,2 | 2 | 38.000 | 210 | 0,005 | 0,005 | 37.000 | 140 | 0,005 | 0,005 | 33.000 | 100 | 0,004 | 0,005 |
| 0,25 | 1 | 50000 | 470 | 0,005 | 0,008 | 50000 | 450 | 0,005 | 0,008 | 50000 | 430 | 0,005 | 0,008 |
| 0,25 | 1,5 | 50000 | 470 | 0,005 | 0,008 | 50000 | 450 | 0,005 | 0,008 | 50000 | 430 | 0,005 | 0,008 |
| 0,25 | 2 | 50000 | 440 | 0,005 | 0,007 | 50000 | 420 | 0,005 | 0,007 | 50000 | 400 | 0,005 | 0,007 |
| 0,25 | 2,5 | 45000 | 420 | 0,005 | 0,006 | 45000 | 400 | 0,005 | 0,006 | 45000 | 380 | 0,005 | 0,006 |
| 0,25 | 3,5 | 45000 | 390 | 0,005 | 0,005 | 45000 | 370 | 0,005 | 0,005 | 45000 | 350 | 0,005 | 0,005 |
| 0,25 | 4 | 45000 | 360 | 0,005 | 0,005 | 45000 | 340 | 0,005 | 0,005 | 45000 | 320 | 0,005 | 0,005 |
| 0,25 | 6 | 40000 | 240 | 0,005 | 0,005 | 40000 | 220 | 0,005 | 0,005 | 40000 | 200 | 0,005 | 0,005 |
| 0,3 | 1,2 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 390 | 0,005 | 0,01 | 50.000 | 300 | 0,005 | 0,01 |
| 0,3 | 2 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 390 | 0,005 | 0,01 | 50.000 | 310 | 0,005 | 0,01 |
| 0,3 | 3 | 50.000 | 570 | 0,005 | 0,01 | 50.000 | 370 | 0,005 | 0,01 | 50.000 | 290 | 0,005 | 0,01 |
| 0,3 | 4 | 45.000 | 450 | 0,005 | 0,005 | 45.000 | 290 | 0,005 | 0,005 | 41.000 | 210 | 0,004 | 0,005 |
| 0,3 | 5 | 40.000 | 280 | 0,005 | 0,005 | 40.000 | 190 | 0,005 | 0,005 | 36.000 | 130 | 0,004 | 0,005 |
| 0,4 | 2 | 50.000 | 660 | 0,01 | 0,02 | 50.000 | 460 | 0,01 | 0,02 | 45.000 | 330 | 0,008 | 0,015 |
| 0,4 | 3 | 43.000 | 470 | 0,005 | 0,01 | 43.000 | 320 | 0,005 | 0,01 | 38.000 | 220 | 0,005 | 0,01 |
| 0,4 | 4 | 36.000 | 350 | 0,005 | 0,005 | 35.000 | 230 | 0,005 | 0,005 | 31.000 | 160 | 0,005 | 0,005 |
| 0,4 | 5 | 32.000 | 260 | 0,004 | 0,005 | 31.000 | 170 | 0,004 | 0,005 | 28.000 | 120 | 0,004 | 0,005 |
| 0,5 | 2 | 50.000 | 950 | 0,015 | 0,03 | 50.000 | 650 | 0,015 | 0,03 | 50.000 | 520 | 0,01 | 0,02 |
| 0,5 | 3 | 48.000 | 850 | 0,01 | 0,02 | 48.000 | 550 | 0,01 | 0,02 | 43.000 | 390 | 0,01 | 0,02 |
| 0,5 | 4 | 43.000 | 570 | 0,01 | 0,01 | 43.000 | 390 | 0,01 | 0,01 | 38.000 | 270 | 0,01 | 0,01 |
| 0,5 | 6 | 26.000 | 230 | 0,004 | 0,005 | 25.000 | 150 | 0,004 | 0,005 | 22.000 | 100 | 0,004 | 0,005 |
| 0,5 | 8 | 22.000 | 150 | 0,004 | 0,005 | 21.000 | 110 | 0,004 | 0,005 | 20.000 | 100 | 0,004 | 0,005 |
| 0,5 | 10 | 20.000 | 95 | 0,004 | 0,005 | 21.000 | 100 | 0,004 | 0,005 | 20.000 | 90 | 0,004 | 0,005 |
| 0,5 | 12 | 20000 | 80 | 0,004 | 0,005 | 20000 | 70 | 0,004 | 0,005 | 20000 | 60 | 0,004 | 0,005 |
| 0,75 | 3 | 45000 | 2200 | 0,04 | 0,08 | 45000 | 1800 | 0,04 | 0,08 | 45000 | 1400 | 0,02 | 0,05 |
| 0,75 | 4 | 42000 | 1700 | 0,04 | 0,08 | 42000 | 1400 | 0,04 | 0,08 | 42000 | 1100 | 0,02 | 0,05 |
| 0,75 | 6 | 28000 | 1150 | 0,04 | 0,08 | 28000 | 860 | 0,04 | 0,08 | 28000 | 660 | 0,02 | 0,05 |
| 0,75 | 8 | 24000 | 650 | 0,02 | 0,05 | 24000 | 580 | 0,02 | 0,05 | 24000 | 520 | 0,02 | 0,05 |
| 0,75 | 12 | 21000 | 540 | 0,008 | 0,01 | 21000 | 480 | 0,008 | 0,01 | 21000 | 400 | 0,008 | 0,01 |
| 1 | 4 | 40.000 | 2.850 | 0,05 | 0,1 | 40.000 | 2.200 | 0,05 | 0,1 | 40.000 | 1.700 | 0,02 | 0,05 |
| 1 | 6 | 30.000 | 1.900 | 0,05 | 0,1 | 30 | 1.500 | 0,05 | 0,1 | 30 | 1.200 | 0,02 | 0,05 |
| 1 | 8 | 26.000 | 1.500 | 0,05 | 0,1 | 26.000 | 1.200 | 0,05 | 0,1 | 26.000 | 960 | 0,02 | 0,05 |
| 1 | 10 | 22.000 | 1.000 | 0,01 | 0,02 | 21.000 | 760 | 0,01 | 0,02 | 18.000 | 520 | 0,01 | 0,02 |
| 1 | 12 | 20.000 | 760 | 0,01 | 0,01 | 19.000 | 570 | 0,01 | 0,01 | 17.000 | 400 | 0,01 | 0,01 |
| 1 | 14 | 18.000 | 570 | 0,005 | 0,01 | 17.000 | 430 | 0,005 | 0,01 | 15.000 | 300 | 0,005 | 0,01 |
| 1 | 16 | 16.000 | 400 | 0,005 | 0,01 | 15.000 | 300 | 0,005 | 0,01 | 13.000 | 200 | 0,005 | 0,01 |
| 1,25 | 10 | 21000 | 1500 | 0,05 | 0,01 | 21000 | 1200 | 0,05 | 0,05 | 21000 | 950 | 0,015 | 0,01 |
| 1,5 | 6 | 30.000 | 2.700 | 0,075 | 0,15 | 30.000 | 2.200 | 0,075 | 0,15 | 27.000 | 1.500 | 0,03 | 0,06 |
| 1,5 | 8 | 24.000 | 2.100 | 0,075 | 0,15 | 24.000 | 1.700 | 0,075 | 0,15 | 21.000 | 1.100 | 0,03 | 0,06 |
| 1,5 | 10 | 24.000 | 1.900 | 0,075 | 0,15 | 24.000 | 1.500 | 0,075 | 0,15 | 21.000 | 1.000 | 0,03 | 0,06 |
| 1,5 | 12 | 21.000 | 1.300 | 0,075 | 0,1 | 21.000 | 1.000 | 0,075 | 0,1 | 18.000 | 680 | 0,03 | 0,06 |
| 1,5 | 15 | 17000 | 940 | 0,05 | 0,1 | 17000 | 720 | 0,05 | 0,1 | 17000 | 490 | 0,03 | 0,05 |
| 1,5 | 16 | 14.000 | 760 | 0,05 | 0,1 | 13.000 | 560 | 0,05 | 0,1 | 10.000 | 340 | 0,03 | 0,05 |
| 1,5 | 20 | 12.000 | 340 | 0,02 | 0,05 | 11.000 | 240 | 0,02 | 0,05 | 9.000 | 150 | 0,02 | 0,05 |
| 2 | 8 | 25.000 | 2.400 | 0,1 | 0,2 | 24.000 | 2.300 | 0,1 | 0,2 | 20.000 | 1.500 | 0,05 | 0,1 |
| 2 | 10 | 20.000 | 2.200 | 0,1 | 0,2 | 19.000 | 2.000 | 0,1 | 0,2 | 17.000 | 1.400 | 0,05 | 0,1 |
| 2 | 12 | 16.000 | 1.900 | 0,1 | 0,2 | 15.000 | 1.700 | 0,1 | 0,2 | 13.000 | 1.100 | 0,05 | 0,1 |
| 2 | 16 | 14.000 | 1.600 | 0,1 | 0,1 | 13.000 | 1.400 | 0,1 | 0,1 | 11.000 | 950 | 0,05 | 0,1 |
| 2 | 20 | 11.000 | 1.100 | 0,05 | 0,1 | 10.000 | 890 | 0,05 | 0,1 | 9.000 | 640 | 0,05 | 0,1 |
| 3 | 12 | 20.000 | 2.800 | 0,15 | 0,3 | 18.000 | 2.500 | 0,15 | 0,3 | 16.000 | 1.700 | 0,06 | 0,15 |

Max cutting depth




Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emission.
* Modified parameters

# CUTTING CONDITIONS



## EPS-CPR

### Regular milling

| Ø | α° | l1 | max. depth of cut ap / ae | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ap | | | | | | | ap = 120% | ae = 120% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| | | | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1 | 0° | 4 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 23.000 | 1.300 | 20.000 | 1.050 | 17.000 | 755 |
| 1 | 0° | 4 | - | - | - | - | - | - | 0,300 | 23000 | 1300 | 20000 | 1050 | 17000 | 755 |
| 1 | 0° | 6 | 0,005 | 0,01 | 0,02 | 0,025 | - | - | 0,210 | 20.500 | 1.050 | 18.000 | 835 | 15.500 | 605 |
| 1 | 0° | 6 | 0,01 | 0,02 | 0,04 | 0,05 | - | - | 0,300 | 25.500 | 1.250 | 22.500 | 1.150 | 19.000 | 840 |
| 1,5 | 0° | 6 | - | - | 0,04 | 0,06 | - | - | 0,450 | 17.000 | 1.450 | 16.000 | 1.250 | 13.500 | 880 |
| 1,5 | 0° | 10 | - | - | 0,018 | 0,027 | - | - | 0,292 | 14.500 | 1.000 | 13.500 | 900 | 11.000 | 625 |
| 1,5 | 0° | 16 | - | - | 0,007 | 0,01 | - | - | 0,112 | 9.150 | 525 | 8.650 | 460 | 7.150 | 320 |
| 2 | 0° | 8 | - | 0,02 | 0,04 | 0,06 | 0,075 | - | 0,600 | 13.000 | 1.450 | 13.000 | 1.300 | 11.500 | 1.000 |
| 2 | 0° | 10 | - | 0,016 | 0,032 | 0,048 | 0,06 | - | 0,510 | 12.000 | 1.300 | 12.000 | 1.150 | 11.000 | 905 |
| 2 | 0° | 12 | - | 0,01 | 0,02 | 0,03 | 0,037 | - | 0,420 | 11.500 | 1.150 | 11.500 | 1.050 | 10.000 | 810 |
| 3 | 0° | 8 | - | - | 0,04 | - | - | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 12 | - | - | 0,04 | 0,06 | 0,075 | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 16 | - | - | 0,028 | 0,042 | 0,052 | - | 0,720 | 8.500 | 1.200 | 7.650 | 910 | 6.800 | 660 |
| 4 | 0° | 16 | - | - | 0,04 | 0,06 | 0,075 | 0,12 | 1,200 | 7.150 | 2.050 | 6.450 | 1.550 | 5.000 | 965 |
| 4 | 0° | 20 | - | - | 0,032 | 0,048 | 0,06 | 0,2 | 1,020 | 6.750 | 1.950 | 6.100 | 1.450 | 4.750 | 910 |

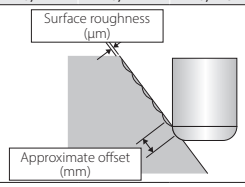
1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication/mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering occur depending on the machineshape, cutting amount, rigidity of the machine or work holding condition etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommanded during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

### Side milling (Contour line finish)

| Ø | α° | l1 | max. depth of cut ap / ae | | | | | | ae | ~ 45 HRC SKD61 • NAK55 •NAK80 • HPMI | | 45 ~ 55 HRC SKD61 • STAVAX • HPM38 | | 55 ~ 65 HRC Hardened Steel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ap | | | | | | | ap = 120% | ae = 120% | ap = 100% | ae = 100% | ap = 60% | ae = 80% |
| | | | R0,05 | R0,1 | R0,2 | R0,3 | R0,5 | R1 | | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1 | 0° | 4 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,030 | 27.000 | 1.500 | 24.500 | 1.250 | 22.500 | 995 |
| 1 | 0° | 6 | 0,006 | 0,015 | 0,02 | 0,03 | - | - | 0,027 | 24.000 | 1.200 | 21.500 | 1.000 | 20.000 | 800 |
| 1,5 | 0° | 6 | - | - | 0,02 | 0,03 | - | - | 0,045 | 21.000 | 1.750 | 18.500 | 1.450 | 16.000 | 1.050 |
| 1,5 | 0° | 10 | - | - | 0,018 | 0,027 | - | - | 0,036 | 17.500 | 1.250 | 15.500 | 1.050 | 13.500 | 760 |
| 1,5 | 0° | 16 | - | - | 0,008 | 0,012 | - | - | 0,022 | 11.000 | 640 | 10.000 | 530 | 8.650 | 390 |
| 2 | 0° | 8 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 16.500 | 1.850 | 16.000 | 1.600 | 15.000 | 1.350 |
| 2 | 0° | 10 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,060 | 15.500 | 1.650 | 15.500 | 1.450 | 14.500 | 1.200 |
| 2 | 0° | 12 | - | 0,015 | 0,02 | 0,03 | 0,05 | - | 0,054 | 14.500 | 1.500 | 14.500 | 1.300 | 13.500 | 1.050 |
| 3 | 0° | 8 | - | - | 0,02 | - | - | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 12 | - | - | 0,02 | 0,03 | 0,05 | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 16 | - | - | 0,02 | 0,03 | 0,05 | - | 0,080 | 10.500 | 1.600 | 9.600 | 1.150 | 9.000 | 875 |
| 4 | 0° | 16 | - | - | 0,02 | 0,03 | 0,05 | 0,08 | 0,080 | 7.900 | 2.500 | 7.150 | 2.050 | 6.450 | 1.450 |
| 4 | 0° | 20 | - | - | 0,02 | 0,03 | 0,05 | 0,08 | 0,080 | 7.450 | 2.400 | 6.750 | 1.950 | 6.100 | 1.350 |

### Approximate offset (mm)

| Corner Radius R (mm) | Target surface roughness (µm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,1 | 0,25 | 0,5 | 0,75 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2,5 | 3 | 3,5 | 4 | 5 |
| R 0,05 | 0,006 | 0,01 | 0,014 | 0,017 | 0,02 | 0,022 | 0,024 | 0,026 | 0,028 | - | - | - | - | - |
| R 0,1 | 0,009 | 0,014 | 0,02 | 0,024 | 0,028 | 0,032 | 0,035 | 0,037 | 0,04 | 0,045 | 0,049 | - | - | - |
| R 0,2 | 0,012 | 0,02 | 0,028 | 0,035 | 0,04 | 0,045 | 0,049 | 0,053 | 0,057 | 0,063 | 0,07 | 0,075 | 0,08 | 0,9 |
| R 0,3 | 0,015 | 0,025 | 0,035 | 0,042 | 0,049 | 0,055 | 0,06 | 0,065 | 0,07 | 0,077 | 0,085 | 0,092 | 0,098 | 0,11 |
| R 0,5 | 0,02 | 0,032 | 0,045 | 0,055 | 0,065 | 0,07 | 0,078 | 0,084 | 0,09 | 0,1 | 0,11 | 0,118 | 0,125 | 0,141 |
| R 1 | 0,028 | 0,045 | 0,063 | 0,078 | 0,09 | 0,1 | 0,11 | 0,118 | 0,125 | 0,142 | 0,155 | 0,168 | 0,18 | 0,2 |



## EPL-LN-EBD

### Standard milling

| | | Cu | | | | < 32 HRC | | | | 32 - 41 HRC | | | | 42 - 50 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,15 | 0,5 | 32.000 | 600 | 0,020 | 0,030 | 32.000 | 400 | 0,010 | 0,015 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 300 | 0,005 | 0,005 |
| 0,15 | 1 | 32.000 | 450 | 0,020 | 0,030 | 32.000 | 300 | 0,010 | 0,015 | 32.000 | 200 | 0,010 | 0,015 | 32.000 | 200 | 0,005 | 0,005 |
| 0,2 | 1 | 32.000 | 600 | 0,025 | 0,050 | 32.000 | 400 | 0,015 | 0,025 | 32.000 | 300 | 0,015 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,2 | 2 | 27.000 | 450 | 0,025 | 0,050 | 27.000 | 300 | 0,015 | 0,025 | 27.000 | 200 | 0,015 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 1 | 32.000 | 750 | 0,040 | 0,050 | 32.000 | 500 | 0,020 | 0,025 | 32.000 | 400 | 0,020 | 0,020 | 32.000 | 400 | 0,010 | 0,010 |
| 0,25 | 2 | 32.000 | 600 | 0,040 | 0,050 | 32.000 | 400 | 0,020 | 0,025 | 32.000 | 300 | 0,020 | 0,020 | 32.000 | 300 | 0,010 | 0,010 |
| 0,25 | 3 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,25 | 4 | 27.000 | 450 | 0,040 | 0,050 | 27.000 | 300 | 0,020 | 0,025 | 27.000 | 200 | 0,020 | 0,020 | 27.000 | 200 | 0,010 | 0,010 |
| 0,3 | 1 | 32.000 | 900 | 0,045 | 0,120 | 32.000 | 600 | 0,030 | 0,060 | 32.000 | 500 | 0,030 | 0,050 | 32.000 | 500 | 0,030 | 0,030 |
| 0,3 | 2 | 32.000 | 675 | 0,045 | 0,120 | 32.000 | 450 | 0,030 | 0,060 | 32.000 | 300 | 0,030 | 0,050 | 32.000 | 300 | 0,030 | 0,030 |
| 0,3 | 3 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,050 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 4 | 30.000 | 375 | 0,045 | 0,120 | 25.000 | 250 | 0,030 | 0,060 | 24.000 | 200 | 0,030 | 0,040 | 24.000 | 200 | 0,030 | 0,030 |
| 0,3 | 6 | 25.000 | 225 | 0,045 | 0,120 | 20.000 | 150 | 0,030 | 0,060 | 20.000 | 150 | 0,030 | 0,040 | 20.000 | 150 | 0,020 | 0,020 |
| 0,4 | 2 | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,040 |
| 0,4 | 4 | 27.000 | 675 | 0,060 | 0,160 | 23.000 | 450 | 0,040 | 0,080 | 21.000 | 300 | 0,040 | 0,060 | 21.000 | 300 | 0,040 | 0,040 |
| 0,4 | 6 | 24.000 | 375 | 0,060 | 0,120 | 21.000 | 250 | 0,040 | 0,060 | 19.000 | 200 | 0,040 | 0,050 | 19.000 | 200 | 0,020 | 0,025 |
| 0,5 | 2,5 | 28.000 | 900 | 0,075 | 0,200 | 25.000 | 600 | 0,050 | 0,100 | 21.000 | 400 | 0,050 | 0,080 | 21.000 | 400 | 0,050 | 0,050 |
| 0,5 | 3 | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 4 | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 5 | 21.000 | 450 | 0,075 | 0,200 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 6 | 21.000 | 450 | 0,075 | 0,200 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 8 | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,075 | 16.000 | 200 | 0,050 | 0,060 | 16.000 | 200 | 0,030 | 0,030 |
| 0,5 | 10 | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,5 | 12 | 18.000 | 300 | 0,060 | 0,120 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,015 |
| 0,75 | 4 | 20.000 | 900 | 0,120 | 0,300 | 15.000 | 600 | 0,080 | 0,150 | 12.000 | 500 | 0,080 | 0,120 | 12.000 | 300 | 0,080 | 0,100 |
| 0,75 | 8 | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 |
| 1 | 6 | 16.500 | 1.050 | 0,150 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,200 |
| 1 | 8 | 16.500 | 1.050 | 0,150 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13500 | 500 | 0,100 | 0,200 |
| 1 | 10 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 12 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 14 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 16 | 14.000 | 750 | 0,150 | 0,420 | 13.000 | 500 | 0,100 | 0,210 | 10.000 | 300 | 0,100 | 0,180 | 10.000 | 300 | 0,060 | 0,100 |
| 1 | 20 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1 | 25 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1,5 | 8 | 12.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 10 | 12.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 16 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 20 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 2 | 10 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 16 | 9.000 | 900 | 0,500 | 1,280 | 7.500 | 600 | 0,200 | 0,640 | 6.000 | 400 | 0,200 | 0,600 | 6.000 | 400 | 0,200 | 0,400 |
| 2 | 20 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 25 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 30 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,560 | 5.000 | 250 | 0,120 | 0,200 |
| 3 | 10 | 7.000 | 1.500 | 0,750 | 2,400 | 5.500 | 1.000 | 0,300 | 1,200 | 4.500 | 800 | 0,300 | 0,960 | 4.500 | 800 | 0,300 | 0,600 |
| 3 | 12 | 7.000 | 1.500 | 0,750 | 2,400 | 5.500 | 1.000 | 0,300 | 1,200 | 4.500 | 800 | 0,300 | 0,960 | 4.500 | 800 | 0,300 | 0,600 |
| 3 | 20 | 7.000 | 1.200 | 0,750 | 2,400 | 5.500 | 800 | 0,300 | 1,200 | 4.500 | 600 | 0,300 | 0,960 | 4.500 | 600 | 0,300 | 0,600 |
| 3 | 30 | 5.000 | 600 | 0,750 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,960 | 4.000 | 300 | 0,300 | 0,600 |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## EPL-LN-EBD

**High speed milling**

| | | Cu | | | | < 32 HRC | | | | 32 - 41 HRC | | | | 42 - 50 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | l1 (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) | S (min-1) | F (mm/min) | ap (mm) | pf (mm) |
| 0,15 | 0,5 | 50.000 | 750 | 0,0075 | 0,020 | 50.000 | 620 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 600 | 0,005 | 0,010 |
| 0,15 | 1 | 50.000 | 730 | 0,0075 | 0,020 | 50.000 | 600 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 | 50.000 | 570 | 0,005 | 0,010 |
| 0,2 | 1 | 50.000 | 1.090 | 0,015 | 0,040 | 50.000 | 900 | 0,020 | 0,010 | 50.000 | 850 | 0,010 | 0,020 | 50.000 | 850 | 0,010 | 0,020 |
| 0,2 | 2 | 50.000 | 850 | 0,015 | 0,040 | 50.000 | 700 | 0,020 | 0,010 | 50.000 | 660 | 0,010 | 0,020 | 50.000 | 660 | 0,010 | 0,020 |
| 0,25 | 1 | 50.000 | 1.420 | 0,0225 | 0,045 | 50.000 | 1.100 | 0,015 | 0,030 | 50.000 | 1.050 | 0,010 | 0,030 | 50.000 | 1.050 | 0,015 | 0,030 |
| 0,25 | 2 | 50.000 | 1.400 | 0,0225 | 0,045 | 50.000 | 1.000 | 0,015 | 0,030 | 50.000 | 950 | 0,010 | 0,030 | 50.000 | 950 | 0,015 | 0,030 |
| 0,25 | 3 | 50.000 | 1.190 | 0,015 | 0,040 | 48.000 | 900 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 | 48.000 | 850 | 0,010 | 0,020 |
| 0,25 | 4 | 45.000 | 1.000 | 0,015 | 0,020 | 43.000 | 600 | 0,010 | 0,010 | 43.000 | 570 | 0,010 | 0,010 | 43.000 | 570 | 0,010 | 0,010 |
| 0,3 | 1 | 50.000 | 1.660 | 0,045 | 0,100 | 50.000 | 1.400 | 0,030 | 0,050 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.300 | 0,030 | 0,050 |
| 0,3 | 2 | 50.000 | 1.600 | 0,045 | 0,100 | 50.000 | 1.300 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 | 50.000 | 1.200 | 0,030 | 0,050 |
| 0,3 | 3 | 50.000 | 1.550 | 0,030 | 0,060 | 50.000 | 1.200 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 | 50.000 | 1.100 | 0,020 | 0,030 |
| 0,3 | 4 | 50.000 | 1.200 | 0,015 | 0,040 | 40.000 | 900 | 0,010 | 0,020 | 40.000 | 850 | 0,010 | 0,020 | 40.000 | 850 | 0,010 | 0,020 |
| 0,3 | 6 | 30.000 | 720 | 0,015 | 0,040 | 26.000 | 600 | 0,010 | 0,020 | 26.000 | 570 | 0,010 | 0,020 | 25.000 | 540 | 0,010 | 0,020 |
| 0,4 | 2 | 50.000 | 2.200 | 0,060 | 0,160 | 50.000 | 2.000 | 0,040 | 0,080 | 50.000 | 1.900 | 0,040 | 0,080 | 50.000 | 1.900 | 0,040 | 0,080 |
| 0,4 | 4 | 50.000 | 1.680 | 0,060 | 0,160 | 40.000 | 1.200 | 0,040 | 0,080 | 40.000 | 1.100 | 0,040 | 0,080 | 40.000 | 1.100 | 0,040 | 0,080 |
| 0,4 | 6 | 32.000 | 1.260 | 0,045 | 0,100 | 30.000 | 800 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 | 30.000 | 760 | 0,030 | 0,050 |
| 0,5 | 2,5 | 50.000 | 3.270 | 0,075 | 0,200 | 50.000 | 3.400 | 0,050 | 0,100 | 50.000 | 3.200 | 0,050 | 0,100 | 50.000 | 3.200 | 0,050 | 0,100 |
| 0,5 | 3 | 50.000 | 3.060 | 0,075 | 0,200 | 45.000 | 3.200 | 0,050 | 0,100 | 45.000 | 3.000 | 0,050 | 0,100 | 45.000 | 3.000 | 0,050 | 0,100 |
| 0,5 | 4 | 50.000 | 3.000 | 0,075 | 0,200 | 40.000 | 3.000 | 0,050 | 0,100 | 40.000 | 2.850 | 0,050 | 0,100 | 40.000 | 2.850 | 0,050 | 0,100 |
| 0,5 | 5 | 47.000 | 2.870 | 0,075 | 0,200 | 36.000 | 2.300 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,100 | 36.000 | 2.100 | 0,050 | 0,100 |
| 0,5 | 6 | 43.000 | 2.600 | 0,075 | 0,200 | 30.000 | 2.000 | 0,050 | 0,100 | 30.000 | 1.900 | 0,050 | 0,100 | 30.000 | 1.900 | 0,050 | 0,100 |
| 0,5 | 8 | 27.000 | 2.000 | 0,075 | 0,150 | 26.000 | 1.600 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,100 | 26.000 | 1.500 | 0,050 | 0,100 |
| 0,5 | 10 | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 12 | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,75 | 4 | 42.000 | 4.110 | 0,150 | 0,300 | 40.000 | 3.900 | 0,075 | 0,150 | 40.000 | 3.700 | 0,075 | 0,150 | 40.000 | 3.700 | 0,075 | 0,1005 |
| 0,75 | 8 | 30.000 | 2.650 | 0,150 | 0,300 | 24.000 | 2.300 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0,150 | 24.000 | 2.100 | 0,075 | 0,1005 |
| 1 | 6 | 38.000 | 4.000 | 0,200 | 0,400 | 36.000 | 3.000 | 0,100 | 0,200 | 36.000 | 2.800 | 0,100 | 0,200 | 34.000 | 2.600 | 0,100 | 0,200 |
| 1 | 8 | 27.000 | 3.360 | 0,200 | 0,400 | 25.000 | 2.600 | 0,100 | 0,200 | 25.000 | 2.400 | 0,100 | 0,200 | 23.000 | 2.200 | 0,100 | 0,200 |
| 1 | 10 | 22.000 | 3.050 | 0,200 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 12 | 16.000 | 2.580 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 |
| 1 | 14 | 15.000 | 2.400 | 0,200 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 16 | 14.000 | 2.200 | 0,200 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 20 | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0 | 0,100 |
| 1 | 25 | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0 | 0,100 |
| 1,5 | 8 | 32.000 | 4.600 | 0,300 | 0,600 | 30.000 | 4.500 | 0,150 | 0,300 | 30.000 | 4.200 | 0,150 | 0,300 | 25.000 | 3.500 | 0,150 | 0,300 |
| 1,5 | 10 | 28.000 | 4.000 | 0,300 | 0,600 | 25.000 | 3.800 | 0,150 | 0,300 | 25.000 | 3.600 | 0,150 | 0,300 | 20.000 | 2.800 | 0,150 | 0,300 |
| 1,5 | 16 | 20.000 | 2.600 | 0,250 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 20 | 16.000 | 2.200 | 0,250 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 2 | 10 | 25.000 | 4.500 | 0,400 | 1,000 | 25.000 | 4.500 | 0,200 | 0,500 | 25.000 | 4.200 | 0,200 | 0,500 | 20.000 | 3.300 | 0,200 | 0,500 |
| 2 | 16 | 20.000 | 3.460 | 0,400 | 0,600 | 18.000 | 3.200 | 0,200 | 0,500 | 18.000 | 3.000 | 0,200 | 0,500 | 14.000 | 2.300 | 0,200 | 0,500 |
| 2 | 20 | 18.000 | 3.000 | 0,400 | 0,500 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.600 | 0,200 | 0,400 | 12.000 | 1.900 | 0,200 | 0,400 |
| 2 | 25 | 18.000 | 3.000 | 0,250 | 0,600 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 | 12.000 | 1.900 | 0,100 | 0,300 |
| 2 | 30 | 16.000 | 2.850 | 0,250 | 0,400 | 14.000 | 2.400 | 0,100 | 0,200 | 14.000 | 2.200 | 0,100 | 0,200 | 11.000 | 1.700 | 0,100 | 0,200 |
| 3 | 10 | 22.000 | 5.900 | 0,750 | 1,250 | 20.000 | 5.400 | 0,300 | 0,500 | 20.000 | 5.000 | 0,300 | 0,500 | 15.000 | 3.750 | 0,300 | 0,500 |
| 3 | 12 | 22.000 | 5.900 | 0,750 | 1,250 | 20.000 | 5.400 | 0,300 | 0,500 | 20.000 | 5.000 | 0,300 | 0,500 | 15.000 | 3.750 | 0,300 | 0,500 |
| 3 | 20 | 18.000 | 4.400 | 0,750 | 1,250 | 16.000 | 4.200 | 0,300 | 0,500 | 16.000 | 3.900 | 0,300 | 0,500 | 12.000 | 2.900 | 0,300 | 0,500 |
| 3 | 30 | 10.000 | 3.200 | 0,600 | 1,25 | 10.000 | 2.600 | 0,3 | 0,5 | 10.000 | 2.400 | 0,3 | 0,5 | 8.000 | 1.900 | 0,3 | 0,5 |

## EPL-PC-EBD-DIA

| | | | GF | | | | |
|---|---|---|---|---|---|---|---|
| Ø | l1 | Vc | S (min-1) | F (mm/min) | ap | ae | fz (mm) |
| 1 | 35 | 53 | 16.800 | 320 | 0,05 | 0,10 | 0,01 |
| 2 | 50 | 84 | 13.300 | 500 | 0,10 | 0,20 | 0,02 |
| 3 | 60 | 84 | 8.900 | 510 | 0,15 | 0,30 | 0,03 |
| 4 | 130 | 95 | 7.550 | 580 | 0,20 | 0,40 | 0,04 |
| 4 | 160 | 92 | 7.350 | 560 | 0,2 | 0,4 | 0,04 |
| 6 | 160 | 130 | 6.900 | 700 | 0,30 | 0,60 | 0,05 |
| 6 | 220 | 105 | 5.550 | 640 | 0,30 | 0,60 | 0,06 |
| 8 | 170 | 127 | 5.040 | 770 | 0,40 | 0,80 | 0,08 |
| 8 | 220 | 116 | 4.600 | 700 | 0,4 | 0,8 | 0,08 |

## EPL-PC-EBD

### Standard milling

| | | | Cu | | | | < 32 HRC | | | | 32 - 41 HRC | | | | 42 - 50 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | φ° | l1 (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) |
| 0,5 | 0,9° | 10 | 28.000 | 750 | 0,075 | 0,200 | 25.000 | 500 | 0,050 | 0,100 | 21.000 | 300 | 0,050 | 0,080 | 21.000 | 300 | 0,050 | 0,050 |
| 0,5 | 0,9° | 15 | 21.000 | 450 | 0,075 | 0,150 | 19.000 | 300 | 0,050 | 0,100 | 16.000 | 200 | 0,050 | 0,080 | 16.000 | 200 | 0,050 | 0,050 |
| 0,5 | 0,9° | 20 | 21.000 | 450 | 0,075 | 0,150 | 17.000 | 200 | 0,030 | 0,050 | 14.000 | 150 | 0,030 | 0,040 | 14.000 | 150 | 0,010 | 0,020 |
| 0,75 | 0,9° | 20 | 17.000 | 450 | 0,120 | 0,240 | 15.000 | 300 | 0,080 | 0,120 | 12.000 | 250 | 0,080 | 0,100 | 12.000 | 250 | 0,075 | 0,100 |
| 0,75 | 0,9° | 30 | 13.000 | 300 | 0.090 | 0,200 | 12.000 | 200 | 0,060 | 0,100 | 9.500 | 150 | 0,060 | 0,100 | 9.500 | 150 | 0,030 | 0,100 |
| 0,75 | 1,4° | 20 | 17.000 | 450 | 0,120 | 0,300 | 15.000 | 300 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 | 12.000 | 250 | 0,080 | 0,150 |
| 1 | 0,9° | 20 | 14.000 | 750 | 0,200 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 0,9° | 30 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,080 | 0,100 |
| 1 | 1,4° | 20 | 16.500 | 1.050 | 0,200 | 0,560 | 16.500 | 700 | 0,100 | 0,280 | 13.500 | 500 | 0,100 | 0,280 | 13.500 | 500 | 0,10 | 0,200 |
| 1 | 1,4° | 30 | 14.000 | 750 | 0,150 | 0,560 | 13.000 | 500 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,280 | 10.000 | 300 | 0,100 | 0,200 |
| 1 | 1,4° | 40 | 11.000 | 375 | 0,150 | 0,420 | 10.000 | 250 | 0,100 | 0,210 | 8.000 | 200 | 0,100 | 0,180 | 8.000 | 200 | 0,060 | 0,100 |
| 1,5 | 0,9° | 20 | 10.000 | 900 | 0,200 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 0,9° | 30 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 0,9° | 40 | 10.000 | 450 | 0,200 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,300 | 6.500 | 250 | 0,090 | 0,150 |
| 1,5 | 1,4° | 20 | 10.000 | 900 | 0,300 | 0,840 | 9.500 | 600 | 0,150 | 0,420 | 7.500 | 400 | 0,150 | 0,360 | 7.500 | 400 | 0,150 | 0,300 |
| 1,5 | 1,4° | 30 | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 1,5 | 1,4° | 40 | 10.000 | 450 | 0,250 | 0,840 | 8.500 | 300 | 0,150 | 0,420 | 6.500 | 250 | 0,150 | 0,360 | 6.500 | 250 | 0,150 | 0,300 |
| 2 | 0,9° | 30 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,600 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 0,9° | 40 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,56 | 5.000 | 250 | 0,120 | 0,300 |
| 2 | 0,9° | 50 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,56 | 5.000 | 250 | 0,120 | 0,200 |
| 2 | 0,9° | 60 | 5.000 | 375 | 0,350 | 1,280 | 5.000 | 250 | 0,200 | 0,640 | 4.000 | 200 | 0,200 | 0,56 | 4.000 | 200 | 0,120 | 0,200 |
| 2 | 0,9° | 70 | 7.000 | 600 | 0,500 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.000 | 250 | 0,200 | 0,6 | 5.000 | 250 | 0,200 | 0,400 |
| 2 | 1,4° | 40 | 7.000 | 600 | 0,450 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.500 | 350 | 0,200 | 0,56 | 5.500 | 350 | 0,200 | 0,300 |
| 2 | 1,4° | 50 | 7.000 | 600 | 0,450 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.500 | 350 | 0,200 | 0,56 | 5.500 | 350 | 0,200 | 0,300 |
| 2 | 1,4° | 60 | 7.000 | 600 | 0,400 | 1,280 | 6.000 | 400 | 0,200 | 0,640 | 5.500 | 350 | 0,200 | 0,56 | 5.500 | 350 | 0,200 | 0,300 |
| 3 | 0,9° | 50 | 5.000 | 600 | 0,600 | 2,400 | 6.000 | 400 | 0,200 | 0,640 | 5.500 | 350 | 0,200 | 0,56 | 5.500 | 350 | 0,200 | 0,600 |
| 3 | 0,9° | 60 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,96 | 4.000 | 300 | 0,300 | 0,600 |
| 3 | 0,9° | 70 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,96 | 4.000 | 300 | 0,300 | 0,300 |
| 3 | 0,9° | 80 | 5.000 | 600 | 0,450 | 2,400 | 4.000 | 400 | 0,200 | 1,200 | 4.000 | 300 | 0,200 | 0,96 | 4.000 | 300 | 0,200 | 0,300 |
| 3 | 1,4° | 60 | 5.000 | 600 | 0,600 | 2,400 | 4.000 | 400 | 0,300 | 1,200 | 4.000 | 300 | 0,300 | 0,96 | 4.000 | 300 | 0,300 | 0,600 |
| 4 | 0,9° | 60 | 4.000 | 550 | 0,800 | 3,200 | 3.000 | 350 | 0,400 | 1,600 | 3.000 | 300 | 0,400 | 1,24 | 3.000 | 300 | 0,400 | 0,800 |
| 4 | 0,9° | 80 | 4.000 | 550 | 0,800 | 3,200 | 3.000 | 350 | 0,400 | 1,600 | 3.000 | 300 | 0,400 | 1,24 | 3.000 | 300 | 0,400 | 0,800 |
| 4 | 1,4° | 60 | 4.000 | 550 | 0,900 | 3,200 | 3.000 | 350 | 0,450 | 1,600 | 3.000 | 300 | 0,450 | 1,24 | 3.000 | 300 | 0,450 | 0,800 |
| 4 | 1,4° | 80 | 4.000 | 550 | 0,900 | 3,200 | 3.000 | 350 | 0,450 | 1,600 | 3.000 | 300 | 0,450 | 1,24 | 3.000 | 300 | 0,450 | 0,800 |

### High speed milling

| | | | Cu | | | | < 32 HRC | | | | 32 - 41 HRC | | | | 42 - 50 HRC | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | φ° | l1 (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) | S (min-1) | F (mm/ min) | ap (mm) | pf (mm) |
| 0,5 | 0,9° | 10 | 30.000 | 2.350 | 0,075 | 0,150 | 27.000 | 1.700 | 0,050 | 0,100 | 27.000 | 1.600 | 0,050 | 0,050 | 27.000 | 1.600 | 0,050 | 0,050 |
| 0,5 | 0,9° | 15 | 24.000 | 1.400 | 0,015 | 0,040 | 22.000 | 1.100 | 0,010 | 0,020 | 22.000 | 1.000 | 0,010 | 0,020 | 21.000 | 950 | 0,010 | 0,020 |
| 0,5 | 0,9° | 20 | 24.000 | 1.000 | 0,015 | 0,040 | 22.000 | 770 | 0,010 | 0,020 | 22.000 | 700 | 0,010 | 0,020 | 21.000 | 680 | 0,010 | 0,015 |
| 0,75 | 0,9° | 20 | 24.000 | 1.400 | 0,120 | 0,200 | 21.000 | 1.400 | 0,075 | 0,100 | 21.000 | 1.300 | 0,075 | 0,090 | 21.000 | 1.300 | 0,050 | 0,060 |
| 0,75 | 0,9° | 30 | 22.000 | 1.400 | 0,070 | 0,200 | 18.000 | 1.200 | 0,050 | 0,100 | 18.000 | 1.100 | 0,050 | 0,070 | 17.000 | 1.100 | 0,030 | 0,030 |
| 0,75 | 1,4° | 20 | 30.000 | 2.400 | 0,120 | 0,300 | 24.000 | 2.000 | 0,075 | 0,150 | 24.000 | 1.900 | 0,075 | 0,120 | 24.000 | 1.900 | 0,080 | 0,100 |
| 1 | 0,9° | 20 | 15.000 | 2.400 | 0,150 | 0,300 | 15.000 | 1.800 | 0,100 | 0,200 | 15.000 | 1.700 | 0,100 | 0,200 | 14.000 | 1.500 | 0,100 | 0,200 |
| 1 | 0,9° | 30 | 14.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,070 | 0,100 |
| 1 | 1,4° | 20 | 22.000 | 3.050 | 0,200 | 0,400 | 20.000 | 2.400 | 0,100 | 0,200 | 20.000 | 2.200 | 0,100 | 0,200 | 19.000 | 2.000 | 0,100 | 0,200 |
| 1 | 1,4° | 30 | 15.000 | 2.200 | 0,150 | 0,200 | 14.000 | 1.700 | 0,100 | 0,100 | 14.000 | 1.600 | 0,100 | 0,100 | 13.000 | 1.400 | 0,100 | 0,100 |
| 1 | 1,4° | 40 | 12.000 | 1.200 | 0,100 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 11.000 | 1.100 | 0,050 | 0,100 | 10.000 | 1.000 | 0,050 | 0,100 |
| 1,5 | 0,9° | 20 | 22.000 | 2.900 | 0,200 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 0,9° | 30 | 16.000 | 2.200 | 0,200 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 1,5 | 0,9° | 40 | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 1,5 | 1,4° | 20 | 22.000 | 2.900 | 0,200 | 0,600 | 18.000 | 2.700 | 0,150 | 0,300 | 18.000 | 2.500 | 0,150 | 0,300 | 15.000 | 2.000 | 0,150 | 0,300 |
| 1,5 | 1,4° | 30 | 20.000 | 2.600 | 0,200 | 0,400 | 16.000 | 2.000 | 0,100 | 0,200 | 16.000 | 1.900 | 0,100 | 0,200 | 13.000 | 1.500 | 0,100 | 0,200 |
| 1,5 | 1,4° | 40 | 16.000 | 2.200 | 0,200 | 0,400 | 14.000 | 1.800 | 0,100 | 0,200 | 14.000 | 1.700 | 0,100 | 0,200 | 11.000 | 1.300 | 0,100 | 0,200 |
| 2 | 0,9° | 30 | 18.000 | 3.000 | 0,400 | 0,500 | 16.000 | 2.800 | 0,200 | 0,400 | 16.000 | 2.600 | 0,200 | 0,400 | 12.000 | 1.900 | 0,200 | 0,400 |
| 2 | 0,9° | 40 | 18.000 | 3.000 | 0,250 | 0,600 | 16.000 | 2.800 | 0,100 | 0,300 | 16.000 | 2.600 | 0,100 | 0,300 | 12.000 | 1.900 | 0,100 | 0,300 |
| 2 | 0,9° | 50 | 14.000 | 2.200 | 0,250 | 0,400 | 12.000 | 1.800 | 0,100 | 0,300 | 12.000 | 1.700 | 0,100 | 0,200 | 9.000 | 1.700 | 0,100 | 0,200 |
| 2 | 0,9° | 60 | 16.000 | 1.800 | 0,125 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 2 | 0,9° | 70 | 16.000 | 1.800 | 0,120 | 0,200 | 12.000 | 1.200 | 0,050 | 0,100 | 12.000 | 1.100 | 0,050 | 0,100 | 9.000 | 820 | 0,050 | 0,100 |
| 2 | 1,4° | 40 | 18.000 | 3.200 | 0,300 | 0,600 | 16.000 | 3.200 | 0,150 | 0,300 | 16.000 | 3.000 | 0,150 | 0,300 | 12.000 | 2.200 | 0,150 | 0,300 |
| 2 | 1,4° | 50 | 18.000 | 2.800 | 0,300 | 0,400 | 12.000 | 2.200 | 0,150 | 0,300 | 12.000 | 2.000 | 0,150 | 0,300 | 9.000 | 1.600 | 0,150 | 0,300 |
| 2 | 1,4° | 60 | 16.000 | 2.400 | 0,300 | 0,200 | 12.000 | 1.600 | 0,100 | 0,200 | 12.000 | 15.000 | 0,100 | 0,200 | 9.000 | 1.200 | 0,100 | 0,200 |
| 3 | 0,9° | 50 | 9.000 | 3.000 | 0,400 | 0,100 | 9.000 | 2.300 | 0,200 | 0,400 | 9.000 | 2.100 | 0,200 | 0,400 | 7.000 | 1.600 | 0,200 | 0,400 |
| 3 | 0,9° | 60 | 9.000 | 2.800 | 0,400 | 0,750 | 9.000 | 2.000 | 0,200 | 0,300 | 9.000 | 1.900 | 0,200 | 0,300 | 7.000 | 1.400 | 0,200 | 0,400 |
| 3 | 0,9° | 70 | 7.000 | 2.300 | 0,400 | 0,750 | 7.000 | 1.500 | 0,200 | 0,300 | 7.000 | 1.500 | 0,200 | 0,300 | 5.900 | 1.100 | 0,200 | 0,300 |
| 3 | 0,9° | 80 | 6.000 | 2.000 | 0,300 | 0,750 | 6.000 | 1.300 | 0,150 | 0,300 | 6.000 | 1.200 | 0,150 | 0,300 | 5.000 | 900 | 0,150 | 0,300 |
| 3 | 1,4° | 60 | 9.000 | 3.200 | 0,400 | 0,750 | 9.000 | 2.400 | 0,200 | 0,400 | 9.000 | 2.200 | 0,200 | 0,400 | 7.000 | 2.000 | 0,200 | 0,400 |
| 4 | 0,9° | 60 | 7.000 | 2.400 | 0,500 | 1,000 | 7.000 | 1.700 | 0,400 | 0,400 | 7.000 | 1.500 | 0,400 | 0,400 | 5.000 | 1.100 | 0,400 | 0,400 |
| 4 | 0,9° | 80 | 7.000 | 2.200 | 0,450 | 1,000 | 6.000 | 1.500 | 0,350 | 0,400 | 6.000 | 1.300 | 0,350 | 0,400 | 4.000 | 800 | 0,350 | 0,400 |
| 4 | 1,4° | 60 | 7.000 | 2.800 | 0,500 | 1,000 | 7.000 | 2.100 | 0,400 | 0,400 | 7.000 | 1.700 | 0,400 | 0,400 | 5.000 | 1.200 | 0,400 | 0,400 |
| 4 | 1,4° | 80 | 7.000 | 2.600 | 0,450 | 1,000 | 6.000 | 1.900 | 0,350 | 0,400 | 6.000 | 1.400 | 0,350 | 0,400 | 4.000 | 900 | 0,350 | 0,400 |

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## EPL-CPR

### Regular milling

| | | | max. depth of cut | | | | | | | < 45 HRC ap=120% ae=120% | | 45 - 55 HRC ap=100% ae=120% | | 55 - 65 HRC ap=60% ae=80% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | α° | l1 | R0,1 | R0,2 | R0,3 | ap R0,5 | R1 | R2 | ae | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1 | 0° | 4 | 0,020 | 0,04 | 0,050 | - | - | - | 0,300 | 23.000 | 1.300 | 20.000 | 1.050 | 17.000 | 755 |
| 1 | 0° | 6 | 0,010 | 0,02 | 0,025 | - | - | - | 0,210 | 20.500 | 1.050 | 18.000 | 835 | 15.500 | 605 |
| 1 | 0° | 8 | 0,006 | 0,012 | 0,015 | - | - | - | 0,180 | 18.000 | 780 | 15.500 | 650 | 13.500 | 470 |
| 1 | 0° | 10 | - | 0,008 | 0,010 | - | - | - | 0,090 | 16.500 | 650 | 14.500 | 530 | 12.500 | 380 |
| 2 | 0° | 6 | - | 0,040 | - | 0,075 | - | - | 0,600 | 15.000 | 1680 | 15.000 | 1500 | 11.500 | 1.000 |
| 2 | 0° | 8 | - | 0,040 | - | 0,075 | - | - | 0,600 | 13.000 | 1.450 | 13.000 | 1.300 | 11.500 | 1.000 |
| 2 | 0° | 10 | - | 0,032 | - | 0,060 | - | - | 0,510 | 12.000 | 1.300 | 12.000 | 1.150 | 11.000 | 905 |
| 2 | 0° | 12 | - | 0,020 | - | 0,037 | - | - | 0,420 | 11.500 | 1.150 | 11.500 | 1.050 | 10.000 | 810 |
| 2 | 0° | 16 | - | 0,012 | - | 0,022 | - | - | 0,360 | 10.000 | 900 | 10.000 | 800 | 8.900 | 630 |
| 2 | 0,9° | 20 | - | - | - | 0,052 | - | - | 0,540 | 13.000 | 1.300 | 13.000 | 1.150 | 11.500 | 910 |
| 2 | 0,9° | 30 | - | - | - | 0,030 | - | - | 0,240 | 11.500 | 1.050 | 11.500 | 920 | 10.000 | 720 |
| 3 | 0° | 6 | - | 0,044 | - | 0,083 | - | - | 0,990 | 11.700 | 2000 | 10.500 | 1530 | 7.650 | 825 |
| 3 | 0° | 8 | - | 0,040 | - | 0,075 | - | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 10 | - | 0,040 | - | 0,075 | - | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 12 | - | 0,040 | - | 0,075 | - | - | 0,900 | 9.550 | 1.500 | 8.600 | 1.150 | 7.650 | 825 |
| 3 | 0° | 16 | - | 0,028 | - | 0,052 | - | - | 0,720 | 8.500 | 1.200 | 7.650 | 910 | 6.800 | 660 |
| 3 | 0,9° | 20 | - | - | - | 0,070 | 0,09 | - | 0,900 | 9.950 | 1.500 | 8.950 | 1.150 | 7.950 | 830 |
| 3 | 0,9° | 30 | - | - | - | 0,050 | 0,07 | - | 0,810 | 9.550 | 1.350 | 8.600 | 1.000 | 7.650 | 745 |
| 3 | 0,9° | 40 | - | - | - | 0,040 | 0,05 | - | 0,522 | 8.900 | 1.150 | 8.000 | 890 | 7.150 | 650 |
| 3 | 1,4° | 20 | - | - | - | 0,090 | 0,13 | - | 0,900 | 9.950 | 1.690 | 8.950 | 1.350 | 7.950 | 950 |
| 3 | 1,4° | 30 | - | - | - | 0,070 | 0,13 | - | 0,810 | 9.550 | 1.550 | 8.600 | 1.200 | 7.650 | 850 |
| 3 | 1,4° | 40 | - | - | - | - | 0,13 | - | 0,522 | 8.900 | 1.350 | 8.000 | 1.040 | 7.150 | 700 |
| 4 | 0° | 10 | - | - | - | - | 0,13 | - | 1,320 | 8.750 | 2.770 | 7.900 | 2080 | 5.750 | 1.250 |
| 4 | 0° | 12 | - | - | - | 0,075 | 0,12 | - | 1,200 | 8.350 | 2.400 | 7.500 | 1800 | 5.400 | 1.080 |
| 4 | 0° | 16 | - | - | - | 0,075 | 0,12 | - | 1,200 | 7.150 | 2.050 | 6.450 | 1.550 | 5.000 | 965 |
| 4 | 0° | 20 | - | - | - | 0,060 | 0,2 | - | 1,020 | 6.750 | 1.950 | 6.100 | 1.450 | 4.750 | 910 |
| 4 | 0,9° | 30 | - | - | - | 0,050 | 0,09 | - | 1,120 | 7.550 | 1.500 | 7.150 | 1.300 | 6.400 | 950 |
| 4 | 0,9° | 40 | - | - | - | 0,040 | 0,09 | - | 0,900 | 7.200 | 1.350 | 6.750 | 1.150 | 5.950 | 850 |
| 4 | 0,9° | 50 | - | - | - | 0,030 | 0,07 | - | 0,810 | 7.150 | 1.300 | 6.600 | 1.050 | 5.800 | 750 |
| 4 | 0,9° | 60 | - | - | - | - | 0,05 | - | 0,522 | 6.800 | 1.150 | 6.400 | 950 | 5.600 | 700 |
| 4 | 1,4° | 30 | - | - | - | 0,070 | 0,13 | - | 1,120 | 7.550 | 1.500 | 7.150 | 1.300 | 6.400 | 950 |
| 4 | 1,4° | 40 | - | - | - | 0,060 | 0,13 | - | 0,900 | 7.200 | 1.400 | 6.750 | 1.150 | 5.950 | 850 |
| 6 | 0° | 12 | - | - | - | 0,083 | 0,13 | - | 1,980 | 6.130 | 2.900 | 5.550 | 2200 | 3.850 | 900 |
| 6 | 0° | 16 | - | - | - | 0,075 | 0,12 | - | 1,800 | 5.000 | 2.170 | 4.540 | 1630 | 3.600 | 800 |
| 6 | 0° | 20 | - | - | - | 0,075 | 0,12 | - | 1,800 | 5.000 | 2.170 | 4.540 | 1630 | 3.350 | 700 |
| 6 | 0° | 25 | - | - | - | 0,075 | 0,12 | - | 1,800 | 5.000 | 2.170 | 4.540 | 1630 | 3.180 | 650 |
| 6 | 0,9° | 50 | - | - | - | 0,030 | 0,13 | - | 1,680 | 5.300 | 1.100 | 5.050 | 950 | 4.250 | 700 |
| 6 | 0,9° | 60 | - | - | - | 0,030 | 0,09 | - | 1,200 | 5.150 | 1.030 | 4.900 | 900 | 3.950 | 600 |
| 6 | 0,9° | 70 | - | - | - | 0,020 | 0,07 | - | 1,200 | 4.950 | 950 | 4.750 | 800 | 3.800 | 550 |
| 6 | 0,9° | 80 | - | - | - | - | 0,07 | - | 1,020 | 4.750 | 850 | 4.500 | 720 | 3.750 | 500 |
| 8 | 0,9° | 60 | - | - | - | 0,070 | 0,13 | - | 2,160 | 4.350 | 950 | 4.000 | 800 | 3.800 | 650 |
| 8 | 0,9° | 80 | - | - | - | 0,050 | 0,09 | 0,2 | 1,920 | 4.150 | 830 | 3.800 | 700 | 3.550 | 550 |

### Offset

| | roughness (µm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corner Radius R (mm) | 0,10 | 0,25 | 0,75 | 1,00 | 1,25 | 1,50 | 1,75 | 2,00 | 2,50 | 3,00 | 3,25 | 4,00 | 5,00 |
| R 0,1 | 0,009 | 0,014 | 0,024 | 0,028 | 0,032 | 0,035 | 0,037 | 0,040 | 0,045 | 0,049 | - | - | - |
| R 0,2 | 0,012 | 0,020 | 0,035 | 0,040 | 0,045 | 0,049 | 0,053 | 0,057 | 0,063 | 0,070 | 0,075 | 0,080 | 0,900 |
| R 0,3 | 0,015 | 0,025 | 0,042 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 | 0,085 | 0,092 | 0,098 | 0,110 |
| R 0,5 | 0,020 | 0,032 | 0,055 | 0,065 | 0,070 | 0,078 | 0,084 | 0,090 | 0,100 | 0,110 | 0,118 | 0,125 | 0,141 |
| R 1 | 0,028 | 0,045 | 0,078 | 0,090 | 0,100 | 0,110 | 0,011 | 0,125 | 0,142 | 0,155 | 0,168 | 0,180 | 0,200 |

## EPL-CPR-DIA

| | GF | | | | | | |
|---|---|---|---|---|---|---|---|
| Ø | l1 | Vc | S (min-1) | F (mm/min) | ap | ae | fz (mm) |
| 4 | 80 | 75 | 6.000 | 840 | 0,75 | 1,60 | 0,07 |
| 4 | 110 | 50 | 4.000 | 560 | 0,75 | 1,60 | 0,07 |
| 6 | 100 | 75 | 4.000 | 720 | 1,10 | 3,20 | 0,09 |
| 6 | 150 | 57 | 3.000 | 540 | 1,10 | 3,20 | 0,09 |
| 8 | 100 | 101 | 4.000 | 760 | 1,50 | 4,80 | 0,10 |
| 8 | 150 | 75 | 3.000 | 570 | 1,50 | 4,80 | 0,10 |

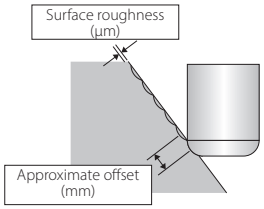
## EPL-CPR

**Side milling (Contour line finish)**

| | | | max. depth of cut | | | | | | | < 45 HRC ap=120% ae=120% | | 45 - 55 HRC ap=100% ae=120% | | 55 - 65 HRC ap=60% ae=80% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | α° | l1 | R0,1 | R0,2 | R0,3 | ap R0,5 | R1 | R2 | ae | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 1 | 0° | 4 | 0,015 | 0,020 | 0,03 | - | - | - | 0,030 | 27.000 | 1.500 | 24.500 | 1.250 | 22.500 | 995 |
| 1 | 0° | 6 | 0,015 | 0,020 | 0,03 | - | - | - | 0,027 | 24.000 | 1.200 | 21.500 | 1.000 | 20.000 | 800 |
| 1 | 0° | 8 | 0,009 | 0,012 | 0,018 | - | - | - | 0,021 | 21.000 | 950 | 19.000 | 790 | 17.500 | 620 |
| 1 | 0° | 10 | - | 0,008 | 0,012 | - | - | - | 0,015 | 19.500 | 770 | 17.500 | 640 | 16.500 | 505 |
| 2 | 0° | 6 | - | 0,020 | - | 0,05 | - | - | 0,060 | 16.500 | 1850 | 16.000 | 1.600 | 15.000 | 1.350 |
| 2 | 0° | 8 | - | 0,020 | - | 0,05 | - | - | 0,060 | 16.500 | 1.850 | 16.000 | 1.600 | 15.000 | 1.350 |
| 2 | 0° | 10 | - | 0,020 | - | 0,05 | - | - | 0,060 | 15.500 | 1.650 | 15.500 | 1.450 | 14.500 | 1.200 |
| 2 | 0° | 12 | - | 0,020 | - | 0,05 | - | - | 0,054 | 14.500 | 1.500 | 14.500 | 1.300 | 13.500 | 1.050 |
| 2 | 0° | 16 | - | 0,012 | - | 0,03 | - | - | 0,042 | 13.000 | 1.150 | 12.500 | 1.000 | 12.000 | 830 |
| 2 | 0,9° | 20 | 0,050 | - | - | - | - | - | 0,060 | 16.500 | 1.650 | 16.000 | 1.450 | 15.000 | 1.200 |
| 2 | 0,9° | 30 | 0,040 | - | - | - | - | - | 0,048 | 14.500 | 1.300 | 14.500 | 1.150 | 13.500 | 950 |
| 3 | 0° | 6 | - | 0,020 | - | 0,05 | - | - | 0,080 | 12.600 | 2.100 | 11.400 | 1.500 | 10.000 | 1.100 |
| 3 | 0° | 8 | - | 0,020 | - | 0,05 | - | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 10 | - | 0,020 | - | 0,05 | - | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 12 | - | 0,020 | - | 0,05 | - | - | 0,080 | 12.000 | 2.000 | 11.000 | 1.400 | 10.000 | 1.100 |
| 3 | 0° | 16 | - | 0,020 | - | 0,05 | - | - | 0,080 | 10.500 | 1.600 | 9.600 | 1.150 | 9.000 | 875 |
| 3 | 0,9° | 20 | 0,050 | 0,090 | - | - | - | - | 0,080 | 12.500 | 2.000 | 11.500 | 1.450 | 10.500 | 1.100 |
| 3 | 0,9° | 30 | 0,050 | 0,070 | - | - | - | - | 0,080 | 12.000 | 1.800 | 11.000 | 1.300 | 10.000 | 985 |
| 3 | 0,9° | 40 | 0,045 | 0,070 | - | - | - | - | 0,064 | 11.000 | 1.550 | 10.000 | 1.100 | 9.450 | 860 |
| 3 | 1,4° | 20 | 0,090 | 0,130 | - | - | - | - | 0,080 | 12.500 | 2.250 | 11.500 | 1.750 | 10.500 | 1.250 |
| 3 | 1,4° | 30 | 0,070 | 0,130 | - | - | - | - | 0,080 | 12.000 | 2.050 | 11.000 | 1.550 | 10.000 | 1.100 |
| 3 | 1,4° | 40 | - | 0,130 | - | - | - | - | 0,064 | 11.000 | 1.750 | 10.000 | 1.300 | 9.450 | 950 |
| 4 | 0° | 10 | - | - | - | - | 0,08 | - | 0,080 | 8.300 | 2.700 | 7.550 | 2.200 | 7.600 | 1.650 |
| 4 | 0° | 12 | - | - | - | 0,08 | 0,08 | - | 0,080 | 7.900 | 2.500 | 7.150 | 2.050 | 7.200 | 1.550 |
| 4 | 0° | 16 | - | - | - | - | 0,08 | - | 0,080 | 7.900 | 2.500 | 7.150 | 2.050 | 6.450 | 1.450 |
| 4 | 0° | 20 | - | - | - | 0,05 | 0,08 | - | 0,080 | 7.450 | 2.400 | 6.750 | 1.950 | 6.100 | 1.350 |
| 4 | 0,9° | 30 | - | - | - | 0,050 | 0,090 | - | 0,106 | 9.950 | 1.900 | 9.150 | 1.450 | 8.350 | 1.100 |
| 4 | 0,9° | 40 | - | - | - | 0,040 | 0,090 | - | 0,106 | 9.600 | 1.750 | 8.800 | 1.350 | 8.050 | 1.000 |
| 4 | 0,9° | 50 | - | - | - | 0,030 | 0,070 | - | 0,085 | 9.500 | 1.600 | 8.500 | 1.200 | 7.750 | 850 |
| 4 | 0,9° | 60 | - | - | - | - | 0,050 | - | 0,085 | 9.150 | 1.450 | 8.350 | 1.100 | 7.550 | 750 |
| 4 | 1,4° | 30 | - | - | - | 0,070 | 0,130 | - | 0,106 | 9.950 | 2.100 | 9.150 | 1.650 | 8.350 | 1.100 |
| 4 | 1,4° | 40 | - | - | - | 0,060 | 0,130 | - | 0,106 | 9.600 | 1.950 | 8.800 | 1.500 | 8.050 | 950 |
| 6 | 0° | 12 | - | - | - | 0,05 | 0,08 | - | 0,100 | 5.500 | 2.650 | 5.050 | 2.150 | 5.050 | 1.800 |
| 6 | 0° | 16 | - | - | - | 0,05 | 0,08 | - | 0,100 | 5.250 | 2.500 | 4.750 | 2.050 | 4.750 | 1.750 |
| 6 | 0° | 20 | - | - | - | 0,05 | 0,08 | - | 0,100 | 5.250 | 2.500 | 4.750 | 2.050 | 4.500 | 1.750 |
| 6 | 0° | 25 | - | - | - | 0,05 | 0,08 | - | 0,100 | 4.950 | 2.350 | 4.500 | 1.950 | 4.250 | 1.600 |
| 6 | 0,9° | 50 | - | - | - | 0,030 | 0,130 | - | 0,130 | 7.450 | 1.700 | 6.900 | 1.400 | 6.350 | 950 |
| 6 | 0,9° | 60 | - | - | - | 0,030 | 0,090 | - | 0,130 | 7.200 | 1.600 | 6.700 | 1.300 | 6.150 | 850 |
| 6 | 0,9° | 70 | - | - | - | 0,020 | 0,070 | - | 0,130 | 7.050 | 1.500 | 6.500 | 1.200 | 5.900 | 750 |
| 6 | 0,9° | 80 | - | - | - | - | 0,070 | - | 0,100 | 6.900 | 1.400 | 6.350 | 1.100 | 5.850 | 700 |
| 8 | 0,9° | 60 | - | - | - | 0,070 | 0,130 | - | 0,192 | 6.350 | 1.550 | 5.950 | 1.250 | 5.550 | 900 |
| 8 | 0,9° | 80 | - | - | - | 0,050 | 0,090 | 0,2 | 0,160 | 5.950 | 1.300 | 5.550 | 1.050 | 5.150 | |

### Offset

| roughness (µm) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corner Radius R (mm) | 0,10 | 0,25 | 0,75 | 1,00 | 1,25 | 1,50 | 1,75 | 2,00 | 2,50 | 3,00 | 3,25 | 4,00 | 5,00 |
| R 0,1 | 0,009 | 0,014 | 0,024 | 0,028 | 0,032 | 0,035 | 0,037 | 0,040 | 0,045 | 0,049 | - | - | - |
| R 0,2 | 0,012 | 0,020 | 0,035 | 0,040 | 0,045 | 0,049 | 0,053 | 0,057 | 0,063 | 0,070 | 0,075 | 0,080 | 0,900 |
| R 0,3 | 0,015 | 0,025 | 0,042 | 0,049 | 0,055 | 0,060 | 0,065 | 0,070 | 0,077 | 0,085 | 0,092 | 0,098 | 0,110 |
| R 0,5 | 0,020 | 0,032 | 0,055 | 0,065 | 0,070 | 0,078 | 0,084 | 0,090 | 0,100 | 0,110 | 0,118 | 0,125 | 0,141 |
| R 1 | 0,028 | 0,045 | 0,078 | 0,090 | 0,100 | 0,110 | 0,011 | 0,125 | 0,142 | 0,155 | 0,168 | 0,180 | 0,200 |



# CUTTING CONDITIONS



## EPA-AL-3FS/FL

### Side milling

| | Aluminium wrought alloys | Aluminium cast alloy >5% Si <10% Si |
|---|---|---|
| Vc | 500 - 800 (m/min) | 400 - 700 (m/min) |
| Ø | fz (mm) | fz (mm) |
| 3 | 0,027 | 0,024 |
| 4 | 0,036 | 0,032 |
| 5 | 0,045 | 0,041 |
| 6 | 0,054 | 0,049 |
| 8 | 0,072 | 0,065 |
| 10 | 0,090 | 0,081 |
| 12 | 0,108 | 0,097 |
| 16 | 0,144 | 0,130 |
| 20 | 0,195 | 0,175 |
| ae max. 60% x D<br>ap = 1xD | | |

## EPN-AL-3FS/FL

### Side milling

| | Aluminium wrought alloys | Aluminium cast alloy >5% Si <10% Si |
|---|---|---|
| Vc | 400 - 600 (m/min) | 350 - 500 (m/min) |
| Ø | fz (mm) | fz (mm) |
| 3 | 0,027 | 0,024 |
| 4 | 0,036 | 0,032 |
| 5 | 0,045 | 0,041 |
| 6 | 0,054 | 0,049 |
| 8 | 0,072 | 0,065 |
| 10 | 0,090 | 0,081 |
| 12 | 0,108 | 0,097 |
| 16 | 0,144 | 0,130 |
| 20 | 0,195 | 0,175 |
| ae max. 60% x D<br>ap = 1xD | | |

## EPN-AL-3FS/FL

### Slotting

| | Aluminium wrought alloys | Aluminium cast alloy >5% Si <10% Si |
|---|---|---|
| Vc | 400 - 600 (m/min) | 350 - 500 (m/min) |
| Ø | fz (mm) | fz (mm) |
| 3 | 0,019 | 0,017 |
| 4 | 0,025 | 0,022 |
| 5 | 0,032 | 0,029 |
| 6 | 0,038 | 0,034 |
| 8 | 0,050 | 0,046 |
| 10 | 0,063 | 0,057 |
| 12 | 0,076 | 0,068 |
| 16 | 0,101 | 0,091 |
| 20 | 0,137 | 0,123 |
| ap = 1xD | | |

# CUTTING CONDITIONS



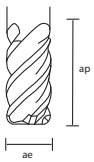
## HYP-CR-HI-WEMS / HYP-CR-HD-WEMS

### High speed contouring

| | Low Carbon - Alloy - Tool Steel | | | | | | | | | GG-GGG-GTW | | | Stainless steel | | | Aluminium - Mg | | | Ti Alloys | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HB/HRC | HB 150-250 | | | HB 20-30 | | | HRC 30-40 | | | >HB 180 | | | HRC 20 | | | | | | HRC 40-50 | | |
| N/mm² | 500~800 N/mm² | | | 800~1000 N/mm² | | | 1000~1300 N/mm² | | | Non - Alloyed | | | 400~700 N/mm² | | | Non-alloyed | | | | | |
| Vc | 160 m/min | | | 120 m/min | | | 100 m/min | | | 140 m/min | | | 50 m/min | | | 180 m/min | | | 65 m/min | | |
| Ø | FZ | S=n | F=Vf | FZ | S=n | F=Vf | FZ | S=n | F=Vf | FZ | S=n | F=Vf | FZ | S=n | F=Vf | FZ | S=n | F=Vf | FZ | S=n | F=Vf |
| 4 | 0,035 | 12.730 | 1.790 | 0,03 | 9.550 | 1.150 | 0,03 | 7.960 | 960 | 0,035 | 11.150 | 1.570 | 0,03 | 3.980 | 480 | 0,035 | 14.330 | 2.010 | 0,025 | 5.180 | 520 |
| 6 | 0,04 | 8.490 | 1.360 | 0,035 | 6.370 | 900 | 0,035 | 5.310 | 750 | 0,04 | 7.430 | 1.190 | 0,035 | 2.660 | 380 | 0,04 | 9.550 | 1.530 | 0,027 | 3.450 | 380 |
| 8 | 0,07 | 6.370 | 1.790 | 0,065 | 4.780 | 1.250 | 0,065 | 3.980 | 1040 | 0,7 | 5.580 | 1.570 | 0,065 | 1.990 | 520 | 0,07 | 7.170 | 2.010 | 0,031 | 2.590 | 330 |
| 10 | 0,1 | 5.090 | 2.040 | 0,08 | 3.820 | 1.230 | 0,08 | 3.190 | 1030 | 0,1 | 4.460 | 1.790 | 0,08 | 1.600 | 520 | 0,1 | 5.730 | 2.300 | 0,038 | 2.070 | 320 |
| 12 | 0,12 | 4.240 | 2.040 | 0,1 | 3.190 | 1.280 | 0,1 | 2.660 | 1070 | 0,12 | 3.720 | 1.790 | 0,1 | 1.330 | 540 | 0,12 | 4.780 | 2.300 | 0,045 | 1.730 | 320 |
| 16 | 0,13 | 3.180 | 1.660 | 0,12 | 2.390 | 1.150 | 0,12 | 1.990 | 960 | 0,13 | 2.790 | 1.460 | 0,12 | 1.000 | 480 | 0,13 | 3.590 | 1.870 | 0,052 | 1.300 | 280 |
| 20 | 0,15 | 2.550 | 1.530 | 0,12 | 1.910 | 920 | 0,12 | 1.600 | 770 | 0,15 | 2.230 | 1.340 | 0,12 | 800 | 390 | 0,15 | 2.870 | 1.730 | 0,059 | 1.040 | 250 |

ap x d

F(fz) correction




| ap | Fakt. |
|---|---|
| **0,5** | **1,0** |
| 1,0 | 0,7 |
| 1,5 | 0,5 |
| 2,0 | 0,3 |

ae = 1xd

| ap | Fakt. |
|---|---|
| 0,5 | 1,2 |
| **1,0** | **1,0** |
| 1,5 | 0,7 |
| 2,0 | 0,5 |

ae = 0,5xd

| ap | Fakt. |
|---|---|
| 0,5 | 1,3 |
| 1,0 | 1,2 |
| **1,5** | **1,0** |
| 2,0 | 0,8 |

ae = 0,2xd

The above stated application data are as per **RED** marked parameters.

## EPL-HI-CR-EMS / EPL-HI-CR-WEMS

| | Carbon Steel / Alloyed Steel / Tool Steel | | | | | | | | | GG-GGG-GTW | | | INOX | | | Aluminium / Mg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~20 HRC | | | 20 - 35 HRC | | | 35 - 45 HRC | | | Unalloyed | | | ~20HRC | | | Wrought Alloy | | |
| Vc | 180 m/min | | | 160 m/min | | | 140 m/min | | | 145 m/min | | | 45 m/min | | | 180 m/min | | |
| Ø | S (min⁻¹) | F (mm/min) | fz (mm) | S (min⁻¹) | F (mm/min) | fz (mm) | S (min⁻¹) | F (mm/min) | fz (mm) | S (min⁻¹) | F (mm/min) | fz (mm) | S (min⁻¹) | F (mm/min) | fz (mm) | S (min⁻¹) | F (mm/min) | fz (mm) |
| 4 | 14.320 | 1.720 | 0,03 | 12.730 | 1.370 | 0,03 | 11.140 | 1.080 | 0,02 | 11.540 | 1.300 | 0,03 | 3.580 | 310 | 0,02 | 14.320 | 1.720 | 0,03 |
| 5 | 11.460 | 1.380 | 0,03 | 10.190 | 1.220 | 0,03 | 8.920 | 1.070 | 0,03 | 9.240 | 1.110 | 0,03 | 2.870 | 230 | 0,02 | 11.460 | 1.380 | 0,03 |
| 6 | 9.550 | 1.240 | 0,03 | 8.490 | 990 | 0,03 | 7.430 | 780 | 0,03 | 7.690 | 1.100 | 0,04 | 2.390 | 230 | 0,02 | 9.550 | 1.240 | 0,03 |
| 8 | 7.160 | 1.110 | 0,04 | 6.370 | 890 | 0,03 | 5.570 | 700 | 0,03 | 5.770 | 1.000 | 0,04 | 1.790 | 200 | 0,03 | 7.160 | 1.110 | 0,04 |
| 10 | 5.730 | 1.110 | 0,05 | 5.090 | 890 | 0,04 | 4.460 | 700 | 0,04 | 4.620 | 1.000 | 0,05 | 1.430 | 200 | 0,03 | 5.730 | 1.110 | 0,05 |
| 12 | 4.770 | 1.110 | 0,06 | 4.240 | 890 | 0,05 | 3.710 | 700 | 0,05 | 3.850 | 1.000 | 0,06 | 1.190 | 200 | 0,04 | 4.770 | 1.110 | 0,06 |
| 16 | 3.580 | 1.020 | 0,07 | 3.180 | 820 | 0,06 | 2.790 | 640 | 0,06 | 2.880 | 900 | 0,08 | 900 | 190 | 0,05 | 3.580 | 1.020 | 0,07 |
| 20 | 2.860 | 960 | 0,08 | 2.250 | 770 | 0,09 | 2.230 | 610 | 0,07 | 2.340 | 800 | 0,09 | 720 | 180 | 0,06 | 2.860 | 960 | 0,08 |

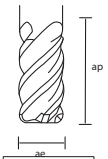
## HYP-HI-EMS / HYP-HI-WEMS

### Side milling (Contour line finish)

| | Low Carbon - Alloy - Tool Steel | | | | | | | | | GG-GGG-GTW | | | Stainless steel | | | Aluminium - Mg | | | Ti Alloys | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB 150-250 500~800 N/mm² | | | HB 20-30 800~1000 N/mm² | | | HRC 30-40 1000~1300 N/mm² | | | >HB 180 Non - Alloyed | | | HRC 20 400~700 N/mm² | | | Non - Alloyed | | | HRC 40-50 | | |
| Vc | 160 (m/min) | | | 120 (m/min) | | | 100 (m/min) | | | 140 (m/min) | | | 50 (m/min) | | | 180 (m/min) | | | 65 (m/min) | | |
| Ø | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) | Fz (mm) | S (min⁻¹) | F (mm/min) |
| 4 | 0,035 | 12.730 | 1.790 | 0,03 | 9.550 | 1.150 | 0,03 | 7.960 | 960 | 0,035 | 11.150 | 1.570 | 0,03 | 3.980 | 480 | 0,035 | 14.330 | 2.010 | 0,025 | 5.180 | 520 |
| 6 | 0,04 | 8.490 | 1.360 | 0,035 | 6.370 | 900 | 0,035 | 5.310 | 750 | 0,04 | 7.430 | 1.190 | 0,035 | 2.660 | 380 | 0,04 | 9.550 | 1.530 | 0,027 | 3.450 | 380 |
| 8 | 0,07 | 6.370 | 1.790 | 0,065 | 4.780 | 1.250 | 0,065 | 3.980 | 1040 | 0,7 | 5.580 | 1.570 | 0,065 | 1.990 | 520 | 0,07 | 7.170 | 2.010 | 0,031 | 2.590 | 330 |
| 10 | 0,1 | 5.090 | 2.040 | 0,08 | 3.820 | 1.230 | 0,08 | 3.190 | 1030 | 0,1 | 4.460 | 1.790 | 0,08 | 1.600 | 520 | 0,1 | 5.730 | 2.300 | 0,038 | 2.070 | 320 |
| 12 | 0,12 | 4.240 | 2.040 | 0,1 | 3.190 | 1.280 | 0,1 | 2.660 | 1070 | 0,12 | 3.720 | 1.790 | 0,1 | 1.330 | 540 | 0,12 | 4.780 | 2.300 | 0,045 | 1.730 | 320 |
| 16 | 0,13 | 3.180 | 1.660 | 0,12 | 2.390 | 1.150 | 0,12 | 1.990 | 960 | 0,13 | 2.790 | 1.460 | 0,12 | 1.000 | 480 | 0,13 | 3.590 | 1.870 | 0,052 | 1.300 | 280 |
| 20 | 0,15 | 2.550 | 1.530 | 0,12 | 1.910 | 920 | 0,12 | 1.600 | 770 | 0,15 | 2.230 | 1.340 | 0,12 | 800 | 390 | 0,15 | 2.870 | 1.730 | 0,059 | 1.040 | 250 |

ap x d

F(fz) correction

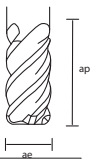



| ap | Fakt. |
|---|---|
| **0,5** | **1,0** |
| 1,0 | 0,7 |
| 1,5 | 0,5 |
| 2,0 | 0,3 |

| ae |
|---|
| 1xd |

| ap | Fakt. |
|---|---|
| 0,5 | 0,7 |
| **1,0** | **1,0** |
| 1,5 | 0,7 |
| 2,0 | 0,5 |

| ae |
|---|
| 0,5xd |




| ap | Fakt. |
|---|---|
| 0,5 | 1,3 |
| 1,0 | 1,2 |
| **1,5** | **1,0** |
| 2,0 | 0,8 |

| ae |
|---|
| 0,2xd |

The above stated application data are as per RED marked parameters.

# CUTTING CONDITIONS



## HYP-HP-WRESF

### Side milling

| | GG<br>GG-GGG | | C≤0,2%<br>S55C • SS400<br>~750 N/mm² | | ~30 HRC<br>SKD • SKS • SNCM | | 30~38 HRC<br>NAK55 • HPMI • SKT | | 38~45 HRC - SUS<br>SUS304 • X210CR12 •<br>X40CRMOV51 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) |
| 6 | 4.200 | 585 | 4.200 | 585 | 3.700 | 370 | 2.900 | 230 | 2.650 | 210 |
| 8 | 3.150 | 565 | 3.150 | 565 | 2.750 | 350 | 2.150 | 230 | 1.950 | 210 |
| 10 | 2.500 | 500 | 2.500 | 500 | 2.200 | 350 | 1.750 | 230 | 1.550 | 210 |
| 12 | 2.100 | 500 | 2.100 | 500 | 1.850 | 330 | 1.450 | 230 | 1.300 | 210 |
| 16 | 1.550 | 400 | 1.550 | 400 | 1.350 | 320 | 1.050 | 230 | 995 | 210 |
| 20 | 1.250 | 375 | 1.250 | 375 | 1.100 | 320 | 875 | 240 | 795 | 220 |

### Slotting

| | GG<br>GG-GGG | | C≤0,2%<br>S55C • SS400<br>~750 N/mm² | | ~30 HRC<br>SKD • SKS • SNCM | | 30~38 HRC<br>NAK55 • HPMI • SKT | | 38~45 HRC - SUS<br>SUS304 • X210CR12 •<br>X40CRMOV51 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) |
| 6 | 3.150 | 315 | 3.150 | 315 | 2.650 | 265 | 2.300 | 180 | 2.100 | 165 |
| 8 | 2.350 | 300 | 2.350 | 300 | 1.950 | 250 | 1.750 | 175 | 1.550 | 155 |
| 10 | 1.900 | 300 | 1.900 | 300 | 1.550 | 245 | 1.400 | 165 | 1.250 | 150 |
| 12 | 1.550 | 280 | 1.550 | 280 | 1.300 | 235 | 1.150 | 160 | 1.050 | 145 |
| 16 | 1.150 | 280 | 1.150 | 280 | 995 | 235 | 875 | 140 | 795 | 125 |
| 20 | 955 | 280 | 955 | 280 | 795 | 235 | 700 | 140 | 635 | 125 |
| 25 | 700 | 245 | 700 | 245 | 640 | 225 | 510 | 125 | 460 | 115 |

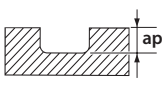
## HYP-SB-EBD

### Centre cutting

| | Cu | | | | | | 30~35 HRC | | | | | 35~42 HRC | | | | | 42~55 HRC | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 300 (m/min) | | | | | | 280 (m/min) | | | | | 260 (m/min) | | | | | 240 (m/min) | | | | |
| Ø | Z | fz<br>(mm) | ap<br>(mm) | ae<br>(mm) | n<br>(min⁻¹) | F<br>(mm/<br>min) | fz<br>(mm) | ap<br>(mm) | ae<br>(mm) | n<br>(min⁻¹) | F<br>(mm/<br>min) | fz<br>(mm) | ap<br>(mm) | ae<br>(mm) | n<br>(min⁻¹) | F<br>(mm/<br>min) | fz<br>(mm) | ap<br>(mm) | ae<br>(mm) | n<br>(min⁻¹) | F<br>(mm/<br>min) |
| 3 | 2 | 0,045 | 0,15 | 0,6 | 31.847 | 2866 | 0,045 | 0,15 | 0,6 | 29.724 | 2675 | 0,045 | 0,15 | 0,6 | 27.601 | 2484 | 0,045 | 0,15 | 0,6 | 25.478 | 2293 |
| 4 | 2 | 0,06 | 0,2 | 0,8 | 23.885 | 2866 | 0,06 | 0,2 | 0,8 | 22.293 | 2675 | 0,06 | 0,2 | 0,8 | 20.701 | 2484 | 0,06 | 0,2 | 0,8 | 19.108 | 2293 |
| 5 | 2 | 0,075 | 0,25 | 1 | 19.108 | 2866 | 0,075 | 0,25 | 1 | 17.834 | 2675 | 0,075 | 0,25 | 1 | 16.561 | 2484 | 0,075 | 0,25 | 1 | 15.287 | 2293 |
| 6 | 2 | 0,09 | 0,3 | 1,2 | 15.924 | 2866 | 0,09 | 0,3 | 1,2 | 14.862 | 2675 | 0,09 | 0,3 | 1,2 | 13.800 | 2484 | 0,09 | 0,3 | 1,2 | 12.739 | 2293 |
| 8 | 2 | 0,12 | 0,4 | 1,6 | 11.943 | 2866 | 0,12 | 0,4 | 1,6 | 11.146 | 2675 | 0,12 | 0,4 | 1,6 | 10.350 | 2484 | 0,12 | 0,4 | 1,6 | 9.554 | 2293 |
| 10 | 2 | 0,15 | 0,5 | 2 | 9.554 | 2866 | 0,15 | 0,5 | 2 | 8.917 | 2675 | 0,15 | 0,5 | 2 | 8.280 | 2484 | 0,15 | 0,5 | 2 | 7.643 | 2293 |
| 12 | 2 | 0,18 | 0,6 | 2,4 | 7.962 | 2866 | 0,18 | 0,6 | 2,4 | 7.431 | 2675 | 0,18 | 0,6 | 2,4 | 6.900 | 2484 | 0,18 | 0,6 | 2,4 | 6.369 | 2293 |

## HYP-ZDS

### Counterboring

| | C≤0,2% - GG<br>S55C • SS400 • GG25<br>~750 N/mm2 | | ~30 HRC<br>SCM • SKS • SKT • SKD | | 30~38 HRC<br>NAK55 • HPMI • SKT • SKD | | 38~45 HRC<br>SUS<br>SUS304 • SKD | | Aluminium Alloy<br>A7075 | | Aluminium Alloy Casting<br><Si 13% | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 60~80 (m/min) | | 40~60 (m/min) | | 30~50 (m/min) | | 20~40 (m/min) | | 80~200 (m/min) | | 40~150 (m/min) | |
| Ø | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) | S<br>(min⁻¹) | F<br>(mm/min) |
| 4 | 5.950 | 360 | 4.950 | 295 | 4.000 | 240 | 3.200 | 155 | 12.500 | 915 | 9.550 | 575 |
| 5 | 4.800 | 360 | 3.950 | 295 | 3.200 | 240 | 2.550 | 155 | 10.000 | 915 | 7.650 | 575 |
| 6 | 4.000 | 360 | 3.300 | 295 | 2.700 | 240 | 2.150 | 155 | 8.400 | 915 | 6.400 | 575 |
| 7 | 3.400 | 360 | 2.800 | 295 | 2.300 | 240 | 1.850 | 155 | 7.200 | 915 | 5.500 | 575 |
| 8 | 3.000 | 360 | 2.450 | 295 | 2.000 | 240 | 1.600 | 155 | 6.350 | 915 | 4.750 | 575 |
| 9 | 2.650 | 360 | 2.200 | 295 | 1.800 | 240 | 1.450 | 155 | 5.600 | 915 | 4.200 | 575 |
| 10 | 2.400 | 360 | 2.000 | 295 | 1.600 | 240 | 1.300 | 155 | 5.000 | 915 | 3.800 | 575 |
| Max cutting depth |  | | | | | | | | | | | |

| ap |
|---|
| 0,5D |

## HYP-F1

### Slotting

| | AL | | Plastic | |
|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 3 | 40.000 | 2.500 | 20.000 | 2.000 |
| 4 | 35.000 | 2.500 | 20.000 | 2.000 |
| 5 | 30.000 | 3.000 | 20.000 | 3.000 |
| 6 | 25.000 | 3.000 | 20.000 | 3.000 |
| 8 | 25.000 | 3.000 | 20.000 | 3.000 |
| 10 | 22.300 | 3.000 | 16.000 | 2.400 |
| 12 | 18.600 | 3.000 | 13.500 | 2.400 |

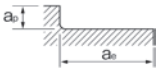
# CUTTING CONDITIONS



# PXHF-AM

**For both PXMZ straight shank holder / PXMC collet**

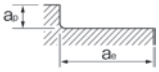
## Frontal Milling L/D ≤ 4

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 110~130m/min | | 90~110m/min | | 65~85m/min | | 125~145m/min | | 110~130m/min | | 90~110m/min | | 30~50m/min | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 3.180 | 5.270 | 2.650 | 4.390 | 1.990 | 1.580 | 3.580 | 5.930 | 3.180 | 5.270 | 2.650 | 4.390 | 1.060 | 760 |
| 16 | 2.390 | 5.280 | 1.990 | 4.390 | 1.490 | 1.570 | 2.690 | 5.940 | 2.390 | 5.280 | 1.990 | 4.390 | 800 | 770 |
| 20 | 1.910 | 5.270 | 1.590 | 4.390 | 1.190 | 1.570 | 2.150 | 5.930 | 1.910 | 5.270 | 1.590 | 4.390 | 640 | 770 |
| Depth of cut |  | | | | | | | | | | | | | |

| ae | ap |
|---|---|
| Max: 0,5D | Max: 0,04D |

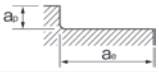
During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.

## Frontal Milling 4<L/D ≤ 5

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 100~120m/min | | 80~100m/min | | 60~80m/min | | 115~135m/min | | 100~120m/min | | 80~100m/min | | 25~45m/min | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 2.920 | 3.780 | 2.390 | 3.100 | 1.860 | 1.210 | 3.320 | 4.300 | 2.920 | 3.780 | 2.390 | 3.100 | 930 | 540 |
| 16 | 2.190 | 3.780 | 1.790 | 3.090 | 1.390 | 1.200 | 2.490 | 4.300 | 2.190 | 3.780 | 1.790 | 3.090 | 700 | 540 |
| 20 | 1.750 | 3.780 | 1.430 | 3.090 | 1.110 | 1.200 | 1.990 | 4.300 | 1.750 | 3.780 | 1.430 | 3.090 | 560 | 540 |
| Depth of cut |  | | | | | | | | | | | | | |

| ae | ap |
|---|---|
| Max: 0,5D | Max: 0,03D |

## Frontal Milling 5<L/D ≤ 6

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 90~110m/min | | 70~90m/min | | 50~70m/min | | 100~120m/min | | 90~110m/min | | 70~90m/min | | 20~40m/min | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 2.650 | 2.670 | 2.120 | 2.140 | 1.590 | 800 | 2.920 | 2.940 | 2.650 | 2.670 | 2.120 | 2.140 | 800 | 350 |
| 16 | 1.990 | 2.670 | 1.590 | 2.140 | 1.190 | 800 | 2.190 | 2.940 | 1.990 | 2.670 | 1.590 | 2.140 | 600 | 350 |
| 20 | 1.590 | 2.670 | 1.270 | 2.130 | 960 | 810 | 1.750 | 2.940 | 1.590 | 2.670 | 1.270 | 2.130 | 480 | 350 |
| Depth of cut |  | | | | | | | | | | | | | |

| ae | ap |
|---|---|
| Max: 0,5D | Max: 0,02D |

# PXHF-AM

## Side Milling

| | Prehardened Steel • Hardened Steel ~45HRC | | Hardened Steel ~62HRC | | Hardened Steel ~70HRC | | Stainless Steel ≤200HB | | Cobalt Chromium Based Alloy (Stellite) | | Titanium Alloy | | Ni based Alloy (Inconel 718) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | 80~100m/min | | 50~70m/min | | 50~70m/min | | 100~120m/min | | 90~110m/min | | 70~90m/min | | 30~50m/min | |
| DC | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 12 | 2.390 | 1.200 | 1.590 | 570 | 1.060 | 230 | 2.650 | 1.340 | 2.390 | 1.200 | 1.590 | 570 | 800 | 230 |
| 16 | 1.790 | 1.200 | 1.190 | 570 | 800 | 230 | 1.990 | 1.340 | 1.790 | 1.200 | 1.190 | 570 | 600 | 230 |
| 20 | 1.430 | 1.200 | 960 | 580 | 640 | 230 | 1.590 | 1.340 | 1.430 | 1.200 | 960 | 580 | 480 | 230 |
| Depth of cut | ae: Max: 0,05D / ap: Max: 0,5D | | ae: Max: 0,02D / ap: Max: 0,5D | | | | ae: Max: 0,05D / ap: Max: 0,5D | | | | ae: Max: 0,02D / ap: Max: 0,5D | | | |

1. This tool is recommended for the roughing of additive manufacturing and mold overlay surfaces.
2. Please use machines and holders that are rigid and highly accurate.
3. The values listed above are for reference. Please set the cutting condition in accordance with the actual machining environment.
4.Please reduce the feed rate when the depth of cut is greater than specified.
5. Please adjust the cutting condition when the overhang length is longer.
6. Please use a suitable fluid with high smoke retardant properties.
7. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
8. Please use water-soluble coolant when machining stainless steel, cobalt-chromiumalloy, titanium alloy, and Ni-based alloy.
9.Tool runout should be kept to a minimum for maximum accuracy.
10. When the cutting load fluctuates in areas such as the corners, please reduce the rotational speed.
11. If the pick amount is 0.5 x D or more, cusp may occur on the machined surface.

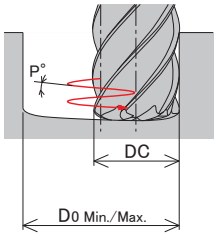
During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.

## PXHF-AM

**For both PXMZ straight shank holder / PXMC collet**

**Maximum Ramping Angle (E°)**

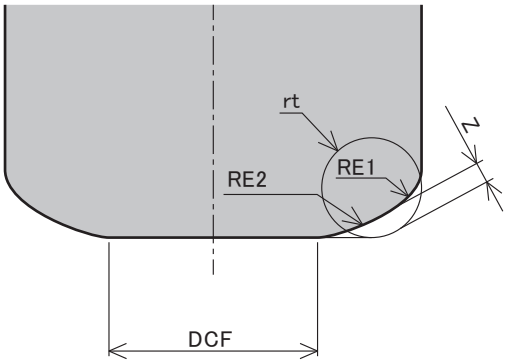
| Designation | Ramping Angle E° | Helical Milling (mm) | | Helical Angle P° |
|---|---|---|---|---|
| | | D0 Min. | D0 Max. | |
| PXHF-AM120C12-06R150-O | 3° | 18 | 23 | 1,5° |
| PXHF-AM160C16-06R200-O | 3° | 24 | 31 | 1,5° |
| PXHF-AM200C20-06R250-O | 3° | 30 | 39 | 1,5° |




### Edge shape definitions for the purpose of creating a program

| Designation | R rt | Remainder Z |
|---|---|---|
| PXHF-AM120C12-06R150-O | R1,5 | 0,36 |
| PXHF-AM160C16-06R200-O | R2 | 0,47 |
| PXHF-AM200C20-06R250-O | R2,5 | 0,59 |

During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.



# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## V-XPM-WEDS / V-WEDS

### Slotting

| | | E24 • XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron | | | 35NCD16 • 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel | | | 316 • 304 800 MPA Stainless steel | | | Z38CDV5 • Z40CDV5 38 ~ 45 HRC Treated & pre-treated steel | | | Inconel • Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base | | | TA6V 900 ~ 1100 MPA Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 2 | 2 | 8.754 | 70 | 0,004 | 7.162 | 57 | 0,004 | 3.979 | 32 | 0,004 | 4.775 | 38 | 0,004 | 2.387 | 19 | 0,004 | 3.501 | 28 | 0,004 |
| 2 | 2,5 | 7.003 | 63 | 0,005 | 5.730 | 52 | 0,005 | 3.183 | 29 | 0,005 | 3.820 | 34 | 0,005 | 1.910 | 17 | 0,005 | 2.801 | 25 | 0,005 |
| 2 | 3 | 5.836 | 70 | 0,006 | 4.775 | 57 | 0,006 | 2.653 | 32 | 0,006 | 3.183 | 38 | 0,006 | 1.592 | 19 | 0,006 | 2.334 | 28 | 0,006 |
| 2 | 3,5 | 5.002 | 70 | 0,007 | 4.093 | 57 | 0,007 | 2.274 | 32 | 0,007 | 2.728 | 38 | 0,007 | 1.364 | 19 | 0,007 | 2.001 | 28 | 0,007 |
| 2 | 4 | 4.377 | 70 | 0,008 | 3.581 | 57 | 0,008 | 1.989 | 32 | 0,008 | 2.387 | 38 | 0,008 | 1.194 | 19 | 0,008 | 1.751 | 28 | 0,008 |
| 2 | 4,5 | 3.890 | 70 | 0,009 | 3.183 | 57 | 0,009 | 1.768 | 32 | 0,009 | 2.122 | 38 | 0,009 | 1.061 | 19 | 0,009 | 1.556 | 28 | 0,009 |
| 2 | 5 | 3.501 | 70 | 0,01 | 2.865 | 57 | 0,01 | 1.592 | 32 | 0,01 | 1.910 | 38 | 0,01 | 955 | 19 | 0,01 | 1.401 | 28 | 0,01 |
| 2 | 5,5 | 3.183 | 76 | 0,012 | 2.604 | 63 | 0,012 | 1.447 | 35 | 0,012 | 1.736 | 42 | 0,012 | 868 | 21 | 0,012 | 1.273 | 31 | 0,012 |
| 2 | 6 | 2.918 | 82 | 0,014 | 2.387 | 67 | 0,014 | 1.326 | 37 | 0,014 | 1.592 | 45 | 0,014 | 796 | 22 | 0,014 | 1.167 | 33 | 0,014 |
| 2 | 6,5 | 2.693 | 81 | 0,015 | 2.204 | 66 | 0,015 | 1.224 | 37 | 0,015 | 1.469 | 44 | 0,015 | 735 | 22 | 0,015 | 1.077 | 32 | 0,015 |
| 2 | 7 | 2.501 | 75 | 0,015 | 2.046 | 61 | 0,015 | 1.137 | 34 | 0,015 | 1.364 | 41 | 0,015 | 682 | 20 | 0,015 | 1.000 | 30 | 0,015 |
| 2 | 7,5 | 2.334 | 75 | 0,016 | 1.910 | 61 | 0,016 | 1.061 | 34 | 0,016 | 1.273 | 41 | 0,016 | 637 | 20 | 0,016 | 934 | 30 | 0,016 |
| 2 | 8 | 2.188 | 79 | 0,018 | 1.790 | 64 | 0,018 | 995 | 36 | 0,018 | 1.194 | 43 | 0,018 | 597 | 21 | 0,018 | 875 | 32 | 0,018 |
| 2 | 8,5 | 2.060 | 78 | 0,019 | 1.685 | 64 | 0,019 | 936 | 36 | 0,019 | 1.123 | 43 | 0,019 | 562 | 21 | 0,019 | 824 | 31 | 0,019 |
| 2 | 9 | 1.945 | 78 | 0,02 | 1.592 | 64 | 0,02 | 884 | 35 | 0,02 | 1.061 | 42 | 0,02 | 531 | 21 | 0,02 | 778 | 31 | 0,02 |
| 2 | 9,5 | 1.843 | 81 | 0,022 | 1.508 | 66 | 0,022 | 838 | 37 | 0,022 | 1.005 | 44 | 0,022 | 503 | 22 | 0,022 | 737 | 32 | 0,022 |
| 2 | 10 | 1.751 | 84 | 0,024 | 1.432 | 69 | 0,024 | 796 | 38 | 0,024 | 955 | 46 | 0,024 | 477 | 23 | 0,024 | 700 | 34 | 0,024 |
| 2 | 11 | 1.592 | 80 | 0,025 | 1.303 | 65 | 0,025 | 724 | 36 | 0,025 | 869 | 43 | 0,025 | 434 | 22 | 0,025 | 637 | 32 | 0,025 |
| 2 | 12 | 1.460 | 73 | 0,025 | 1.194 | 60 | 0,025 | 663 | 33 | 0,025 | 796 | 40 | 0,025 | 398 | 20 | 0,025 | 584 | 29 | 0,025 |
| 2 | 13 | 1.347 | 67 | 0,025 | 1.102 | 55 | 0,025 | 612 | 31 | 0,025 | 735 | 37 | 0,025 | 367 | 18 | 0,025 | 539 | 27 | 0,025 |
| 2 | 14 | 1.251 | 63 | 0,025 | 1.024 | 51 | 0,025 | 569 | 28 | 0,025 | 682 | 34 | 0,025 | 341 | 17 | 0,025 | 500 | 25 | 0,025 |
| 2 | 15 | 1.168 | 70 | 0,03 | 955 | 57 | 0,03 | 531 | 32 | 0,03 | 637 | 38 | 0,03 | 318 | 19 | 0,03 | 467 | 28 | 0,03 |
| 2 | 16 | 1.095 | 66 | 0,03 | 896 | 54 | 0,03 | 498 | 30 | 0,03 | 597 | 36 | 0,03 | 299 | 18 | 0,03 | 438 | 26 | 0,03 |
| 2 | 17 | 1.030 | 62 | 0,03 | 843 | 51 | 0,03 | 468 | 28 | 0,03 | 562 | 34 | 0,03 | 281 | 17 | 0,03 | 412 | 25 | 0,03 |
| 2 | 18 | 973 | 68 | 0,035 | 796 | 56 | 0,035 | 442 | 31 | 0,035 | 531 | 37 | 0,035 | 265 | 19 | 0,035 | 389 | 27 | 0,035 |
| 2 | 19 | 922 | 65 | 0,035 | 754 | 53 | 0,035 | 419 | 29 | 0,035 | 503 | 35 | 0,035 | 251 | 18 | 0,035 | 369 | 26 | 0,035 |
| 2 | 20 | 876 | 70 | 0,04 | 717 | 57 | 0,04 | 398 | 32 | 0,04 | 478 | 38 | 0,04 | 239 | 19 | 0,04 | 350 | 28 | 0,04 |
| 2 | 22 | 796 | 72 | 0,045 | 651 | 59 | 0,045 | 362 | 33 | 0,045 | 434 | 39 | 0,045 | 217 | 20 | 0,045 | 318 | 29 | 0,045 |
| 2 | 24 | 730 | 73 | 0,05 | 597 | 60 | 0,05 | 332 | 33 | 0,05 | 398 | 40 | 0,05 | 199 | 20 | 0,05 | 292 | 29 | 0,05 |
| 2 | 25 | 701 | 77 | 0,055 | 573 | 63 | 0,055 | 318 | 35 | 0,055 | 382 | 42 | 0,055 | 191 | 21 | 0,055 | 280 | 31 | 0,055 |
| 2 | 30 | 584 | 70 | 0,06 | 478 | 57 | 0,06 | 265 | 32 | 0,06 | 318 | 38 | 0,06 | 159 | 19 | 0,06 | 234 | 28 | 0,06 |

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the column by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the column by X by 2 times the cutting speed.
For V-WEDS, reduce cutting speed by 20% and feed/flute by 10%.

## V-XPM-WETS / V-WETS

### Slotting

| | | E24 • XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron | | | 35NCD16 • 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel | | | 316 • 304 800 MPA Stainless steel | | | Z38CDV5 • Z40CDV5 38 ~ 45 HRC Treated & pre-treated steel | | | Inconel • Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base | | | TA6V 900 ~ 1100 MPA Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 3 | 3 | 5.836 | 70 | 0,004 | 4.775 | 57 | 0,004 | 2.653 | 32 | 0,004 | 3.183 | 38 | 0,004 | 1.592 | 19 | 0,004 | 2.334 | 28 | 0,004 |
| 3 | 4 | 4.377 | 79 | 0,006 | 3.581 | 64 | 0,006 | 1.989 | 36 | 0,006 | 2.387 | 43 | 0,006 | 1.194 | 21 | 0,006 | 1.751 | 32 | 0,006 |
| 3 | 5 | 3.501 | 84 | 0,008 | 2.865 | 69 | 0,008 | 1.592 | 38 | 0,008 | 1.910 | 46 | 0,008 | 955 | 23 | 0,008 | 1.401 | 34 | 0,008 |
| 3 | 6 | 2.918 | 96 | 0,011 | 2.387 | 79 | 0,011 | 1.326 | 44 | 0,011 | 1.592 | 53 | 0,011 | 796 | 26 | 0,011 | 1.167 | 39 | 0,011 |
| 3 | 7 | 2.501 | 83 | 0,011 | 2.046 | 68 | 0,011 | 1.137 | 38 | 0,011 | 1.364 | 45 | 0,011 | 682 | 23 | 0,011 | 1.000 | 33 | 0,011 |
| 3 | 8 | 2.188 | 85 | 0,013 | 1.790 | 70 | 0,013 | 995 | 39 | 0,013 | 1.194 | 47 | 0,013 | 597 | 23 | 0,013 | 875 | 34 | 0,013 |
| 3 | 10 | 1.751 | 95 | 0,018 | 1.432 | 77 | 0,018 | 796 | 43 | 0,018 | 955 | 52 | 0,018 | 477 | 26 | 0,018 | 700 | 38 | 0,018 |
| 3 | 12 | 1.459 | 109 | 0,025 | 1.194 | 90 | 0,025 | 663 | 50 | 0,025 | 796 | 60 | 0,025 | 398 | 30 | 0,025 | 584 | 44 | 0,025 |
| 3 | 14 | 1.251 | 105 | 0,028 | 1.023 | 86 | 0,028 | 568 | 48 | 0,028 | 682 | 57 | 0,028 | 341 | 29 | 0,028 | 500 | 42 | 0,028 |
| 3 | 15 | 1.161 | 98 | 0,028 | 955 | 80 | 0,028 | 531 | 45 | 0,028 | 637 | 53 | 0,028 | 318 | 27 | 0,028 | 467 | 39 | 0,028 |
| 3 | 16 | 1.094 | 105 | 0,032 | 895 | 86 | 0,032 | 497 | 48 | 0,032 | 597 | 57 | 0,032 | 298 | 29 | 0,032 | 438 | 42 | 0,032 |
| 3 | 18 | 973 | 102 | 0,035 | 796 | 84 | 0,035 | 442 | 46 | 0,035 | 531 | 56 | 0,035 | 265 | 28 | 0,035 | 389 | 41 | 0,035 |
| 3 | 20 | 875 | 105 | 0,04 | 716 | 86 | 0,04 | 398 | 48 | 0,04 | 477 | 57 | 0,04 | 239 | 29 | 0,04 | 350 | 42 | 0,04 |
| 3 | 22 | 796 | 107 | 0,045 | 651 | 88 | 0,045 | 362 | 49 | 0,045 | 434 | 59 | 0,045 | 217 | 29 | 0,045 | 318 | 43 | 0,045 |
| 3 | 24 | 729 | 109 | 0,05 | 597 | 90 | 0,05 | 332 | 50 | 0,05 | 398 | 60 | 0,05 | 199 | 30 | 0,05 | 292 | 44 | 0,05 |
| 3 | 25 | 700 | 116 | 0,055 | 573 | 95 | 0,055 | 318 | 53 | 0,055 | 382 | 63 | 0,055 | 191 | 32 | 0,055 | 280 | 46 | 0,055 |
| 3 | 30 | 584 | 105 | 0,06 | 477 | 86 | 0,06 | 265 | 48 | 0,06 | 318 | 57 | 0,06 | 159 | 29 | 0,06 | 233 | 42 | 0,06 |

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the column by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the column by X by 2 times the cutting speed.
For V-WEDS, reduce cutting speed by 20% and feed/flute by 10%.

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## V-XPM-WEMS / V-WEMS

### Side milling

| | | E24 • XC48<br>Fonte GG25<br>490 ~ 750 MPA<br>Low carbon steel, cast iron | | | 35NCD16 • 40CMD8<br>750 ~ 1100 MPA<br>Alloy steel, tool steel | | | 316 • 304<br>800 MPA<br>Stainless steel | | | Z38CDV5 • Z40CDV5<br>38 ~ 45 HRC<br>Treated & pre-treated steel | | | Inconel • Hastelloy<br>35 ~ 43 HRC<br>Steel alloys, Nickel base | | | TA6V<br>900 ~ 1100 MPA<br>Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 60 m/min | | | 50 m/min | | | 30 m/min | | | 30 m/min | | | 15 m/min | | | 25 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 4 | 3 | 6.366 | 76 | 0,003 | 5.305 | 64 | 0,003 | 3.183 | 38 | 0,003 | 3.183 | 38 | 0,003 | 1.592 | 19 | 0,003 | 2.653 | 32 | 0,003 |
| 4 | 4 | 4.775 | 76 | 0,004 | 3.979 | 64 | 0,004 | 2.387 | 38 | 0,004 | 2.387 | 38 | 0,004 | 1.194 | 19 | 0,004 | 1.989 | 32 | 0,004 |
| 4 | 5 | 3.820 | 76 | 0,005 | 3.183 | 64 | 0,005 | 1.910 | 38 | 0,005 | 1.910 | 38 | 0,005 | 955 | 19 | 0,005 | 1.592 | 32 | 0,005 |
| 4 | 6 | 3.183 | 127 | 0,01 | 2.653 | 106 | 0,01 | 1.592 | 64 | 0,01 | 1.592 | 64 | 0,01 | 796 | 32 | 0,01 | 1.326 | 53 | 0,01 |
| 4 | 7 | 2.728 | 218 | 0,02 | 2.274 | 182 | 0,02 | 1.364 | 109 | 0,02 | 1.364 | 109 | 0,02 | 682 | 55 | 0,02 | 1.137 | 91 | 0,02 |
| 4 | 8 | 2.387 | 191 | 0,02 | 1.989 | 159 | 0,02 | 1.194 | 95 | 0,02 | 1.194 | 95 | 0,02 | 597 | 48 | 0,02 | 995 | 80 | 0,02 |
| 4 | 10 | 1.910 | 229 | 0,03 | 1.592 | 191 | 0,03 | 955 | 115 | 0,03 | 955 | 115 | 0,03 | 477 | 57 | 0,03 | 796 | 95 | 0,03 |
| 4 | 12 | 1.592 | 286 | 0,045 | 1.326 | 239 | 0,045 | 796 | 143 | 0,045 | 796 | 143 | 0,045 | 398 | 72 | 0,045 | 663 | 119 | 0,045 |
| 4 | 14 | 1.364 | 273 | 0,05 | 1.137 | 227 | 0,05 | 682 | 136 | 0,05 | 682 | 136 | 0,05 | 341 | 68 | 0,05 | 568 | 114 | 0,05 |
| 4 | 15 | 1.273 | 280 | 0,055 | 1.061 | 233 | 0,055 | 637 | 140 | 0,055 | 637 | 140 | 0,055 | 318 | 70 | 0,055 | 531 | 117 | 0,055 |
| 4 | 16 | 1.194 | 263 | 0,055 | 995 | 219 | 0,055 | 597 | 131 | 0,055 | 597 | 131 | 0,055 | 298 | 66 | 0,055 | 497 | 109 | 0,055 |
| 4 | 18 | 1.061 | 276 | 0,065 | 884 | 230 | 0,065 | 531 | 138 | 0,065 | 531 | 138 | 0,065 | 265 | 69 | 0,065 | 442 | 115 | 0,065 |
| 4 | 20 | 955 | 267 | 0,07 | 796 | 223 | 0,07 | 477 | 134 | 0,07 | 477 | 134 | 0,07 | 239 | 67 | 0,07 | 398 | 111 | 0,07 |
| 6 | 22 | 868 | 286 | 0,055 | 723 | 239 | 0,055 | 434 | 143 | 0,055 | 434 | 143 | 0,055 | 217 | 72 | 0,055 | 362 | 119 | 0,055 |
| 6 | 24 | 796 | 286 | 0,06 | 663 | 239 | 0,06 | 398 | 143 | 0,06 | 398 | 143 | 0,06 | 199 | 72 | 0,06 | 332 | 119 | 0,06 |
| 6 | 25 | 764 | 275 | 0,06 | 637 | 229 | 0,06 | 382 | 138 | 0,06 | 382 | 138 | 0,06 | 191 | 69 | 0,06 | 318 | 115 | 0,06 |
| 6 | 30 | 637 | 267 | 0,07 | 531 | 223 | 0,07 | 318 | 134 | 0,07 | 318 | 134 | 0,07 | 159 | 67 | 0,07 | 265 | 111 | 0,07 |

These parameters are for use with cutting-depth of 1,5 D and a cutting-width of 1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the column by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the column by X by 2 times the cutting speed.
For V-WEMS, reduce cutting speed by 20% and feed/flute by 10%.

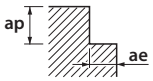
## SI-WH-WRESF

### Side milling

| | Cast Iron<br>FC250 | | Mild Steels • Carbon Steels<br>SS400 - S50C | | ~ 30HRC<br>SCM-SKT-SKS-SKD | | ~ 45 HRC<br>SKD-NAK80 | | Stainless Steel<br>SUS304 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 2.920 | 300 | 3.450 | 300 | 2.650 | 210 | 2.390 | 170 | 1.860 | 130 | 1.330 | 80 |
| 8 | 2.190 | 340 | 2.590 | 350 | 1.990 | 240 | 1.790 | 190 | 1.390 | 150 | 990 | 90 |
| 10 | 1.750 | 380 | 2.070 | 390 | 1.590 | 270 | 1.430 | 220 | 1.110 | 170 | 800 | 110 |
| 12 | 1.460 | 410 | 1.720 | 420 | 1.330 | 290 | 1.190 | 230 | 930 | 180 | 660 | 110 |
| 16 | 1.090 | 480 | 1.290 | 490 | 990 | 340 | 900 | 270 | 700 | 210 | 500 | 130 |
| 20 | 880 | 510 | 1.030 | 520 | 800 | 360 | 720 | 290 | 560 | 230 | 400 | 140 |
| 25 | 700 | 490 | 830 | 510 | 640 | 350 | 570 | 280 | 450 | 220 | 320 | 140 |

Max cutting depth

| ap | ae |
|---|---|
| ≤15 | ≤0,5D |



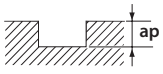

## SI-WH-WRESF

### Slotting

| | Cast Iron<br>FC250 | | Mild Steels • Carbon Steels<br>SS400 - S50C | | ~ 30HRC<br>SCM-SKT-SKS-SKD | | ~ 45 HRC<br>SKD-NAK80 | | Stainless Steel<br>SUS304 | | Titanium Alloy<br>Ti-6Al-4V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 6 | 2.390 | 160 | 2.650 | 160 | 2.120 | 110 | 1.860 | 90 | 1.330 | 60 | 800 | 30 |
| 8 | 1.790 | 200 | 1.990 | 190 | 1.590 | 140 | 1.390 | 110 | 990 | 80 | 600 | 40 |
| 10 | 1.430 | 220 | 1.590 | 210 | 1.270 | 150 | 1.110 | 120 | 800 | 80 | 480 | 40 |
| 12 | 1.190 | 230 | 1.330 | 220 | 1.060 | 160 | 930 | 120 | 660 | 90 | 400 | 50 |
| 16 | 900 | 270 | 990 | 260 | 800 | 190 | 700 | 150 | 500 | 110 | 300 | 60 |
| 20 | 720 | 290 | 800 | 280 | 640 | 210 | 560 | 160 | 400 | 110 | 240 | 60 |
| 25 | 570 | 280 | 640 | 280 | 510 | 200 | 450 | 150 | 320 | 110 | 190 | 60 |

Max cutting depth

| ap | ≤1D |
|---|---|
| ap Max | 20 mm |



## V-XPM-WRESF / V-WREES / V-WRESF

### Slotting

| | | E24 • XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron | | | 35NCD16 • 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel | | | 316 • 304 800 MPA Stainless steel | | | Z38CDV5 • Z40CDV5 38 ~ 45 HRC Treated & pre-treated steel | | | Inconel • Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base | | | TA6V 900 ~ 1100 MPA Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 4 | 6 | 2.918 | 233 | 0,02 | 2.387 | 191 | 0,02 | 1.326 | 106 | 0,02 | 1.592 | 127 | 0,02 | 796 | 64 | 0,02 | 1.167 | 93 | 0,02 |
| 4 | 7 | 2.501 | 250 | 0,025 | 2.046 | 205 | 0,025 | 1.137 | 114 | 0,025 | 1.364 | 136 | 0,025 | 682 | 68 | 0,025 | 1.000 | 100 | 0,025 |
| 4 | 8 | 2.188 | 263 | 0,03 | 1.790 | 215 | 0,03 | 995 | 119 | 0,03 | 1.194 | 143 | 0,03 | 597 | 72 | 0,03 | 875 | 105 | 0,03 |
| 4 | 10 | 1.751 | 280 | 0,04 | 1.432 | 229 | 0,04 | 796 | 127 | 0,04 | 955 | 153 | 0,04 | 477 | 76 | 0,04 | 700 | 112 | 0,04 |
| 4 | 12 | 1.459 | 350 | 0,06 | 1.194 | 286 | 0,06 | 663 | 159 | 0,06 | 796 | 191 | 0,06 | 398 | 95 | 0,06 | 584 | 140 | 0,06 |
| 4 | 14 | 1.251 | 325 | 0,065 | 1.023 | 266 | 0,065 | 568 | 148 | 0,065 | 682 | 177 | 0,065 | 341 | 89 | 0,065 | 500 | 130 | 0,065 |
| 4 | 15 | 1.167 | 327 | 0,07 | 955 | 267 | 0,07 | 531 | 149 | 0,07 | 637 | 178 | 0,07 | 318 | 89 | 0,07 | 467 | 131 | 0,07 |
| 4 | 16 | 1.094 | 328 | 0,075 | 895 | 269 | 0,075 | 497 | 149 | 0,075 | 597 | 179 | 0,075 | 298 | 90 | 0,075 | 438 | 131 | 0,075 |
| 4 | 18 | 973 | 331 | 0,085 | 796 | 271 | 0,085 | 442 | 150 | 0,085 | 531 | 180 | 0,085 | 265 | 90 | 0,085 | 389 | 132 | 0,085 |
| 4 | 20 | 875 | 350 | 0,1 | 716 | 286 | 0,1 | 398 | 159 | 0,1 | 477 | 191 | 0,1 | 239 | 95 | 0,1 | 350 | 140 | 0,1 |
| 5 | 22 | 796 | 438 | 0,11 | 651 | 358 | 0,11 | 362 | 199 | 0,11 | 434 | 239 | 0,11 | 217 | 119 | 0,11 | 318 | 175 | 0,11 |
| 5 | 25 | 700 | 438 | 0,125 | 573 | 358 | 0,125 | 318 | 199 | 0,125 | 382 | 239 | 0,125 | 191 | 119 | 0,125 | 280 | 175 | 0,125 |
| 5 | 28 | 625 | 391 | 0,125 | 512 | 320 | 0,125 | 284 | 178 | 0,125 | 341 | 213 | 0,125 | 171 | 107 | 0,125 | 250 | 156 | 0,125 |
| 6 | 30 | 584 | 438 | 0,125 | 477 | 358 | 0,125 | 265 | 199 | 0,125 | 318 | 239 | 0,125 | 159 | 119 | 0,125 | 233 | 175 | 0,125 |
| 6 | 32 | 547 | 410 | 0,125 | 448 | 336 | 0,125 | 249 | 187 | 0,125 | 298 | 224 | 0,125 | 149 | 112 | 0,125 | 219 | 164 | 0,125 |
| 6 | 35 | 500 | 375 | 0,125 | 409 | 307 | 0,125 | 227 | 171 | 0,125 | 273 | 205 | 0,125 | 136 | 102 | 0,125 | 200 | 150 | 0,125 |
| 6 | 36 | 486 | 365 | 0,125 | 398 | 298 | 0,125 | 221 | 166 | 0,125 | 265 | 199 | 0,125 | 133 | 99 | 0,125 | 195 | 146 | 0,125 |
| 6 | 40 | 438 | 328 | 0,125 | 358 | 269 | 0,125 | 199 | 149 | 0,125 | 239 | 179 | 0,125 | 119 | 90 | 0,125 | 175 | 131 | 0,125 |

These parameters are for use with cutting-depth of 1 D and a cutting-width of 1 D.
For V-WREES, V-WRESF, reduce cutting speed by 20% and feed/flute by 10%.

## V-XPM-WRESF / V-WREES / V-WRESF

### Side milling

| | | E24 • XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron | | | 35NCD16 • 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel | | | 316 • 304 800 MPA Stainless steel | | | Z38CDV5 • Z40CDV5 38 ~ 45 HRC Treated & pre-treated steel | | | Inconel • Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base | | | TA6V 900 ~ 1100 MPA Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 4 | 6 | 2.918 | 292 | 0,025 | 2.387 | 239 | 0,025 | 1.326 | 133 | 0,025 | 1.592 | 159 | 0,025 | 796 | 80 | 0,025 | 1.167 | 117 | 0,025 |
| 4 | 7 | 2.501 | 300 | 0,03 | 2.046 | 246 | 0,03 | 1.137 | 136 | 0,03 | 1.364 | 164 | 0,03 | 682 | 82 | 0,03 | 1.000 | 120 | 0,03 |
| 4 | 8 | 2.188 | 394 | 0,045 | 1.790 | 322 | 0,045 | 995 | 179 | 0,045 | 1.194 | 215 | 0,045 | 597 | 107 | 0,045 | 875 | 158 | 0,045 |
| 4 | 10 | 1.751 | 385 | 0,055 | 1.432 | 315 | 0,055 | 796 | 175 | 0,055 | 955 | 210 | 0,055 | 477 | 105 | 0,055 | 700 | 154 | 0,055 |
| 4 | 12 | 1.459 | 467 | 0,08 | 1.194 | 382 | 0,08 | 663 | 212 | 0,08 | 796 | 255 | 0,08 | 398 | 127 | 0,08 | 584 | 187 | 0,08 |
| 4 | 14 | 1.251 | 425 | 0,085 | 1.023 | 348 | 0,085 | 568 | 193 | 0,085 | 682 | 232 | 0,085 | 341 | 116 | 0,085 | 500 | 170 | 0,085 |
| 4 | 15 | 1.167 | 397 | 0,085 | 955 | 325 | 0,085 | 531 | 180 | 0,085 | 637 | 216 | 0,085 | 318 | 108 | 0,085 | 467 | 159 | 0,085 |
| 4 | 16 | 1.094 | 438 | 0,1 | 895 | 358 | 0,1 | 497 | 199 | 0,1 | 597 | 239 | 0,1 | 298 | 119 | 0,1 | 438 | 175 | 0,1 |
| 4 | 18 | 973 | 428 | 0,11 | 796 | 350 | 0,11 | 442 | 195 | 0,11 | 531 | 233 | 0,11 | 265 | 117 | 0,11 | 389 | 171 | 0,11 |
| 4 | 20 | 875 | 455 | 0,13 | 716 | 372 | 0,13 | 398 | 207 | 0,13 | 477 | 248 | 0,13 | 239 | 124 | 0,13 | 350 | 182 | 0,13 |
| 5 | 22 | 796 | 557 | 0,14 | 651 | 456 | 0,14 | 362 | 253 | 0,14 | 434 | 304 | 0,14 | 217 | 152 | 0,14 | 318 | 223 | 0,14 |
| 5 | 25 | 700 | 560 | 0,16 | 573 | 458 | 0,16 | 318 | 255 | 0,16 | 382 | 306 | 0,16 | 191 | 153 | 0,16 | 280 | 224 | 0,16 |
| 5 | 28 | 625 | 438 | 0,14 | 512 | 358 | 0,14 | 284 | 199 | 0,14 | 341 | 239 | 0,14 | 171 | 119 | 0,14 | 250 | 175 | 0,14 |
| 6 | 30 | 584 | 490 | 0,14 | 477 | 401 | 0,14 | 265 | 223 | 0,14 | 318 | 267 | 0,14 | 159 | 134 | 0,14 | 233 | 196 | 0,14 |
| 6 | 32 | 547 | 460 | 0,14 | 448 | 376 | 0,14 | 249 | 209 | 0,14 | 298 | 251 | 0,14 | 149 | 125 | 0,14 | 219 | 184 | 0,14 |
| 6 | 35 | 500 | 420 | 0,14 | 409 | 344 | 0,14 | 227 | 191 | 0,14 | 273 | 229 | 0,14 | 136 | 115 | 0,14 | 200 | 168 | 0,14 |
| 6 | 36 | 486 | 408 | 0,14 | 398 | 334 | 0,14 | 221 | 186 | 0,14 | 265 | 223 | 0,14 | 133 | 111 | 0,14 | 195 | 163 | 0,14 |
| 6 | 40 | 438 | 368 | 0,14 | 358 | 301 | 0,14 | 199 | 167 | 0,14 | 239 | 201 | 0,14 | 119 | 100 | 0,14 | 175 | 147 | 0,14 |

These parameters are for use with cutting-depth of 1 D and a cutting-width of 1 D.
For V-WREES, V-WRESF, reduce cutting speed by 20% and feed/flute by 10%.

# CUTTING CONDITIONS

**Milling | Endmills | Cutting conditions**

## VP-RESF-SP

### Slotting

| | | E24 • XC48<br>Fonte GG25<br>490 ~ 750 MPA<br>Low carbon steel, cast iron | | | 35NCD16 • 40CMD8<br>750 ~ 1100 MPA<br>Alloy steel, tool steel | | | 316 • 304<br>800 MPA<br>Stainless steel | | | Z38CDV5 • Z40CDV5<br>38 ~ 45 HRC<br>Treated & pre-treated steel | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 53 m/min | | | 45 m/min | | | 25 m/min | | | 40 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 3 | 8 | 2.109 | 633 | 0,1 | 1.790 | 537 | 0,1 | 995 | 298 | 0,1 | 1.592 | 477 | 0,1 |
| 3 | 10 | 1.687 | 506 | 0,1 | 1.432 | 430 | 0,1 | 796 | 239 | 0,1 | 1.273 | 382 | 0,1 |
| 3 | 12 | 1.406 | 506 | 0,12 | 1.194 | 430 | 0,12 | 663 | 239 | 0,12 | 1.061 | 382 | 0,12 |
| 3 | 16 | 1.054 | 380 | 0,12 | 895 | 322 | 0,12 | 497 | 179 | 0,12 | 796 | 286 | 0,12 |
| 3 | 20 | 844 | 329 | 0,13 | 716 | 279 | 0,13 | 398 | 155 | 0,13 | 560 | 218 | 0,13 |
| 4 | 25 | 400 | 208 | 0,13 | 420 | 218 | 0,13 | 220 | 114 | 0,13 | 400 | 192 | 0,12 |

These parameters are for use with cutting-depth of 0,8 D and a cutting-width of 1 D.
For the end mill dia 25 mm 4 flutes, the cutting depth may not exceed 0.5D.

## V-XPM-WEHS

### Slotting

| | | E24 • XC48<br>Fonte GG25<br>490 ~ 750 MPA<br>Low carbon steel, cast iron | | | 35NCD16 • 40CMD8<br>750 ~ 1100 MPA<br>Alloy steel, tool steel | | | 316 • 304<br>800 MPA<br>Stainless steel | | | Z38CDV5 • Z40CDV5<br>38 ~ 45 HRC<br>Treated & pre-treated steel | | | Inconel • Hastelloy<br>35 ~ 43 HRC<br>Steel alloys, Nickel base | | | TA6V<br>900 ~ 1100 MPA<br>Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/ min) | AZ (mm) | S ($min^{-1}$) | F (mm/ min) | AZ (mm) | S ($min^{-1}$) | F (mm/ min) | AZ (mm) | S ($min^{-1}$) | F (mm/ min) | AZ (mm) | S ($min^{-1}$) | F (mm/ min) | AZ (mm) | S ($min^{-1}$) | F (mm/ min) | AZ (mm) |
| 2 | 2 | 8.754 | 70 | 0,004 | 7.162 | 57 | 0,004 | 3.979 | 32 | 0,004 | 4.775 | 38 | 0,004 | 2.387 | 19 | 0,004 | 3.501 | 28 | 0,004 |
| 2 | 3 | 5.836 | 70 | 0,006 | 4.775 | 57 | 0,006 | 2.653 | 32 | 0,006 | 3.183 | 38 | 0,006 | 1.592 | 19 | 0,006 | 2.334 | 28 | 0,006 |
| 2 | 4 | 4.377 | 70 | 0,008 | 3.581 | 57 | 0,008 | 1.989 | 32 | 0,008 | 2.387 | 38 | 0,008 | 1.194 | 19 | 0,008 | 1.751 | 28 | 0,008 |
| 2 | 5 | 3.501 | 70 | 0,01 | 2.865 | 57 | 0,01 | 1.592 | 32 | 0,01 | 1.910 | 38 | 0,01 | 955 | 19 | 0,01 | 1.401 | 28 | 0,01 |
| 3 | 6 | 2.918 | 96 | 0,011 | 2.387 | 79 | 0,011 | 1.326 | 44 | 0,011 | 1.592 | 53 | 0,011 | 796 | 26 | 0,011 | 1.167 | 39 | 0,011 |
| 3 | 7 | 2.501 | 90 | 0,012 | 2.046 | 74 | 0,012 | 1.137 | 41 | 0,012 | 1.364 | 49 | 0,012 | 682 | 25 | 0,012 | 1.000 | 36 | 0,012 |
| 3 | 8 | 2.188 | 85 | 0,013 | 1.790 | 70 | 0,013 | 995 | 39 | 0,013 | 1.194 | 47 | 0,013 | 597 | 23 | 0,013 | 875 | 34 | 0,013 |
| 3 | 9 | 1.945 | 82 | 0,014 | 1.592 | 67 | 0,014 | 884 | 37 | 0,014 | 1.061 | 45 | 0,014 | 531 | 22 | 0,014 | 778 | 33 | 0,014 |
| 3 | 10 | 1.751 | 95 | 0,018 | 1.432 | 77 | 0,018 | 796 | 43 | 0,018 | 955 | 52 | 0,018 | 477 | 26 | 0,018 | 700 | 38 | 0,018 |
| 3 | 11 | 1.592 | 95 | 0,02 | 1.302 | 78 | 0,02 | 723 | 43 | 0,02 | 868 | 52 | 0,02 | 434 | 26 | 0,02 | 637 | 38 | 0,02 |
| 3 | 12 | 1.459 | 109 | 0,025 | 1.194 | 90 | 0,025 | 663 | 50 | 0,025 | 796 | 60 | 0,025 | 398 | 30 | 0,025 | 584 | 44 | 0,025 |
| 3 | 13 | 1.347 | 105 | 0,026 | 1.102 | 86 | 0,026 | 612 | 48 | 0,026 | 735 | 57 | 0,026 | 367 | 29 | 0,026 | 539 | 42 | 0,026 |
| 3 | 14 | 1.251 | 105 | 0,028 | 1.023 | 86 | 0,028 | 568 | 48 | 0,028 | 682 | 57 | 0,028 | 341 | 29 | 0,028 | 500 | 42 | 0,028 |
| 3 | 15 | 1.167 | 105 | 0,03 | 955 | 86 | 0,03 | 531 | 48 | 0,03 | 637 | 57 | 0,03 | 318 | 29 | 0,03 | 467 | 42 | 0,03 |
| 3 | 16 | 1.094 | 105 | 0,032 | 895 | 86 | 0,032 | 497 | 48 | 0,032 | 597 | 57 | 0,032 | 298 | 29 | 0,032 | 438 | 42 | 0,032 |
| 3 | 18 | 973 | 102 | 0,035 | 796 | 84 | 0,035 | 442 | 46 | 0,035 | 531 | 56 | 0,035 | 265 | 28 | 0,035 | 389 | 41 | 0,035 |
| 3 | 20 | 875 | 105 | 0,04 | 716 | 86 | 0,04 | 398 | 48 | 0,04 | 477 | 57 | 0,04 | 239 | 29 | 0,04 | 350 | 42 | 0,04 |
| 4 | 22 | 796 | 111 | 0,035 | 651 | 91 | 0,035 | 362 | 51 | 0,035 | 434 | 61 | 0,035 | 217 | 30 | 0,035 | 318 | 45 | 0,035 |
| 4 | 24 | 729 | 117 | 0,04 | 597 | 95 | 0,04 | 332 | 53 | 0,04 | 398 | 64 | 0,04 | 199 | 32 | 0,04 | 292 | 47 | 0,04 |
| 4 | 25 | 700 | 126 | 0,045 | 573 | 103 | 0,045 | 318 | 57 | 0,045 | 382 | 69 | 0,045 | 191 | 34 | 0,045 | 280 | 50 | 0,045 |
| 4 | 28 | 625 | 125 | 0,05 | 512 | 102 | 0,05 | 284 | 57 | 0,05 | 341 | 68 | 0,05 | 171 | 34 | 0,05 | 250 | 50 | 0,05 |
| 4 | 30 | 584 | 128 | 0,055 | 477 | 105 | 0,055 | 265 | 58 | 0,055 | 318 | 70 | 0,055 | 159 | 35 | 0,055 | 233 | 51 | 0,055 |

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D for end mills 2 and 3 flutes.
These parameters are for use with cutting-depth of 0.25 D and a cutting-width of 1 D for end mills 4 flutes.
For alu. alloys < 6% Si, please use feed/flute as indicated in the column by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the column by X by 2 times the cutting speed.

## V-XPM-WEHS

### Side milling

| | | E24 • XC48<br>Fonte GG25<br>490 ~ 750 MPA<br>Low carbon steel, cast iron | | | 35NCD16 • 40CMD8<br>750 ~ 1100 MPA<br>Alloy steel, tool steel | | | 316 • 304<br>800 MPA<br>Stainless steel | | | Z38CDV5 • Z40CDV5<br>38 ~ 45 HRC<br>Treated & pre-treated steel | | | Inconel • Hastelloy<br>35 ~ 43 HRC<br>Steel alloys, Nickel base | | | TA6V<br>900 ~ 1100 MPA<br>Alloy titanium | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vc | | 55 m/min | | | 45 m/min | | | 25 m/min | | | 30 m/min | | | 15 m/min | | | 22 m/min | | |
| Nr. flutes | Ø | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) | S ($min^{-1}$) | F (mm/min) | AZ (mm) |
| 2 | 2 | 8.754 | 70 | 0,004 | 7.162 | 57 | 0,004 | 3.979 | 32 | 0,004 | 4.775 | 38 | 0,004 | 2.387 | 19 | 0,004 | 3.501 | 28 | 0,004 |
| 2 | 3 | 5.836 | 70 | 0,006 | 4.775 | 57 | 0,006 | 2.653 | 32 | 0,006 | 3.183 | 38 | 0,006 | 1.592 | 19 | 0,006 | 2.334 | 28 | 0,006 |
| 2 | 4 | 4.377 | 70 | 0,008 | 3.581 | 57 | 0,008 | 1.989 | 32 | 0,008 | 2.387 | 38 | 0,008 | 1.194 | 19 | 0,008 | 1.751 | 28 | 0,008 |
| 2 | 5 | 3.501 | 70 | 0,01 | 2.865 | 57 | 0,01 | 1.592 | 32 | 0,01 | 1.910 | 38 | 0,01 | 955 | 19 | 0,01 | 1.401 | 28 | 0,01 |
| 3 | 6 | 2.918 | 105 | 0,012 | 2.387 | 86 | 0,012 | 1.326 | 48 | 0,012 | 1.592 | 57 | 0,012 | 796 | 29 | 0,012 | 1.167 | 42 | 0,012 |
| 3 | 7 | 2.501 | 105 | 0,014 | 2.046 | 86 | 0,014 | 1.137 | 48 | 0,014 | 1.364 | 57 | 0,014 | 682 | 29 | 0,014 | 1.000 | 42 | 0,014 |
| 3 | 8 | 2.188 | 131 | 0,02 | 1.790 | 107 | 0,02 | 995 | 60 | 0,02 | 1.194 | 72 | 0,02 | 597 | 36 | 0,02 | 875 | 53 | 0,02 |
| 3 | 9 | 1.945 | 117 | 0,02 | 1.592 | 95 | 0,02 | 884 | 53 | 0,02 | 1.061 | 64 | 0,02 | 531 | 32 | 0,02 | 778 | 47 | 0,02 |
| 3 | 10 | 1.751 | 131 | 0,025 | 1.432 | 107 | 0,025 | 796 | 60 | 0,025 | 955 | 72 | 0,025 | 477 | 36 | 0,025 | 700 | 53 | 0,025 |
| 3 | 11 | 1.592 | 119 | 0,025 | 1.302 | 98 | 0,025 | 723 | 54 | 0,025 | 868 | 65 | 0,025 | 434 | 33 | 0,025 | 637 | 48 | 0,025 |
| 3 | 12 | 1.459 | 153 | 0,035 | 1.194 | 125 | 0,035 | 663 | 70 | 0,035 | 796 | 84 | 0,035 | 398 | 42 | 0,035 | 584 | 61 | 0,035 |
| 3 | 13 | 1.347 | 141 | 0,035 | 1.102 | 116 | 0,035 | 612 | 64 | 0,035 | 735 | 77 | 0,035 | 367 | 39 | 0,035 | 539 | 57 | 0,035 |
| 3 | 14 | 1.251 | 150 | 0,04 | 1.023 | 123 | 0,04 | 568 | 68 | 0,04 | 682 | 82 | 0,04 | 341 | 41 | 0,04 | 500 | 60 | 0,04 |
| 3 | 15 | 1.167 | 140 | 0,04 | 955 | 115 | 0,04 | 531 | 64 | 0,04 | 637 | 76 | 0,04 | 318 | 38 | 0,04 | 467 | 56 | 0,04 |
| 3 | 16 | 1.094 | 148 | 0,045 | 895 | 121 | 0,045 | 497 | 67 | 0,045 | 597 | 81 | 0,045 | 298 | 40 | 0,045 | 438 | 59 | 0,045 |
| 3 | 18 | 973 | 146 | 0,05 | 796 | 119 | 0,05 | 442 | 66 | 0,05 | 531 | 80 | 0,05 | 265 | 40 | 0,05 | 389 | 58 | 0,05 |
| 3 | 20 | 875 | 158 | 0,06 | 716 | 129 | 0,06 | 398 | 72 | 0,06 | 477 | 86 | 0,06 | 239 | 43 | 0,06 | 350 | 63 | 0,06 |
| 4 | 22 | 796 | 223 | 0,07 | 651 | 182 | 0,07 | 362 | 101 | 0,07 | 434 | 122 | 0,07 | 217 | 61 | 0,07 | 318 | 89 | 0,07 |
| 4 | 24 | 729 | 219 | 0,075 | 597 | 179 | 0,075 | 332 | 99 | 0,075 | 398 | 119 | 0,075 | 199 | 60 | 0,075 | 292 | 88 | 0,075 |
| 4 | 25 | 700 | 224 | 0,08 | 573 | 183 | 0,08 | 318 | 102 | 0,08 | 382 | 122 | 0,08 | 191 | 61 | 0,08 | 280 | 90 | 0,08 |
| 4 | 28 | 625 | 225 | 0,09 | 512 | 184 | 0,09 | 284 | 102 | 0,09 | 341 | 123 | 0,09 | 171 | 61 | 0,09 | 250 | 90 | 0,09 |
| 4 | 30 | 584 | 233 | 0,1 | 477 | 191 | 0,1 | 265 | 106 | 0,1 | 318 | 127 | 0,1 | 159 | 64 | 0,1 | 233 | 93 | 0,1 |

These parameters are for use with cutting-depth of 1,5 D and a cutting-width of 0,1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the column by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the column by X by 2 times the cutting speed.

# SEP-EL

## 3xD cutting length

### Slot Milling

| | Thermoplastic Resin (Natural Grade) | | Thermosetting Resin<br>Thermoplastic Resin (Fiber Reinforced Grade) | |
|---|---|---|---|---|
| Vc (m/min) | 60 ~ 70 | | 50 ~ 70 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,5 X 1,5 | 38.200 | 1.530 | 31.800 | 1.270 |
| 1 X 3 | 19.100 | 2.290 | 15.900 | 1.910 |
| 2 X 6 | 9.500 | 1.430 | 8.000 | 1.200 |
| 3 X 9 | 6.400 | 1.150 | 5.300 | 950 |
| 4 X 12 | 5.600 | 1.340 | 4.800 | 1.010 |
| 6 X 18 | 3.700 | 1.110 | 3.400 | 920 |
| Depth of cut | ap<br>1D | | | |

The table above is for when using air-blow.

## 3xD cutting length

### Side Milling

| | Thermoplastic Resin (Natural Grade) | | Thermosetting Resin<br>Thermoplastic Resin (Fiber Reinforced Grade) | |
|---|---|---|---|---|
| Vc (m/min) | 100 ~ 150 | | 60 ~ 70 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,5 X 1,5 | 40.000 | 2.400 | 38.200 | 2.290 |
| 1 X 3 | 31.800 | 3.820 | 19.100 | 2.290 |
| 2 X 6 | 20.700 | 3.730 | 9.500 | 2.000 |
| 3 X 9 | 14.900 | 3.580 | 7.400 | 2.220 |
| 4 X 12 | 11.900 | 3.570 | 5.600 | 1.680 |
| 6 X 18 | 8.000 | 2.880 | 3.700 | 1.330 |
| Depth of cut | ap: 3D; ae: 0,2D | | | |

The table above is for when using air-blow.

## 3xD cutting length

### Plunging

| | Thermoplastic Resin (Natural Grade) | | Thermosetting Resin<br>Thermoplastic Resin (Fiber Reinforced Grade) | |
|---|---|---|---|---|
| Vc (m/min) | 50 ~ 70 | | 50 ~ 70 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,5 X 1,5 | 31.800 | 320 | 31.800 | 320 |
| 1 X 3 | 15.900 | 480 | 15.900 | 480 |
| 2 X 6 | 9.500 | 360 | 8.000 | 300 |
| 3 X 9 | 6.400 | 290 | 5.300 | 240 |
| 4 X 12 | 5.600 | 340 | 4.800 | 250 |
| 6 X 18 | 3.700 | 280 | 3.400 | 230 |
| Depth of cut | ap<br>1D | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. The feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. When the chips wind around the end mill. reduce the speed and feed.
5. Please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing. the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).
7. Please step feed when processing by plunging.

The table above is for when using air-blow.

# SEP-EL

## 5xD cutting length

### Side Milling

| | Thermoplastic Resin (Natural Grade) | | Thermosetting Resin<br>Thermoplastic Resin (Fiber Reinforced Grade) | |
|---|---|---|---|---|
| Vc (m/min) | 50 ~ 100 | | 50 ~ 70 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,5 X 2,5 | 31.800 | 1.910 | 31.800 | 1.910 |
| 1 X 5 | 19.100 | 2.290 | 19.100 | 2.290 |
| 2 X 10 | 12.700 | 1.910 | 9.500 | 2.000 |
| 3 X 15 | 9.500 | 1.710 | 7.400 | 2.220 |
| 4 X 20 | 8.000 | 1.920 | 5.600 | 1.680 |
| 6 X 30 | 5.300 | 1.270 | 3.700 | 1.330 |
| Depth of cut | ap: 5D, ae: 0,05D | | ap: 5D, ae: 0,1D | |

The table above is for when using air-blow.

## 5xD cutting length

### Plunging

| | Thermoplastic Resin (Natural Grade) | | Thermosetting Resin<br>Thermoplastic Resin (Fiber Reinforced Grade) | |
|---|---|---|---|---|
| Vc (m/min) | 50 ~ 70 | | 50 ~ 70 | |
| DC X APMX | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 0,5 X 2,5 | 31.800 | 320 | 31.800 | 320 |
| 1 X 5 | 15.900 | 480 | 15.900 | 480 |
| 2 X 10 | 9.500 | 360 | 8.000 | 300 |
| 3 X 15 | 6.400 | 290 | 5.300 | 240 |
| 4 X 20 | 5.600 | 340 | 4.800 | 250 |
| 6 X 30 | 3.700 | 280 | 3.400 | 230 |
| Depth of cut | ap: 1D | | | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used. The feed rate can be increased if the shape of the workpiece and method of fixation are rigid.
3. Reduce speed and feed as well as depth of cut when high precision is required.
4. When the chips wind around the end mill. reduce the speed and feed.
5. Please remove cutting chips to prevent them from getting caught or entangled.
6. For higher quality processing. the use of a water-soluble cutting fluid is recommended (excluding nylon and Bakelite).
7. Please step feed when processing by plunging.

The table above is for when using air-blow.

# CUTTING CONDITIONS



## AE-VMSX Square Type

### Slot Milling

| | Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm² | | Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC | | Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC | | Stainless Steel SUS304 • SUS420 ≤200HB | | Precipitation Stainless Steel SUS630 | | Titanium Alloy Ti-6Al-4V | | Ni-Based Alloy Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 100 (80-120) | | 90 (70-110) | | 80 (60-100) | | 70 (50-80) | | 70 (60-80) | | 60 (50-70) | | 25 (20-30) | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 10.600 | 930 | 9.600 | 690 | 8.500 | 510 | 7.400 | 470 | 8.540 | 430 | 7.430 | 410 | 2.650 | 160 |
| 4 | 8.000 | 960 | 7.200 | 720 | 6.400 | 510 | 5.600 | 490 | 6.410 | 460 | 5.570 | 440 | 1.990 | 170 |
| 5 | 6.400 | 1.020 | 5.700 | 800 | 5.100 | 610 | 4.500 | 560 | 5.120 | 490 | 4.460 | 470 | 1.590 | 180 |
| 6 | 5.300 | 1.060 | 4.800 | 900 | 4.200 | 670 | 3.700 | 370 | 4.270 | 480 | 3.710 | 460 | 1.330 | 180 |
| 8 | 4.000 | 910 | 3.600 | 720 | 3.200 | 640 | 2.800 | 370 | 2.750 | 450 | 2.390 | 430 | 1.000 | 200 |
| 10 | 3.200 | 840 | 2.900 | 700 | 2.500 | 550 | 2.200 | 350 | 2.200 | 420 | 1.910 | 400 | 800 | 180 |
| 12 | 2.700 | 810 | 2.400 | 670 | 2.100 | 550 | 1.900 | 330 | 1.830 | 420 | 1.590 | 400 | 660 | 180 |
| Depth of cut | ap 1D | | | | | | DC / ap: DC≤6 → 0,5D; 6<DC → 1D | | ap 0,25D | | | | | |

### Slide Milling

| | Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm² | | Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC | | Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC | | Hardened Steel STAVAX • HPM38 (~55HRC) | | Stainless Steel SUS304 • SUS420 ≤200HB | | Precipitation Stainless Steel SUS630 | | Titanium Alloy Ti-6Al-4V | | Ni-Based Alloy Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 130 (100-150) | | 120 (100-150) | | 100 (80-120) | | 70 (60-80) | | 80 (60-100) | | 80 (70-90) | | 70 (60-80) | | 30 (20-40) | |
| Ø | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| 3 | 13.800 | 1.660 | 12.700 | 1.070 | 10.600 | 760 | 7.430 | 480 | 8.000 | 480 | 9.760 | 510 | 8.490 | 480 | 3.180 | 220 |
| 4 | 10.400 | 1.830 | 9.600 | 1.150 | 8.000 | 800 | 5.570 | 530 | 6.000 | 530 | 7.320 | 550 | 6.370 | 530 | 2.390 | 240 |
| 5 | 8.300 | 1.990 | 7.600 | 1.220 | 6.400 | 900 | 4.460 | 540 | 4.800 | 560 | 5.860 | 560 | 5.090 | 540 | 1.910 | 250 |
| 6 | 6.900 | 2.070 | 6.400 | 1.540 | 5.300 | 1.060 | 3.720 | 550 | 4.200 | 640 | 4.880 | 580 | 4.240 | 550 | 1.590 | 250 |
| 8 | 5.200 | 1.770 | 4.800 | 1.540 | 4.000 | 1.040 | 2.790 | 430 | 3.200 | 610 | 3.200 | 450 | 2.790 | 430 | 1.190 | 230 |
| 10 | 4.100 | 1.640 | 3.800 | 1.370 | 3.200 | 900 | 2.230 | 410 | 2.500 | 580 | 2.560 | 430 | 2.230 | 410 | 960 | 220 |
| 12 | 3.500 | 1.400 | 3.200 | 1.280 | 2.700 | 760 | 1.860 | 400 | 2.100 | 530 | 2.140 | 420 | 1.860 | 400 | 800 | 210 |
| Depth of cut | ap 1,5D / ae 0,2D | | | | | | | | | | | | | | | |

1. The above milling condition is a guideline for the overhang length is 3×D.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel, precipitation stainless steel, titanium alloy, Ni-based alloy.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

### Cutting Condition Guide for Changes in Overhang Length

#### DC≥Ø6

| | Work Material | Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm² | | Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC | | Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC | | Hardened Steel STAVAX • HPM38 (~55HRC) | | Stainless Steel SUS304 • SUS420 ≤200HB | | Precipitation Stainless Steel SUS630 | | Titanium Alloy Ti-6Al-4V | | Ni-Based Alloy Inconel 718 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ø | L/D | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) | S (min⁻¹) | F (mm/min) |
| Slot Milling | 4 | 80% | | 70% | | 70% | | - | | 60% | | 60% | | 50% | | 50% | |
| | 5 | 70% | | 60% | | 60% | | - | | 50% | | 50% | | 50% | | 50% | |
| Side Milling | 4 | 90% | | 90% | | 80% | | 60% | | 70% | | 70% | | 60% | | 60% | |
| | 5 | 80% | | 80% | | 70% | | 60% | | 70% | | 70% | | 60% | | 60% | |

## PAS BORE

45° Face milling

| | Work Material | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Grade |
|---|---|---|---|---|---|---|
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,18 (0,15 ~ 0,35) | 3 | XP3035 XC3025 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,18 (0,15 ~ 0,35) | 3 | XP3035 XC3025 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,15 (0,10 ~ 0,30) | 3 | XP3035 XC3025 |
| M | Stainless Steel (Wet) (SUS304-SUS420) | ~250HB | 120 (80~ 180) | 0,12 (0,08 ~ 0,25) | 3 | XP2040 |
| K | Cast Iron (FC250) | ~300N/mm² | 180 (100~ 350) | 0,20 (0,15 ~ 0,35) | 4 | XC1015 |
| K | Ductile Cast Iron (FCD400) | ~600N/mm² | 180 (100~270) | 0,20 (0,10 ~ 0,30) | 3 | XC1015 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (60~ 150) | 0,12 (0,08 ~ 0,20) | 1,5 | XP2040 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 80 (40 ~ 120) | 0,10 (0,05 ~ 0,15) | 0,5 | XP2040 |
| H | Hardened Steel (SKD11) | 50~60HRC | 60 (40 ~ 90) | 0,08 (0,05 ~ 0,15) | 0,5 | XP2040 |

## PAO BORE

45° Face milling

| | Work Material | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Grade |
|---|---|---|---|---|---|---|
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,25 (0,20 ~ 0,50) | 2 | XP3035 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,25 (0,20 ~ 0,50) | 2 | XP3035 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,25 (0,15 ~ 0,40) | 2 | XP3035 |
| M | Stainless Steel (Wet) (SUS304-SUS420) | ~250HB | 120 (80~ 180) | 0,20 (0,15 ~ 0,40) | 2 | XP2040 |
| K | Cast Iron (FC250) | ~300N/mm² | 200 (100~ 350) | 0,30 (0,20 ~ 0,50) | 2 | XC1015 XP1020 |
| K | Ductile Cast Iron (FCD400) | ~600N/mm² | 180 (100~270) | 0,28 (0,15 ~ 0,40) | 2 | XC1015 XP1020 |
| S | Heat Resistant Alloys (Inconel 718) | - | 35 (25 ~ 60) | 0,12 (0,05 ~ 0,2) | 1 | XC5040 |
| S | Titanium Alloy (Ti-Al-4V) | - | 40 (30 ~ 120) | 0,15 (0,1 ~ 0,25) | 1,5 | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (60~ 150) | 0,15 (0,10 ~ 0,25) | 1,5 | XP2040 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 80 (40 ~ 120) | 0,12 (0,05 ~ 0,20) | 0,5 | XP2040 |
| H | Hardened Steel (SKD11) | 50~55HRC | 60 (40 ~ 90) | 0,10 (0,05 ~ 0,20) | 0,5 | XP2040 |

## PFAL BORE

Face milling finishing cutter for aluminium

| | Work Material | Component | Material Symbol | Application | Cutting Speed Vc (m/min) BT30 | Cutting Speed Vc (m/min) BT40, BT50 HSK63 | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) |
|---|---|---|---|---|---|---|---|---|
| N | Aluminium Alloy | ~ 12% Si | A7075, A5052, A2017, ADC12 | Semi-finishing | 1.000 (800 ~ 2.000) | 2.000 (1.000 ~ 5.000) | 0.08 (0.05 ~ 0.10) | 1.5 (1.0 ~ 2.0) |
| N | Aluminium Alloy | ~ 12% Si | A7075, A5052, A2017, ADC12 | Finishing | 1.000 (800 ~ 2.000) | 2.000 (1.000 ~ 5.000) | 0.06 (0.05 ~ 0.08) | 0.5 (0.3 ~ 1.0) |
| N | Aluminium Alloy | ~ 13% Si | AC9A, AC98 | Semi-finishing | 600 (400 ~ 800) | | 0.08 (0.05 ~ 0.10) | 1.5 (1.0 ~ 2.0) |
| N | Aluminium Alloy | ~ 13% Si | AC9A, AC98 | Finishing | 600 (400 ~ 800) | | 0.06 (0.05 ~ 0.08) | 0.5 (0.3 ~ 1.0) |

# CUTTING CONDITIONS



## PFDC

**Economical 4-corner insert with 90° cutting angle**

| Work Material | | Component | Material Symbol | Vc (m/min) Cutting Speed | fz(mm/t) Feed per Tooth | ap(mm) Depth of Cut |
|---|---|---|---|---|---|---|
| N | Aluminium Alloys | ~12%Si | A7075 • A5052 • A2017 etc ADC12 etc | 200 ~ 2.500 | 0,15 (0,05 ~ 0,25) | 3 |
| | | 13%Si~ | AC9A • AC98 etc | 100 ~ 300 | 0,15 (0,05 ~ 0,25) | 3 |
| | Thermoplastic Resin (XP4610 recommended) | - | MC Nylon • PVC • POM • PTFE (dry) | 2.700 (1.500 ~ 4.000) | 0,1 (0,05 ~ 0,15) | 2 |
| | | - | PP • 6 Nylon (dry) | 3.800 (3.500 ~ 4.000) | 0,1 (0,05 ~ 0,15) | 2 |
| | | - | Acrylic • Transparent PVC (dry) | 1.700 (1.000 ~ 2.500) | 0,03 (0,02 ~ 0,05) | 2 |
| | | - | Acrylic • Transparent PVC (wet) | 2.000 (1.000 ~ 3.500) | 0,03 (0,02 ~ 0,05) | 2 |
| | Thermosetting Resin (XP4610 recommended) | - | Bakelite(dry) | 1.600 (600 ~ 2.200) | 0,1 (0,05 ~ 0,15) | 2 |

## PSTW BORE

**90° shoulder cutter**

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Insert size | | | |
|---|---|---|---|---|---|---|---|
| | | | | TN*U09... | | TN*U12... | |
| | | | | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,12 (0,05~0,2) | 2 | 0,15 (0,05~0,25) | 3 |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,12 (0,05~0,2) | 2 | 0,15 (0,05~0,25) | 3 |
| | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,1 (0,05~0,18) | 2 | 0,12 (0,05~0,2) | 3 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (80 ~ 200) | 0,08 (0,05~0,16) | 1,5 | 0,1 (0,05~0,18) | 2 |
| | Stainless Steel (Wet) (SUS304,SUS420) | ~250HB | 80 (60 ~ 120) | 0,08 (0,05~0,16) | 1,5 | 0,1 (0,05~0,18) | 2 |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (100~ 350) | 0,15 (0,05~0,25) | 2 | 0,2 (0,1~0,3) | 3 |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 180 (100~270) | 0,12 (0,05~0,2) | 2 | 0,15 (0,05~0,25) | 3 |
| N | Aluminium Alloy | ~13%Si | 300 (200~1.500) | 0,12 (0,08~0,25) | 2 | 0,15 (0,1~0,3) | 3 |
| S | Superalloy (Wet) (Inconel*718) | - | 35 (25 ~ 60) | 0,06 (0,04~0,1) | 0,8 | 0,08 (0,05~0,15) | 1 |
| | Titanium Alloy (Ti-Al-4V) | - | 40 (30 ~ 120) | 0,06 (0,04~0,1) | 1 | 0,08 (0,05~0,15) | 1,5 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (50~ 150) | 0,08 (0,06~0,15) | 1 | 0,1 (0,08~0,2) | 1,5 |
| | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 80 (40 ~ 120) | 0,06 (0,05~0,13) | 0,8 | 0,08 (0,06~0,15) | 1 |
| | Hardened Steel (SKD11) | 50~55HRC | 60 (40 ~ 90) | 0,05 (0,04~0,08) | 0,4 | 0,06 (0,05~0,1) | 0,5 |

# CUTTING CONDITIONS

Milling | Indexables | Cutting conditions

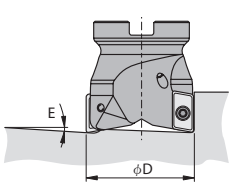
## PSE

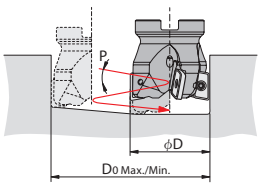
### 90° shoulder cutter

| Work Material | | Tensile Strength / Hardness | Insert Size | | | | | | | | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | ZD-T11... | | | | ZDKT15... | | | | |
| | | | ap:10mm ae:0,2D | | ap:3mm ae:1,0D | | ap:14mm ae:0,2D | | ap:5mm ae:1,0D | | |
| | | | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,25 (0,2 ~ 0,5) | 180 (100~ 250) | 0,12 (0,05 ~ 0,2) | 180 (100~ 250) | 0,3 (0,2 ~ 0,6) | 180 (100~ 250) | 0,15 (0,05 ~ 0,25) | XP3035 |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,2 (0,15 ~ 0,4) | 180 (100~ 250) | 0,11 (0,05 ~ 0,2) | 180 (100~ 250) | 0,25 (0,15 ~ 0,5) | 180 (100~ 250) | 0,12 (0,05 ~ 0,2) | XP3035 |
| | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,2 (0,15 ~ 0,4) | 150 (80 ~ 200) | 0,1 (0,05 ~ 0,18) | 150 (80 ~ 200) | 0,25 (0,15 ~ 0,5) | 150 (80 ~ 200) | 0,12 (0,05 ~ 0,2) | XP3035 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (80 ~ 200) | 0,18 (0,15 ~ 0,4) | 150 (80 ~ 200) | 0,1 (0,05 ~ 0,18) | 150 (80 ~ 200) | 0,2 (0,15 ~ 0,45) | 150 (80 ~ 200) | 0,12 (0,05 ~ 0,2) | XC5035 |
| | Stainless Steel (Coolant) (SUS304-SUS420) | ~250HB | 80 (60 ~ 120) | 0,18 (0,15 ~ 0,4) | 80 (60 ~ 120) | 0,1 (0,05 ~0,18) | 80 (60 ~ 120) | 0,2 (0,15 ~ 0,45) | 80 (60 ~ 120) | 0,12 (0,05 ~ 0,2) | XP2040 |
| K | Cast Iron (FC250) | ~350N/mm² | 180 (100 ~ 300) | 0,25 (0,15 ~ 0,5) | 180 (100 ~ 300) | 0,12 (0,05 ~ 0,2) | 180 (100 ~ 300) | 0,3 (0,2 ~ 0,6) | 180 (100 ~ 300) | 0,15 (0,05 ~ 0,25) | XC1015 |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 180 (100~250) | 0,15 (0,1 ~ 0,4) | 180 (100~250) | 0,12 (0,05 ~ 0,2) | 180 (100~250) | 0,2 (0,15 ~ 0,5) | 180 (100~250) | 0,15 (0,05 ~ 0,25) | XC1015 |
| N | Aluminium Alloys | ~13%Si | 300 (200 ~1.500) | 0,3 (0,2 ~ 0,5) | 300 (200 ~1.500) | 0,15 (0,1 ~ 0,25) | 300 (200 ~1.500) | 0,35 (0,2 ~ 0,6) | 300 (200 ~1.500) | 0,18 (0,1 ~ 0,3) | CK010 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | – | 35 (25 ~ 60) | 0,15 (0,1 ~ 0,3) | 35 (25 ~ 60) | 0,1 (0,05 ~ 0,15) | 35 (25 ~ 60) | 0,2 (0,1 ~ 0,3) | 35 (25 ~ 60) | 0,12 (0,05 ~ 0,15) | XC5040 |
| | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 40 (30 ~ 120) | 0,18 (0,1 ~ 0,35) | 40 (30 ~ 120) | 0,1 (0,08 ~ 0,25) | 40 (30 ~ 120) | 0,22 (0,1 ~ 0,35) | 40 (30 ~ 120) | 0,12 (0,08 ~0,25) | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (40 ~ 150) | 0,18 (0,1 ~ 0,3) | 90 (40 ~ 150) | 0,1 (0,08~0,2) | 100 (40 ~ 150) | 0,22 (0,1~0,35) | 90 (40 ~ 150) | 0,12 (0,08~0,25) | XP6015 |
| | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 80 (40 ~ 120) | 0,12 (0,08~0,2) | 70 (40 ~ 120) | 0,08 (0,06~0,15) | 80 (40 ~ 120) | 0,15 (0,08~0,25) | 70 (40 ~ 120) | 0,1 (0,06~0,2) | XP6015 |
| | Hardened Steel (SKD11) | 50~55HRC | 60 (40 ~90) | 0,1 (0,05~0,2) | 50 (40 ~90) | 0,06 (0,05~0,1) | 60 (40 ~90) | 0,12 (0,05~0,2) | 50 (40 ~90) | 0,08 (0,05~0,12) | XP6015 |

# Maximum ramping (E) & Helical angle (P)

| Insert Size | ZD-T11... | | | | ZDKT15... | | | |
|---|---|---|---|---|---|---|---|---|
| D | Ramping Angle E° | Helical Milling (mm) | | Helical Angle P° | Ramping Angle E° | Helical Milling (mm) | | Helical Angle P° |
| | | D Min. | D Max. | | | D Min. | D Max. | |
| 16 | 10,8 | 18 | 29 | 9,8 | - | - | - | - |
| 17 | 9,8 | 22 | 31 | 7,0 | - | - | - | - |
| 18 | 9,8 | 22 | 33 | 7,0 | - | - | - | - |
| 20 | 9,8 | 30 | 37 | 7,0 | - | - | - | - |
| 21 | 8,5 | 32 | 39 | 4,5 | - | - | - | - |
| 22 | 7,5 | 34 | 41 | 4,5 | - | - | - | - |
| 25 | 7,5 | 40 | 47 | 4,5 | 9,5 | 37 | 48 | 7,5 |
| 26 | 6,8 | 42 | 49 | 4,2 | 8,3 | 38 | 50 | 6,0 |
| 28 | 6,3 | 46 | 53 | 3,9 | 8,3 | 39 | 54 | 5,6 |
| 30 | 5,5 | 50 | 57 | 3,4 | 7,4 | 43 | 58 | 5,3 |
| 32 | 4,8 | 53 | 61 | 3,2 | 6,8 | 47 | 62 | 5,0 |
| 33 | 4,5 | 56 | 63 | 3,0 | 6,3 | 49 | 64 | 4,2 |
| 35 | 3,2 | 60 | 67 | 2,5 | 5,9 | 53 | 68 | 3,8 |
| 40 | 2,9 | 72 | 77 | 2,2 | 5,1 | 63 | 78 | 3,2 |
| 50 | 2,2 | 93 | 98 | 1,7 | 2,5 | 86 | 98 | 2,5 |
| 63 | 1,8 | 118 | 123 | 1,5 | 2,5 | 111 | 124 | 1,5 |
| 80 | 1,4 | 152 | 157 | 1,0 | 2,0 | 147 | 158 | 1,3 |
| 100 | - | - | - | - | 1,5 | 190 | 198 | 1,1 |
| 125 | - | - | - | - | 0,9 | 240 | 248 | 0,9 |



# CUTTING CONDITIONS



## PSEL

### 90° shoulder cutter

| Work Material | | Tensile Strength / Hardness | Insert Size | | | | Grade |
|---|---|---|---|---|---|---|---|
| | | | ZD-T11... | | ZDKT15... | | |
| | | | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 160 (100~ 200) | 0,25 (0,2 ~ 0,4) | 160 (100~ 200) | 0,3 (0,2 ~ 0,4) | XP3035 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100 ~ 200) | 0,2 (0,15 ~ 0,3) | 150 (100~ 200) | 0,25 (0,15 ~ 0,3) | XP3035 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 130 (80 ~ 180) | 0,2 (0,15 ~ 0,3) | 130 (80 ~ 180) | 0,25 (0,15 ~ 0,3) | XP3035 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (100 ~ 200) | 0,12 (0,1 ~ 0,3) | 150 (100 ~ 200) | 0,15 (0,1 ~ 0,3) | XC5035 |
| M | Stainless Steel (Coolant) (SUS304-SUS420) | ~250HB | 80 (60 ~ 120) | 0,12 (0,1 ~ 0,3) | 80 (60 ~ 120) | 0,15 (0,1 ~ 0,3) | XP2040 |
| K | Cast Iron (FC250) | ~350N/mm² | 160 (100 ~ 300) | 0,2 (0,2 ~ 0,35) | 160 (100 ~ 300) | 0,25 (0,2 ~ 0,35) | XC1015 |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100 ~ 250) | 0,15 (0,2 ~ 0,3) | 160 (100 ~ 250) | 0,2 (0,2 ~ 0,3) | XC1015 |
| N | Aluminium Alloys | ~13%Si | 300 (200 ~ 1.000) | 0,25 (0,1 ~ 0,4) | 300 (200 ~ 1.000) | 0,3 (0,1 ~ 0,4) | CK010 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | – | 35 (25 ~ 60) | 0,15 (0,1 ~ 0,3) | 35 (25 ~ 60) | 0,18 (0,1 ~ 0,3) | XC5040 |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 40 (30 ~ 120) | 0,15 (0,1 ~ 0,3) | 40 (30 ~ 120) | 0,18 (0,1 ~ 0,3) | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (40 ~ 150) | 0,15 (0,1 ~ 0,3) | 100 (40 ~ 150) | 0,18 (0,1 ~ 0,3) | XP6015 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 60 (40 ~ 120) | 0,12 (0,05 ~ 0,2) | 60 (40 ~ 120) | 0,15 (0,05 ~ 0,2) | XP6015 |

## PSF

### 4 corner shoulder cutter

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Grade |
|---|---|---|---|---|---|---|
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,12 (0,05 ~ 0,2) | 3 | XP3035 XP2040 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,12 (0,05 ~ 0,2) | 3 | XP3035 XP2040 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,1 (0,05 ~ 0,18) | 3 | XP3035 XP2040 |
| M | Stainless Steel (coolant) (SUS304-SUS420) | ~250HB | 80 (60~ 120) | 0,1 (0,05 ~ 0,18) | 2 | XP2040 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (80~ 200) | 0,1 (0,05 ~ 0,18) | 2 | XC5035 |
| K | Cast Iron (FC250) | ~350N/mm² | 180 (100~ 350) | 0,12 (0,05 ~ 0,2) | 3 | XC1015 |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 180 (100~270) | 0,12 (0,05 ~ 0,2) | 3 | XC1015 |
| N | Alluminium Alloy | ~13%Si | 300 (200~ 1.500) | 0,15 (0,1 ~ 0,25) | 3 | CK010 |
| S | Heat Resistant Alloy (Wet) (Inconel 718) | - | 35 (25~60) | 0,1 (0,05 ~ 0,15) | 1,5 | XC5040 |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | - | 40 (30~120) | 0,1 (0,05 ~ 0,18) | 1,5 | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 90 (40~ 150) | 0,1 (0,08 ~ 0,2) | 1,5 | XP2040 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 70 (40 ~ 120) | 0,08 (0,06 ~ 0,15) | 0,5 | XP2040 |
| H | Hardened Steel (SKD11) | 50~55HRC | 50 (40 ~ 90) | 0,06 (0,05 ~ 0,1) | 0,5 | XP2040 |

# CUTTING CONDITIONS



## PSFL

**90° shoulder cutter**

| Work Material | | Tensile Strength / Hardness | Insert Size | | | |
|---|---|---|---|---|---|---|
| | | | SD-T09... | | SD-T12... | |
| | | | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) | Milling Speed Vc (m/min) | Feed per Tooth fz (mm/t) |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 160 (100~ 200) | 0,25 (0,2 ~ 0,4) | 160 (100~ 200) | 0,3 (0,2 ~ 0,4) |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150 (100 ~ 200) | 0,2 (0,15 ~ 0,3) | 150 (100~ 200) | 0,25 (0,15 ~ 0,3) |
| | Die Steel (SKD11-SKD61) | ~280HB | 130 (80 ~ 180) | 0,2 (0,15 ~ 0,3) | 130 (80 ~ 180) | 0,25 (0,15 ~ 0,3) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (100 ~ 200) | 0,12 (0,1 ~ 0,3) | 150 (100 ~ 200) | 0,15 (0,1 ~ 0,3) |
| | Stainless Steel (Coolant) (SUS304-SUS420) | ~250HB | 80 (60 ~ 120) | 0,12 (0,1 ~ 0,3) | 80 (60 ~ 120) | 0,15 (0,1 ~ 0,3) |
| K | Cast Iron (FC250) | ~350N/mm² | 160 (100 ~ 300) | 0,2 (0,2 ~ 0,35) | 160 (100 ~ 300) | 0,25 (0,2 ~ 0,4) |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 160 (100 ~ 250) | 0,2 (0,15 ~ 0,3) | 160 (100 ~ 250) | 0,2 (0,15 ~ 0,35) |
| N | Aluminium Alloys | ~13%Si | 300 (200 ~ 1.000) | 0,25 (0,1 ~ 0,4) | 300 (200 ~ 1.000) | 0,3 (0,1 ~ 0,4) |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | – | 35 (25 ~ 60) | 0,15 (0,08 ~ 0,3) | 35 (25 ~ 60) | 0,18 (0,1 ~ 0,3) |
| | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 40 (30 ~ 120) | 0,15 (0,08 ~ 0,3) | 40 (30 ~ 120) | 0,18 (0,1 ~ 0,3) |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (40 ~ 150) | 0,15 (0,08 ~ 0,3) | 100 (40 ~ 150) | 0,18 (0,1 ~ 0,3) |
| | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 60 (40 ~ 120) | 0,12 (0,05 ~ 0,2) | 60 (40 ~ 120) | 0,15 (0,05 ~ 0,2) |

## Ratio cutting depth

| Depth of cut ap (mm) | Maximum width of Cut ae (mm) | Ratio to adjust cutting speed vp | Ratio to adjust feed rate fP |
|---|---|---|---|
| ~ 0,2D | 1D | 0,8 | 0,5 |
| 0,2 ~ 0,3D | 0,7D | 0,8 | 0,6 |
| 0,4 ~ 0,5D | 0,5D | 0,9 | 0,7 |
| 0,6 ~ 0,7D | 0,3D | 0,9 | 0,8 |
| 0,8 ~ 1D | 0,2D | 1 | 0,9 |
| 1,1 ~ 1,5D | 0,1D | 1 | 1 |

# PMD

## Side Milling - Slot Milling

For horizontal milling, calculate by per tooth.

| | Work Material | Tensile Strength / Hardness | Side Milling ap: 10mm ae:0,2D | | Slot Milling ap: 3mm ae:1,0D | |
|---|---|---|---|---|---|---|
| | | | Cutting Speed Vc (m/min) | Feed per tooth fz (mm/t) | Cutting Speed Vc (m/min) | Feed per tooth fz (mm/t) |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (100~ 250) | 0,25 (0,2~0,5) | 180 (100~ 250) | 0,12(0,05~0,2) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,2(0,15~0,4) | 180 (100 ~ 250) | 0,11(0,05~0,2) |
| P | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,2(0,15~0,4) | 150 (80 ~ 200) | 0,1(0,05~0,18) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 150 (80 ~ 200) | 0,18(0,15~0,4) | 150 (80 ~ 200) | 0,1(0,05~0,18) |
| M | Stainless Steel (Wet) (SUS304,SUS420) | ~250HB | 80 (60 ~ 120) | 0,18(0,15~0,4) | 80 (60 ~ 120) | 0,1(0,05~0,18) |
| K | Cast Iron (FC250) | ~350N/mm² | 180 (100~ 300) | 0,25(0,15~0,5) | 180 (100~ 300) | 0,12(0,05~0,2) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 180 (100~ 250) | 0,15(0,1~0,4) | 180 (100~ 250) | 0,12(0,05~0,2) |
| N | Aluminium Alloy | ~13%Si | 300 (200~1.500) | 0,3(0,2~0,5) | 300 (200~1.500) | 0,15(0,1~0,25) |
| S | Superalloy (Wet) (Inconel®718) | - | 35 (25 ~ 60) | 0,15 (0,1~0,3) | 35 (25 ~ 60) | 0,1(0,05~0,15) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | - | 40 (30 ~ 120) | 0,18(0,1~0,35) | 40 (30 ~ 120) | 0,1(0,08~0,25) |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100 (40~ 150) | 0,18(0,1~0,3) | 90 (40~ 150) | 0,1(0,08~0,2) |
| H | Steel for Die Casting (DAC-MAGIC, DH31) | 43~48HRC | 80 (40 ~ 120) | 0,12(0,08~0,2) | 70 (40 ~ 120) | 0,08(0,06~0,15) |
| H | Hardened Steel (SKD11) | 50~55HRC | 60 (40 ~ 90) | 0,1(0,05~0,2) | 50 (40 ~ 90) | 0,06(0,05~0,1) |

## Drilling

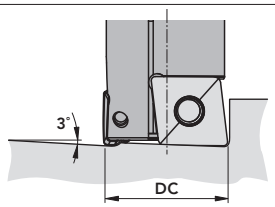
For both counterboring and plunge milling

| | Work Material | Tensile Strength / Hardness | Cutting Speed Vc (m/min) | Feed Rate f (mm/rev) | | |
|---|---|---|---|---|---|---|
| | | | | Ø20 | Ø25 | Ø32 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 160(100~200) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 150(100~200) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| P | Die Steel (SKD11-SKD61) | ~280HB | 120(80~180) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 130(80~180) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| K | Cast Iron (FC250) | ~350N/mm² | 200(150~180) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 160(100~220) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| N | Aluminium Alloy | ~13%Si | 200(100~800) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| S | Superalloy (Wet) (Inconel®718) | - | 50(30~60) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| S | Titanium Alloy (Wet) (Ti-6Al-4V) | - | 60(30~100) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 100(60~120) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| H | Steel for Die Casting (DAC-MAGIC, DH31) | 43~48HRC | 80(40~100) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |
| H | Hardened Steel (SKD11) | 50~55HRC | 60(40~80) | 0,07(0,05~0,08) | 0,08(0,06~0,1) | 0,1(0,08~0,12) |

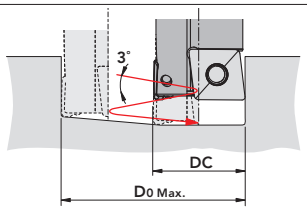
* Above recommended speed is for short shank type.
  For long shank type, use the following cutting condition: cutting speed = 80% of the above settings.
1. The indicated speeds and feeds are for milling with water-soluble coolant.
2. The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting condition.
3. Inserts should be attached to the holder tightly in a very neat condition.
4. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.

### Set the maximum processing angle during ramping and helical drilling operations to less than 3°

**Ramping**




**Helical Drilling**




Unit: mm

| (DC) | (D0 Max.) |
|---|---|
| 20 | 37 |
| 25 | 47 |
| 32 | 61 |

# CUTTING CONDITIONS

Milling | Indexables | Cutting conditions

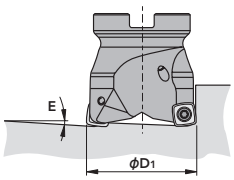
## PHC

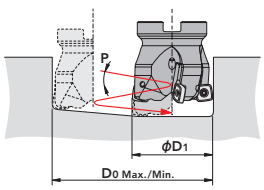
### High feed radius cutter

| Work Material | | Tensile Strength / Hardness | Vc (m/min) | Insert Size | | | | | | | | | | | | Grade |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SPMT07... | | | | SDMT09... | | | | SXMT12... | | | | |
| | | | | Feed per Tooth fz (mm/t) | ap (mm) | | | Feed per Tooth fz (mm/t) | ap (mm) | | | Feed per Tooth fz (mm/t) | ap (mm) | | | |
| | | | | | L/D=2 | L/D=3 | L/D=4 | | L/D=2 | L/D=3 | L/D=4 | | L/D=2 | L/D=3 | L/D=4 | |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (60~250) | 0,7 (0,3~1,5) | 0,8 | 0,6 | 0,4 | 0,8 (0,3~1,8) | 1 | 0,8 | 0,5 | 1,25 (0,5~3,2) | 1,2 | 1,2 | 1 | XP3035 |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (60~250) | 0,7 (0,3~1,3) | 0,8 | 0,6 | 0,4 | 0,8 (0,3~1,5) | 1 | 0,8 | 0,5 | 1,25 (0,5~3) | 1,2 | 1,2 | 1 | XP3035 |
| | Die Steel (SKD11-SKD61) | ~280HB | 180 (60~250) | 0,7 (0,3~1,3) | 0,6 | 0,5 | 0,3 | 0,8 (0,3~1,5) | 0,8 | 0,6 | 0,4 | 1,25 (0,5~3) | 1,2 | 1,2 | 1 | XP3035 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 160 (80~200) | 0,4 (0,3~1,2) | 0,6 | 0,5 | 0,3 | 0,5 (0,3~1,5) | 0,8 | 0,6 | 0,4 | 1 (0,5~2,5) | 1,2 | 1 | 1 | XC5035 |
| | Stainless Steel (Coolant) (SUS304-SUS420) | ~250HB | 120 (60 ~ 180) | 0,4 (0,3~1,2) | 0,6 | 0,5 | 0,3 | 0,5 (0,3~1,5) | 0,8 | 0,6 | 0,4 | 1 (0,5~2,5) | 1,2 | 1 | 1 | XP2040 |
| K | Cast Iron (FC250) | ~350N/mm² | 200 (100~300) | 0,8 (0,4~1,5) | 0,8 | 0,6 | 0,4 | 1 (0,5~1,8) | 1 | 0,8 | 0,5 | 1,5 (0,5~3,5) | 1,5 | 1,5 | 1 | XC1015 |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 180 (100~250) | 0,7 (0,3~1,3) | 0,8 | 0,6 | 0,4 | 0,9 (0,5~1,5) | 1 | 0,8 | 0,5 | 1,35 (0,5~3) | 1,2 | 1,2 | 0,9 | XC1015 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | – | 30 (25~60) | 0,3 (0,2~0,7) | 0,4 | 0,4 | 0,3 | 0,4 (0,2~0,8) | 0,5 | 0,5 | 0,4 | 0,5 (0,2~1) | 1 | 1 | 0,8 | XC5040 |
| | Titanium Alloy (Wet) (Ti-6Al-4V) | – | 80 (50~120) | 0,4 (0,3~0,8) | 0,4 | 0,4 | 0,3 | 0,5 (0,3~1) | 0,5 | 0,5 | 0,3 | 0,7 (0,3~1,2) | 0,8 | 0,8 | 0,4 | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 120 (40~150) | 0,4 (0,2~0,8) | 0,4 | 0,4 | 0,3 | 0,5 (0,2~1) | 0,5 | 0,5 | 0,3 | 0,8 (0,3~1,5) | 1 | 1 | 0,5 | XP2040 |
| | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 90 (40~120) | 0,3 (0,2~0,6) | 0,4 | 0,4 | 0,3 | 0,4 (0,2~0,8) | 0,5 | 0,5 | 0,3 | 0,7 (0,3~1,2) | 0,7 | 0,7 | 0,5 | XP2040 |
| | Hardened Steel (SKD11) | 50~55HRC | 60 (40~90) | 0,2 (0,2~0,5) | 0,3 | 0,3 | 0,2 | 0,3 (0,2~0,7) | 0,3 | 0,3 | 0,2 | 0,5 (0,3~0,8) | 0,5 | 0,5 | 0,4 | XP2040 |

## Maximum Ramping Angle (E)

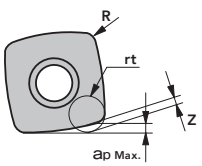
| Insert Size | SPMT07... | | | | SDMT09... | | | | SXMT12... | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° |
| | | D Min. | D Max. | | | D Min. | D Max. | | | D Min. | D Max. | |
| 16 | 5,9 | 22 | 31 | 4,5 | - | - | - | - | - | - | - | - |
| 17 | 4,9 | 24 | 33 | 3,6 | - | - | - | - | - | - | - | - |
| 18 | 4,2 | 26 | 35 | 3,1 | - | - | - | - | - | - | - | - |
| 20 | 3,2 | 30 | 39 | 2,3 | - | - | - | - | - | - | - | - |
| 21 | 2,8 | 32 | 41 | 2,0 | - | - | - | - | - | - | - | - |
| 22 | 2,6 | 34 | 43 | 1,8 | - | - | - | - | - | - | - | - |
| 25 | 2,0 | 40 | 49 | 1,3 | 3,6 | 35 | 48 | 3,1 | - | - | - | - |
| 26 | 1,8 | 42 | 51 | 1,1 | 3,1 | 37 | 50 | 2,6 | - | - | - | - |
| 28 | 1,6 | 46 | 55 | 1,0 | 2,6 | 41 | 54 | 2,1 | - | - | - | - |
| 30 | 1,4 | 50 | 59 | 0,8 | 2,2 | 45 | 58 | 1,9 | 7,9 | 40 | 58 | 6,5 |
| 32 | 1,3 | 54 | 63 | 0,7 | 2,0 | 49 | 62 | 1,7 | 7,2 | 44 | 62 | 6,1 |
| 33 | 1,2 | 56 | 65 | 0,6 | 1,8 | 51 | 64 | 1,5 | 6,4 | 46 | 64 | 4,4 |
| 35 | 1,1 | 60 | 69 | 0,5 | 1,6 | 55 | 68 | 1,4 | 4,4 | 50 | 68 | 3,7 |
| 40 | - | - | - | - | 1,2 | 65 | 78 | 1,0 | 2,9 | 60 | 78 | 2,5 |
| 50 | - | - | - | - | 0,9 | 85 | 98 | 0,8 | 1,5 | 80 | 98 | 1,3 |
| 63 | - | - | - | - | 0,8 | 111 | 124 | 0,7 | 1,1 | 106 | 124 | 0,9 |
| 80 | - | - | - | - | - | - | - | - | 1,3 | 140 | 158 | 1,1 |
| 100 | - | - | - | - | - | - | - | - | 0,7 | 180 | 198 | 0,6 |




### Flute shape dimensions (for programming)

| Insert size | R | ap max | R rt | Z |
|---|---|---|---|---|
| SPMT07··· | 0,5 | 0,8 | 1,2 | 0,35 |
| SDMT09··· | 0,8 | 1 | 2 | 0,7 |
| SXMT12··· | 1 | 2 | 3 | 1,15 |




For machining purposes: create machining programs for the recommended simulated R. Unit: mm

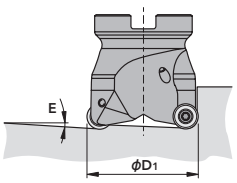
## PRC

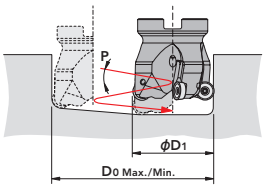
### Radius cutter

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Insert size | | | | | | Grade |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | RPH.10... | | RPH.12... | | RPH.16... | | |
| | | | | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | Depth of Cut ap (mm) | |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 200 (100 ~ 300) | 0,25 (0,1 ~ 0,35) | 2 | 0,3 (0,1 ~ 0,4) | 2,4 | 0,35 (0,1 ~ 0,5) | 3,2 | XP3035 |
| | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (100 ~ 250) | 0,2 (0,1 ~ 0,3) | 2 | 0,25 (0,1 ~ 0,35) | 2,4 | 0,3 (0,1 ~0,45) | 3,2 | XP3035 |
| | Die Steel (SKD11-SKD61) | ~280HB | 150 (80 ~ 200) | 0,2 (0,1 ~ 0,3) | 2 | 0,25 (0,1 ~ 0,35) | 2,4 | 0,3 (0,1 ~0,45) | 3,2 | XP3035 |
| M | Stainless Steel (DRY) (SUS304-SUS420) | ~250HB | 160 (80 ~ 200) | 0,25 (0,1 ~ 0,35) | 2 | 0,3 (0,1 ~ 0,4) | 2,4 | 0,35 (0,1 ~ 0,5) | 3,2 | XC5035 |
| | Stainless Steel (WET) (SUS304-SUS420) | ~250HB | 120 (60 ~ 180) | 0,25 (0,1 ~ 0,35) | 2 | 0,3 (0,1 ~ 0,4) | 2,4 | 0,35 (0,1 ~ 0,5) | 3,2 | XP2040 |
| K | Cast Iron (FC250) | ~350N/mm² | 220 (100 ~ 350) | 0,25 (0,05 ~ 0,4) | 2 | 0,3 (0,1 ~ 0,5) | 2,4 | 0,35 (0,1 ~ 0,6) | 3,2 | XC1015 |
| | Ductile Cast Iron (FCD400) | ~800N/mm² | 150 (100 ~ 220) | 0,2 (0,1 ~ 0,3) | 2 | 0,25 (0,1 ~ 0,35) | 2,4 | 0,3 (0,1 ~0,45) | 3,2 | XC1015 |
| N | Aluminium Alloys | ~13%Si | 600 (300 ~ 1.500) | 0,4 (0,2 ~ 0,8) | 2 | 0,6 (0,2 ~ 1) | 2,4 | 0,8 (0,3 ~ 1,5) | 3,2 | CK010 |
| S | Heat Resistant Alloys (Inconel 718) | – | 40 (25 ~ 60) | 0,15 (0,05 ~0,25) | 2 | 0,2 (0,05 ~ 0,3) | 2,4 | 0,25 (0,05 ~0,4) | 3,2 | XC5040 |
| | Titanium Alloy (Ti-6Al-4V) | – | 80 (50 ~ 120) | 0,2 (0,1 ~ 0,3) | 2 | 0,25 (0,1 ~ 0,35) | 2,4 | 0,3 (0,1 ~0,45) | 3,2 | XC5040 |
| H | Pre-hardened Steel (NAK80) | 40~43HRC | 120 (40 ~ 150) | 0,15 (0,05 ~ 0,25) | 1,5 | 0,2 (0,05 ~ 0,3) | 1,5 | 0,25 (0,05 ~0,4) | 1,5 | XP6015 |
| | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 80 (40 ~ 120) | 0,15 (0,05 ~ 0,25) | 1 | 0,2 (0,05 ~ 0,3) | 1 | 0,25 (0,05 ~ 0,4) | 1 | XP6015 |
| | Hardened Steel (SKD11) | 50~55HRC | 60 (30~ 90) | 0,15 (0,05 ~ 0,25) | 0,5 | 0,2 (0,05 ~0,3) | 0,5 | 0,25 (0,05 ~ 0,4) | 0,5 | XP6015 |

## Maximum Ramping Angle (E)

| Insert Size | RPH*10... | | | | RPH*12... | | | | RPH*16... | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° | Ramping Angle E° | Helical Milling(mm) | | Helical Angle P° |
| | | D Min. | D Max. | | | D Min. | D Max. | | | D Min. | D Max. | |
| 20 | 1,3 | 26 | 30 | 1,3 | - | - | - | - | - | - | - | - |
| 24 | - | - | - | - | 6,0 | 30 | 36 | 2,2 | - | - | - | - |
| 25 | 2,0 | 37 | 40 | 1,8 | - | - | - | - | - | - | - | - |
| 30 | 2,5 | 46 | 50 | 1,6 | 5,3 | 42 | 48 | 1,9 | - | - | - | - |
| 32 | 3,0 | 50 | 54 | 1,5 | 4,0 | 46 | 52 | 1,7 | 7,0 | 39 | 48 | 2,1 |
| 40 | - | - | - | - | 2,8 | 62 | 68 | 1,4 | 4,8 | 55 | 64 | 1,8 |
| 50 | - | - | - | - | 2,6 | 81 | 88 | 1,1 | 4,0 | 75 | 84 | 1,5 |
| 63 | - | - | - | - | 1,9 | 107 | 114 | 0,9 | 2,8 | 101 | 110 | 1,1 |
| 80 | - | - | - | - | 1,3 | 142 | 148 | 0,7 | 2,0 | 135 | 144 | 0,9 |
| 100 | - | - | - | - | 1,0 | 181 | 188 | 0,5 | 1,5 | 175 | 184 | 0,7 |



# CUTTING CONDITIONS

Milling | Indexables | Cutting conditions

## PDR

### High feed radius cutter

| Work Material | | Tensile strength / Hardness | Milling Speed Vc (m/min) | PDR SS/MT/CN | | | PDR BORE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Feed per Tooth fz (mm) | Depth of Cut ap (mm) | | Feed per Tooth fz (mm) | Depth of Cut ap (mm) | | | |
| | | | | | 120 | 170 | | 100 | 200 | 300 | 400 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 180 (90~220) | 0,7(0,3~1) | 3 | 2 | 0,6(0,3~1) | 3 | 3 | 2 | 2 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 180 (90~220) | 0,7(0,3~1) | 3 | 2 | 0,6(0,3~1) | 3 | 3 | 2 | 2 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 150 (90~180) | 0,6(0,3~1) | 3 | 2 | 0,5(0,3~1) | 3 | 2 | 2 | 2 |
| K | Cast Iron (FC250) | ~350N/mm² | 180 (100~250) | 0,8(0,3~1,5) | 3 | 2 | 0,7(0,3~1,5) | 3 | 3 | 2 | 2 |
| K | Ductile Cast Iron (FCD400) | ~800N/mm² | 150 (100~250) | 0,7(0,3~1,2) | 3 | 2 | 0,6(0,3~1,2) | 3 | 3 | 2 | 2 |

## PFB-SP, PFB-SH, PFB-Q

### Finishing ball nose cutter

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6,8 | Ø 10,12 | Ø 16,20 | Ø 25-30-32 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 300 (200~ 400) | 0,02 D | 0,1 | 0,12 | 0,14 | 0,18 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 300 (200~ 400) | 0,02 D | 0,07 | 0,1 | 0,12 | 0,14 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 250 (150 ~ 350) | 0,02 D | 0,07 | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 250 (150 ~ 350) | 0,02 D | 0,07 | 0,12 | 0,14 | 0,17 |
| K | Cast Iron (FC250) | ~300N/mm² | 400 (300~ 500) | 0,02 D | 0,12 | 0,14 | 0,18 | 0,22 |
| K | Ductile Cast Iron (FCD400) | ~600N/mm² | 300 (200~ 400) | 0,02 D | 0,1 | 0,12 | 0,14 | 0,18 |
| N | Aluminium Alloy | ~13% Si | 500 (400~ 600) | 0,03 D | 0,12 | 0,14 | 0,18 | 0,22 |
| N | Copper Alloy (C1100) | - | 300 (200 ~ 400) | 0,03 D | 0,11 | 0,13 | 0,17 | 0,22 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | - | 50 (25~ 80) | 0,015 D | 0,04 | 0,05 | 0,06 | 0,06 |
| S | Titanium Alloy (Wet) (Ti-Al-4V) | - | 90 (40~120) | 0,02 D | 0,06 | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40~43HRC | 200 (100~ 300) | 0,015 D | 0,06 | 0,07 | 0,0,8 | 0,1 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 180 (90 ~ 200) | 0,015 D | 0,05 | 0,06 | 0,07 | 0,07 |
| H | Hardened Steel (SKD11) | 50~60HRC | 150 (100 ~ 250) | 0,01 D | 0,05 | 0,06 | 0,07 | 0,07 |

## PFB-D

### Finishing ball nose cutter

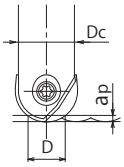
| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6,8 | Ø 10,12 | Ø 16,20 | Ø 25-30-32 |
| N | Graphite | - | 500 (400~ 600) | 0,03 D | 0,14 | 0,17 | 0,21 | 0,25 |
| N | CFRP Carbon Fiber Reinforced Plastic | - | 300 (300 ~ 500) | 0,03 D | 0,11 | 0,13 | 0,17 | 0,20 |

# PFB

## Chart of cutting depth and actual cutting diameter

| Depth of cut | | Actual cutting diameter | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D | R | 0,1 | 0,2 | 0,3 | 0,4 | 0,5 | 0,8 | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 |
| 6 | 3 | 1,5 | 2,2 | 2,6 | 3 | 3,3 | 4,1 | - | - | - | - | - | - | - | - | - |
| 7 | 3,5 | 1,6 | 2,3 | 2,8 | 3,3 | 3,6 | 4,5 | - | - | - | - | - | - | - | - | - |
| 8 | 4 | 1,8 | 2,5 | 3 | 3,5 | 3,9 | 4,8 | - | - | - | - | - | - | - | - | - |
| 10 | 5 | 2 | 2,8 | 3,4 | 3,9 | 4,4 | 5,4 | 6 | 7,1 | - | - | - | - | - | - | - |
| 12 | 6 | 2,2 | 3,1 | 3,7 | 4,3 | 4,8 | 6 | 6,6 | 7,9 | 8,9 | - | - | - | - | - | - |
| 16 | 8 | 2,5 | 3,6 | 4,3 | 5 | 5,6 | 7 | 7,7 | 9,3 | 10,6 | 11,6 | - | - | - | - | - |
| 20 | 10 | 2,8 | 4 | 4,9 | 5,6 | 6,2 | 7,8 | 8,7 | 10,5 | 12 | 13,2 | 14,3 | 15,2 | - | - | |
| 25 | 12,5 | 3,2 | 4,5 | 5,4 | 6,3 | 7 | 8,8 | 9,8 | 11,9 | 13,6 | 15 | 16,2 | 17,3 | 18,3 | - | - |
| 30 | 15 | 3,5 | 4,9 | 6 | 6,9 | 7,7 | 9,7 | 10,8 | 13,1 | 15 | 16,6 | 18 | 19,3 | 20,4 | 21,4 | 22,4 |
| 32 | 16 | 3,6 | 5 | 6,2 | 7,1 | 7,9 | 10 | 11,1 | 13,5 | 15,5 | 17,2 | 18,7 | 20 | 21,2 | 22,2 | 23,2 |

How to determine actual cutting diameter D



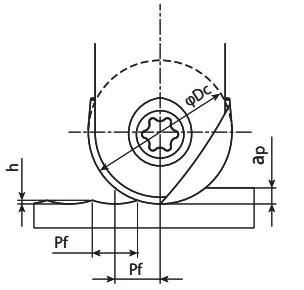

$$D=2\sqrt{apx(Dc-ap)}$$

## Recommended pick feed and milling surface roughness

Unit: mm

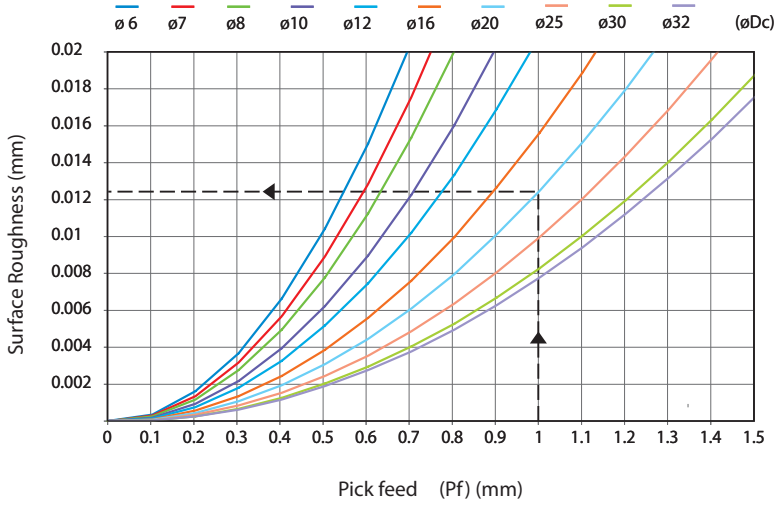
| D | 6 | 7 | 8 | 10 | 12 | 16 | 20 | 25 | 30 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|
| Pf | 0,4 | 0,45 | 0,5 | 0,6 | 0,7 | 0,8 | 1 | 1,2 | 1,3 | 1,4 |
| h | 0,007 | 0,007 | 0,008 | 0,009 | 0,01 | 0,01 | 0,012 | 0,014 | 0,014 | 0,015 |

## Theoretical milling surface roughness




$h = 0.5\times (Dc-\sqrt{Dc^2-Pf^2})$

Dc=20mm
Pf=1mm
→h=0.0125mm



# CUTTING CONDITIONS



## PFR-ST, PFR-SH

### Standard conditions

| Work Material | | Tensile Strength / Hardness | Cutting Speed Vc (m/min) | | | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L/D | | | | D | | | |
| | | | 2,5D | 5D | 8D | | Ø 6,7 | Ø 8~11 | Ø 12~17 | Ø 20~32 |
| P | Mild Steel·Carbon Steel SS400 - S10C | ~180HB | 200 (150~250) | 80% | 60% | 0,05Dc | 0,12 | 0,2 | 0,22 | 0,25 |
| P | Carbon Steel·Alloy Steel S50C - SCM440 | ~280HB | 180 (150~250) | 80% | 60% | 0,05Dc | 0,15 | 0,18 | 0,22 | 0,25 |
| P | Die Steel SKD11 - SKD61 | ~280HB | 150 (120~200) | 80% | 60% | 0,05Dc | 0,1 | 0,15 | 0,18 | 0,2 |
| M | Stainless Steel (SUS304 - SUS420) | ~250HB | 150 (100~200) | 80% | 60% | 0,03Dc | 0,08 | 0,12 | 0,15 | 0,18 |
| K | Cast Iron FC250 | ~300N/mm² | 200 (150~250) | 80% | 60% | 0,05Dc | 0,15 | 0,2 | 0,25 | 0,3 |
| K | Ductile Cast Iron FCD400 | ~600N/mm² | 150 (100~200) | 80% | 60% | 0,05Dc | 0,12 | 0,15 | 0,2 | 0,25 |
| N | Aluminium Alloy | ~13%Si | 300 (200~400) | 80% | 60% | 0,05Dc | 0,2 | 0,25 | 0,3 | 0,35 |
| S | Superalloy (Wet) (Inconel 718) | - | 30 (20~40) | 80% | 60% | 0,02Dc | 0,04 | 0,05 | 0,08 | 0,12 |
| S | Titanium Alloy (Wet) (Ti-Al-4V) | - | 50 (40~60) | 80% | 60% | 0,02Dc | 0,05 | 0,08 | 0,1 | 0,15 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40 ~ 43HRC | 120 (100~150) | 80% | 60% | 0,03Dc | 0,08 | 0,1 | 0,12 | 0,18 |
| H | Die Cast Steel (DAC55, DH31) | 43 ~ 48HRC | 80 (50~100) | 80% | 60% | 0,025Dc | 0,05 | 0,08 | 0,1 | 0,15 |
| H | Hardened Steel (SKD11) | 50 ~ 60HRC | 60 (40~80) | 80% | 60% | 0,02Dc | 0,04 | 0,05 | 0,08 | 0,1 |

## PFR-D

### Standard conditions

| Work Material | | Cutting Speed Vc (m/min) | | | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L/D | | | | D | | | |
| | | 2,5D | 5D | 8D | | Ø 6,7 | Ø 8~11 | Ø 12~17 | Ø 20~32 |
| N | Graphite | 250 (150~350) | 80% | 60% | 0,1Dc | 0,25 | 0,4 | 0,5 | 0,5 |
| N | CFRP Carbon Fiber Reinforced Plastic | 200 (150~250) | 80% | 60% | 0,5Dc | 0,05 | 0,1 | 0,15 | 0,2 |

## PFR - High speed finishing conditions

### Steel shank

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6~8 | Ø 10~13 | Ø 16~21 | Ø 25~32 |
| P | Mild Steel·Carbon Steel SS400 - S10C | ~180HB | 450 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| | Carbon Steel·Alloy Steel S50C - SCM440 | ~280HB | 450 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| | Die Steel SKD11 - SKD61 | ~280HB | 375 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (SUS304 - SUS420) | ~250HB | 375 | 0,02Dc | 0,07 | 0,12 | 0,14 | 0,17 |
| K | Cast Iron FC250 | ~300N/mm² | 600 | 0,02Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| | Ductile Cast Iron FCD400 | ~600N/mm² | 450 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| N | Aluminium Alloy | ~13%Si | 750 | 0,03Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| S | Superalloy (Wet) (Inconel 718) | - | 70 | 0,015Dc | 0,04 | 0,05 | 0,06 | 0,06 |
| | Titanium Alloy (Wet) (Ti-Al-4V) | - | 120 | 0,02Dc | 0,06 | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40 ~ 43HRC | 300 | 0,015Dc | 0,06 | 0,07 | 0,08 | 0,1 |
| | Die Cast Steel (DAC55, DH31) | 43 ~ 48HRC | 270 | 0,015Dc | 0,05 | 0,06 | 0,07 | 0,07 |
| | Hardened Steel (SKD11) | 50 ~ 60HRC | 220 | 0,01Dc | 0,05 | 0,06 | 0,07 | 0,07 |

## PFR - High speed finishing conditions

### Carbide shank short type

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6~8 | Ø 10~13 | Ø 16~21 | Ø 25~32 |
| P | Mild Steel·Carbon Steel SS400 - S10C | ~180HB | 540 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| | Carbon Steel·Alloy Steel S50C - SCM440 | ~280HB | 540 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| | Die Steel SKD11 - SKD61 | ~280HB | 450 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (SUS304 - SUS420) | ~250HB | 450 | 0,02Dc | 0,07 | 0,12 | 0,14 | 0,17 |
| K | Cast Iron FC250 | ~300N/mm² | 720 | 0,02Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| | Ductile Cast Iron FCD400 | ~600N/mm² | 540 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| N | Aluminium Alloy | ~13%Si | 600 | 0,03Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| S | Superalloy (Wet) (Inconel 718) | - | 80 | 0,015Dc | 0,04 | 0,05 | 0,06 | 0,06 |
| | Titanium Alloy (Wet) (Ti-Al-4V) | - | 150 | 0,02Dc | 0,06 | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40 ~ 43HRC | 340 | 0,015Dc | 0,06 | 0,07 | 0,08 | 0,1 |
| | Die Cast Steel (DAC55, DH31) | 43 ~ 48HRC | 290 | 0,015Dc | 0,05 | 0,06 | 0,07 | 0,07 |
| | Hardened Steel (SKD11) | 50 ~ 60HRC | 260 | 0,01Dc | 0,05 | 0,06 | 0,07 | 0,07 |

## PFR - High speed finishing conditions

### Carbide shank long type

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6~8 | Ø 10~13 | Ø 16~21 | Ø 25~32 |
| P | Mild Steel·Carbon Steel SS400 - S10C | ~180HB | 480 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| | Carbon Steel·Alloy Steel S50C - SCM440 | ~280HB | 480 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| | Die Steel SKD11 - SKD61 | ~280HB | 400 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (SUS304 - SUS420) | ~250HB | 400 | 0,02Dc | 0,07 | 0,12 | 0,14 | 0,17 |
| K | Cast Iron FC250 | ~300N/mm² | 640 | 0,02Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| | Ductile Cast Iron FCD400 | ~600N/mm² | 480 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| N | Aluminium Alloy | ~13%Si | 800 | 0,03Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| S | Superalloy (Wet) (Inconel 718) | - | 80 | 0,015Dc | 0,04 | 0,05 | 0,06 | 0,06 |
| | Titanium Alloy (Wet) (Ti-Al-4V) | - | 144 | 0,02Dc | 0,06 | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40 ~ 43HRC | 320 | 0,015Dc | 0,06 | 0,07 | 0,08 | 0,1 |
| | Die Cast Steel (DAC55, DH31) | 43 ~ 48HRC | 288 | 0,015Dc | 0,05 | 0,06 | 0,07 | 0,07 |
| | Hardened Steel (SKD11) | 50 ~ 60HRC | 240 | 0,01Dc | 0,05 | 0,06 | 0,07 | 0,07 |

## PFR - High speed finishing conditions

### Carbide shank extra long type

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | Feed per Tooth fz (mm/t) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | D | | | |
| | | | | | Ø 6~8 | Ø 10~13 | Ø 16~21 | Ø 25~32 |
| P | Mild Steel·Carbon Steel SS400 - S10C | ~180HB | 360 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| | Carbon Steel·Alloy Steel S50C - SCM440 | ~280HB | 360 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| | Die Steel SKD11 - SKD61 | ~280HB | 300 | 0,02Dc | 0,07 | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (SUS304 - SUS420) | ~250HB | 300 | 0,02Dc | 0,07 | 0,12 | 0,14 | 0,17 |
| K | Cast Iron FC250 | ~300N/mm² | 480 | 0,02Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| | Ductile Cast Iron FCD400 | ~600N/mm² | 360 | 0,02Dc | 0,1 | 0,12 | 0,14 | 0,18 |
| N | Aluminium Alloy | ~13%Si | 600 | 0,03Dc | 0,12 | 0,14 | 0,18 | 0,22 |
| S | Superalloy (Wet) (Inconel 718) | - | 60 | 0,015Dc | 0,04 | 0,05 | 0,06 | 0,06 |
| | Titanium Alloy (Wet) (Ti-Al-4V) | - | 110 | 0,02Dc | 0,06 | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40 ~ 43HRC | 240 | 0,015Dc | 0,06 | 0,07 | 0,08 | 0,1 |
| | Die Cast Steel (DAC55, DH31) | 43 ~ 48HRC | 220 | 0,015Dc | 0,05 | 0,06 | 0,07 | 0,07 |
| | Hardened Steel (SKD11) | 50 ~ 60HRC | 180 | 0,01Dc | 0,05 | 0,06 | 0,07 | 0,07 |

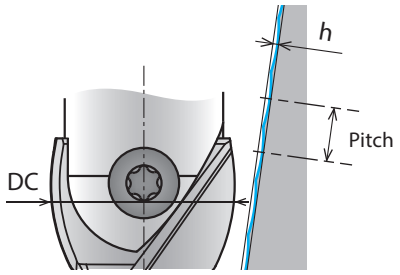
## PFB-BR
### Barrel Type Tool

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | fz (mm/t) | | |
|---|---|---|---|---|---|---|---|
| | | | | | DC | | |
| | | | | | Ø 10,12 | Ø 16,20 | Ø 25-32 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 300 (200~ 400) | 0,2 D | 0,12 | 0,14 | 0,18 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 300 (200~ 400) | 0,2 D | 0,1 | 0,12 | 0,14 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 250 (150 ~ 350) | 0,2 D | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 250 (150 ~ 350) | 0,2 D | 0,12 | 0,14 | 0,17 |
| K | Cast Iron (FC250) | ~300N/mm² | 400 (300~ 500) | 0,2 D | 0,14 | 0,18 | 0,22 |
| K | Ductile Cast Iron (FCD400) | ~600N/mm² | 300 (200~ 400) | 0,2 D | 0,12 | 0,14 | 0,18 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | - | 50 (25~ 80) | 0,15 D | 0,05 | 0,06 | 0,06 |
| S | Titanium Alloy (Wet) (Ti-Al-4V) | - | 90 (40~120) | 0,2 D | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40~43HRC | 200 (100~ 300) | 0,15 D | 0,07 | 0,0,8 | 0,1 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 180 (90 ~ 200) | 0,15 D | 0,06 | 0,07 | 0,07 |
| H | Hardened Steel (SKD11) | 50~60HRC | 150 (100 ~ 250) | 0,1 D | 0,06 | 0,07 | 0,07 |

The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting conditions.

### Theoretical Cusp Height

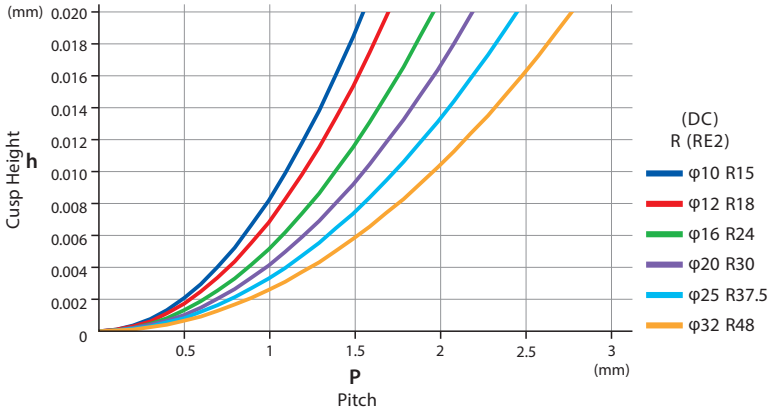
**(PFB-BR) Barrel Type Tool**




$$h = 0.5 \times \left(2 \times RE2 - \sqrt{(2 \times RE2)^2 - P^2}\right)$$

h: Cusp height
P: Pitch
RE2: peripheral edge R

**Cusp Height and Pitch**



# CUTTING CONDITIONS

## PFB-LZ

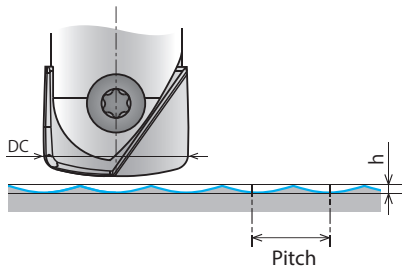
### Lens Type Tool

| Work Material | | Tensile Strength / Hardness | Milling Speed Vc (m/min) | Depth of Cut ap (mm) | fz (mm/t) | | |
|---|---|---|---|---|---|---|---|
| | | | | | DC | | |
| | | | | | Ø 10,12 | Ø 16,20 | Ø 25-32 |
| P | Mild Steel-Carbon Steel (SS400-S10C) | ~180HB | 300 (200~800) | 0,2 D | 0,12 | 0,14 | 0,18 |
| P | Carbon Steel-Alloy Steel (S50C-SCM440) | ~280HB | 300 (200~800) | 0,2 D | 0,1 | 0,12 | 0,14 |
| P | Die Steel (SKD11-SKD61) | ~280HB | 250 (150~600) | 0,2 D | 0,1 | 0,12 | 0,14 |
| M | Stainless Steel (Dry) (SUS304-SUS420) | ~250HB | 250 (150~650) | 0,2 D | 0,12 | 0,14 | 0,17 |
| K | Cast Iron (FC250) | ~300N/mm² | 400 (300~800) | 0,2 D | 0,14 | 0,18 | 0,22 |
| K | Ductile Cast Iron (FCD400) | ~600N/mm² | 300 (200~800) | 0,2 D | 0,12 | 0,14 | 0,18 |
| S | Heat Resistant Alloys (Wet) (Inconel 718) | - | 50 (25~80) | 0,15 D | 0,05 | 0,06 | 0,06 |
| S | Titanium Alloy (Wet) (Ti-Al-4V) | - | 90 (40~120) | 0,2 D | 0,08 | 0,11 | 0,13 |
| H | Pre-hardened Steel (NAK80, STAVAX) | 40~43HRC | 200 (100~350) | 0,15 D | 0,07 | 0,0,8 | 0,1 |
| H | Steel for Die Casting (DAC55-DH31) | 43~48HRC | 180 (90~350) | 0,15 D | 0,06 | 0,07 | 0,07 |
| H | Hardened Steel (SKD11) | 50~60HRC | 150 (100~300) | 0,1 D | 0,06 | 0,07 | 0,07 |

The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting conditions.

### Theoretical Cusp Height

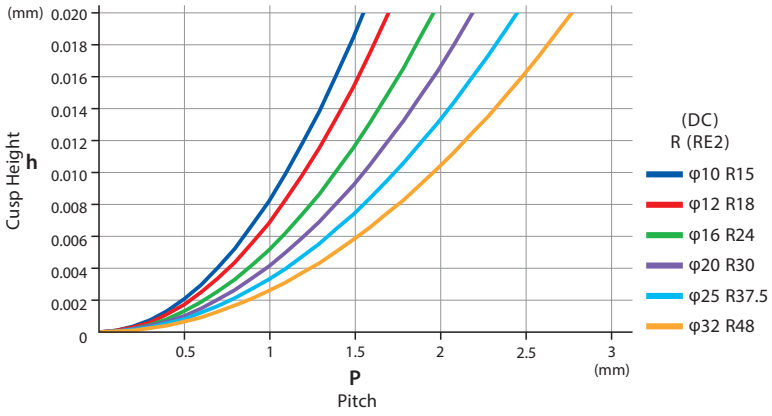
**(PFB-LZ) Lens Type Tool**




$$h = 0.5 \times \left(2 \times RE2 - \sqrt{(2 \times RE2)^2 - P^2}\right)$$

h: Cusp height
P: Pitch
RE2: peripheral edge R

**Cusp Height and Pitch**



## PXNL / PXNH

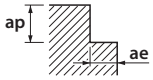
**Side milling L/D≤3,5**

| | Cast iron FC250 | | Carbon steel | | Alloy steel | | Stainless steel Hardened steel | | Stainless steel SUS304 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 2.860 | 720 | 3.820 | 840 | 3.180 | 520 | 2.860 | 350 | 2.550 | 280 |
| 12 | 2.390 | 600 | 3.180 | 700 | 2.650 | 440 | 2.390 | 290 | 2.120 | 230 |
| 16 | 1.790 | 620 | 2.390 | 720 | 1.990 | 450 | 1.790 | 300 | 1.590 | 240 |
| 20 | 1.430 | 660 | 1.910 | 760 | 1.590 | 480 | 1.430 | 310 | 1.270 | 250 |
| 25 | 890 | 450 | 1.270 | 560 | 1.020 | 340 | 890 | 220 | 760 | 170 |

Max cutting depth

| ap | ae |
|---|---|
| 0,5 D | 0,3 D |

| ap | ae |
|---|---|
| 0,5 D | 0,2 D |



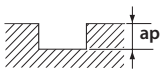

## PXNL / PXNH

**Slotting L/D≤3,5**

| | Cast iron FC250 | | Carbon steel | | Alloy steel | | Stainless steel Hardened steel | | Stainless steel SUS304 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 2.230 | 360 | 3.180 | 450 | 2.550 | 270 | 2.230 | 170 | 1.910 | 130 |
| 12 | 1.860 | 300 | 2.650 | 370 | 2.120 | 220 | 1.860 | 140 | 1.590 | 110 |
| 16 | 1.390 | 320 | 1.990 | 400 | 1.590 | 240 | 1.390 | 150 | 1.190 | 120 |
| 20 | 1.110 | 360 | 1.590 | 450 | 1.270 | 270 | 1.110 | 170 | 950 | 130 |
| 25 | 760 | 280 | 1.150 | 370 | 890 | 210 | 760 | 130 | 640 | 100 |

Max cutting depth

| ap |
|---|
| 0,5 D |



# CUTTING CONDITIONS



## PXVC

**Side milling L/D≤5**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 10 | 4.780 | 1.150 | 3.820 | 920 | 3.190 | 770 | 2.550 | 620 |
| 12 | 3.980 | 960 | 3.190 | 770 | 2.660 | 640 | 2.130 | 520 |
| 14 | 3.420 | 830 | 2.730 | 660 | 2.280 | 550 | 1.820 | 440 |
| 16 | 2.990 | 720 | 2.390 | 580 | 1.990 | 480 | 1.600 | 390 |
| 18 | 2.660 | 640 | 2.130 | 520 | 1.770 | 430 | 1.420 | 350 |
| 20 | 2.390 | 580 | 1.910 | 460 | 1.600 | 390 | 1.280 | 310 |
| 22 | 2.180 | 530 | 1.740 | 420 | 1.450 | 350 | 1.160 | 280 |
| 25 | 1.910 | 460 | 1.530 | 370 | 1.280 | 310 | 1.020 | 250 |
| 32-5F | 1.500 | 380 | 1.200 | 240 | 1.000 | 250 | 800 | 160 |
| 32-8F | 1.500 | 480 | 1.200 | 390 | 1.000 | 320 | 800 | 260 |
| Max cutting depth | ap: 0,5 D<br>ae: 0,2 D | | | | ap: 0,5 D<br>ae: 0,1 D | | ap: 0,5 D<br>ae: 0,05 D | |

## PXVC

**Side milling 5<L/D≤6**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 10 | 4.300 | 1.040 | 3.510 | 850 | 2.870 | 690 | 2.230 | 540 |
| 12 | 3.590 | 870 | 2.920 | 710 | 2.390 | 580 | 1.860 | 450 |
| 14 | 3.070 | 740 | 2.510 | 610 | 2.050 | 500 | 1.600 | 390 |
| 16 | 2.690 | 650 | 2.190 | 530 | 1.800 | 440 | 1.400 | 340 |
| 18 | 2.390 | 580 | 1.950 | 470 | 1.600 | 390 | 1.240 | 300 |
| 20 | 2.150 | 520 | 1.760 | 430 | 1.440 | 350 | 1.120 | 270 |
| 22 | 1.960 | 480 | 1.600 | 390 | 1.310 | 320 | 1.020 | 250 |
| 25 | 1.720 | 420 | 1.410 | 340 | 1.150 | 280 | 900 | 220 |
| 32 | Maximum length of L/D=5 in combination with the standard shank | | | | | | | |
| Max cutting depth | ap: 0,5 D<br>ae: 0,2 D | | | | ap: 0,5 D<br>ae: 0,1 D | | ap: 0,5 D<br>ae: 0,05 D | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please adjust the cutting condition when the overhang length is longer.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.

## PXVC

**Side milling 6<L/D≤7**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 10 | 3.820 | 920 | 3.190 | 770 | 2.550 | 620 | 1.910 | 460 |
| 12 | 3.190 | 770 | 2.660 | 640 | 2.130 | 520 | 1.600 | 390 |
| 14 | 2.730 | 660 | 2.280 | 550 | 1.820 | 440 | 1.370 | 330 |
| 16 | 2.390 | 580 | 1.990 | 480 | 1.600 | 390 | 1.200 | 290 |
| 18 | 2.130 | 520 | 1.770 | 430 | 1.420 | 350 | 1.070 | 260 |
| 20 | 1.910 | 460 | 1.600 | 390 | 1.280 | 310 | 960 | 240 |
| 22 | 1.740 | 420 | 1.450 | 350 | 1.160 | 280 | 870 | 210 |
| 25 | 1.530 | 370 | 1.280 | 310 | 1.020 | 250 | 770 | 190 |
| 32 | Maximum length of L/D=5 in combination with the standard shank | | | | | | | |
| Max cutting depth | ap: 0,5 D<br>ae: 0,2 D | | | | ap: 0,5 D<br>ae: 0,1 D | | ap: 0,5 D<br>ae: 0,05 D | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please adjust the cutting condition when the overhang length is longer.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.

# CUTTING CONDITIONS

## PXVC

**Slotting** **L/D≤5**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 4.780 | 960 | 3.820 | 770 | 3.180 | 640 | 2.390 | 480 |
| 12 | 3.980 | 800 | 3.180 | 640 | 2.650 | 530 | 1.990 | 400 |
| 14 | 3.410 | 680 | 2.730 | 550 | 2.270 | 450 | 1.710 | 340 |
| 16 | 2.980 | 600 | 2.390 | 480 | 1.990 | 400 | 1.490 | 300 |
| 18 | 2.650 | 530 | 2.120 | 420 | 1.770 | 350 | 1.330 | 270 |
| 20 | 2.390 | 480 | 1.910 | 380 | 1.590 | 320 | 1.190 | 240 |
| 22 | 2.170 | 430 | 1.740 | 350 | 1.450 | 290 | 1.090 | 220 |
| 25 | 1.910 | 380 | 1.530 | 310 | 1.270 | 250 | 950 | 190 |
| 32 | Not recommended (due to the large number of flutes) | | | | | | | |
| Max cutting depth | ap ≤ 0,5 D | | ap ≤ 0,4 D | | ap ≤ 0,3 D | | ap ≤ 0,3 D | |

## PXVC

**Slotting** **5<L/D≤6**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 3.820 | 770 | 3.190 | 640 | 2.550 | 510 | 2.070 | 420 |
| 12 | 3.190 | 640 | 2.660 | 540 | 2.130 | 430 | 1.730 | 350 |
| 14 | 2.730 | 550 | 2.280 | 460 | 1.820 | 370 | 1.480 | 300 |
| 16 | 2.390 | 480 | 1.990 | 400 | 1.600 | 320 | 1.300 | 260 |
| 18 | 2.130 | 430 | 1.770 | 360 | 1.420 | 290 | 1.150 | 230 |
| 20 | 1.910 | 390 | 1.600 | 320 | 1.280 | 260 | 1.040 | 210 |
| 22 | 1.740 | 350 | 1.450 | 290 | 1.160 | 240 | 950 | 190 |
| 25 | 1.530 | 310 | 1.280 | 260 | 1.020 | 210 | 830 | 170 |
| 32 | Maximum length of L/D=5 in combination with the standard shank | | | | | | | |
| Max cutting depth | ap ≤ 0,5 D | | ap ≤ 0,4 D | | ap ≤ 0,3 D | | ap ≤ 0,3 D | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please adjust the cutting condition when the overhang length is longer.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.

## PXVC

**Slotting** **6<L/D≤7**

| | Mild steel - Carbon steel<br>Cast iron<br>SS400 · S55C · FC250<br>~750 N/mm2 | | Alloy steel<br>Tool steel<br>SCM · SKT · SKS · SKD<br>~30 HRC | | Stainless steel<br>Hardened steel<br>SUS304 · SKD<br>~45 HRC | | Hardened steel<br>Titanium alloy steel (wet)<br>Ti-6Al-4V<br>45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 3.190 | 640 | 2.550 | 510 | 2.230 | 450 | 1.910 | 390 |
| 12 | 2.660 | 540 | 2.130 | 430 | 1.860 | 380 | 1.600 | 320 |
| 14 | 2.280 | 460 | 1.820 | 370 | 1.600 | 320 | 1.370 | 280 |
| 16 | 1.990 | 400 | 1.600 | 320 | 1.400 | 280 | 1.200 | 240 |
| 18 | 1.770 | 360 | 1.420 | 290 | 1.240 | 250 | 1.070 | 220 |
| 20 | 1.600 | 320 | 1.280 | 260 | 1.120 | 230 | 960 | 200 |
| 22 | 1.450 | 290 | 1.160 | 240 | 1.020 | 210 | 870 | 180 |
| 25 | 1.280 | 260 | 1.020 | 210 | 900 | 180 | 770 | 160 |
| 32 | Maximum length of L/D=5 in combination with the standard shank | | | | | | | |
| Max cutting depth | ap ≤ 0,3 D | | ap ≤ 0,3 D | | ap ≤ 0,25 D | | ap ≤ 0,2 D | |

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please adjust the cutting condition when the overhang length is longer.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.

# CUTTING CONDITIONS



## PXSE

**Side milling L/D≤3,5**

| | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304 · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | | Heat steel Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 3.810 | 920 | 3.190 | 770 | 2.070 | 500 | 2.070 | 420 | 800 | 130 |
| 12 | 3.180 | 760 | 2.650 | 640 | 1.700 | 400 | 1.700 | 350 | 650 | 100 |
| 16 | 2.390 | 570 | 1.950 | 470 | 1.250 | 300 | 1.250 | 250 | 500 | 80 |
| 20 | 1.910 | 460 | 1.550 | 370 | 1.000 | 250 | 1.000 | 200 | 400 | 65 |
| 25 | 1.530 | 370 | 1.240 | 300 | 800 | 200 | 800 | 160 | 320 | 50 |
| Max cutting depth | ap 0,5 D | ae 0,15 D | | | ap 0,5 D | ae 0,1 D | ap 0,5 D | ae 0,05 D | ap 0,5 D | ae 0,05 D |

## PXSE

**Slotting L/D≤3,5**

| | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304 · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | | Heat steel Inconel | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 3.030 | 610 | 3.030 | 610 | 1.600 | 320 | 1.600 | 260 | 800 | 130 |
| 12 | 2.500 | 500 | 1.550 | 300 | 1.300 | 250 | 1.300 | 250 | 650 | 100 |
| 16 | 1.850 | 350 | 1.150 | 250 | 1.000 | 200 | 1.000 | 200 | 500 | 80 |
| 20 | 1.500 | 300 | 950 | 200 | 750 | 160 | 750 | 160 | 400 | 65 |
| 25 | 1.200 | 240 | 760 | 160 | 600 | 130 | 600 | 130 | 320 | 50 |
| Max cutting depth | ap ≤ 0,35 D | | | | ap ≤ 0,3 D | | ap ≤ 0,2 D | | ap 0,1 D | |

## PXSM

**Side milling L/D≤3,5**

| | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304 · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | | Heat steel Iconel | |
|---|---|---|---|---|---|---|---|---|---|---|
| Ø | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 5.730 | 2.070 | 4.780 | 1.440 | 3.820 | 1.150 | 3.190 | 960 | 1.910 | 420 |
| 12 | 4.780 | 1.730 | 3.980 | 1.200 | 3.190 | 960 | 2.660 | 800 | 1.600 | 350 |
| 16-6F | 3.590 | 1.300 | 2.990 | 900 | 2.390 | 720 | 1.990 | 600 | 1.200 | 260 |
| 16-8F | 3.590 | 1.730 | 2.990 | 1.200 | 2.390 | 960 | 1.990 | 800 | 1.200 | 350 |
| 20 | 2.870 | 1.730 | 2.390 | 1.200 | 1.910 | 960 | 1.600 | 800 | 960 | 350 |
| 25 | 2.300 | 1.380 | 1.910 | 960 | 1.530 | 770 | 1.280 | 640 | 770 | 280 |
| Max cutting depth | ap ≤ 0,5 D | ae ≤ 0,05 D | | | ap ≤ 0,5 D | ae ≤ 0,02 D | | | ap ≤ 0,3 D | ae ≤ 0,02 D |

## PXRE

**Corner radius type** **L/D≤3,5**

| Ø | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Hardened steel Prehardened steel SKD · NAK80 · HPM50 (38~45 HRC) | | Hardened steel 45~55 HRC | | Hardened steel 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 6.370 | 12.800 | 4.800 | 7.800 | 3.900 | 6.000 | 3.300 | 4.100 | 2.800 | 2.700 |
| 12 | 5.800 | 10.600 | 4.000 | 6.500 | 3.200 | 4.900 | 2.700 | 3.300 | 2.300 | 2.200 |
| 16 | 4.000 | 11.900 | 3.000 | 7.700 | 2.400 | 5.900 | 2.000 | 3.900 | 1.700 | 2.700 |
| 20 | 3.200 | 9.550 | 2.400 | 6.500 | 1.900 | 4.900 | 1.600 | 3.300 | 1.400 | 2.200 |

Max cutting depth

| ap | ae |
|---|---|
| 0,1 x R | 0,3 D |

| ap | ae |
|---|---|
| 0,1 x R | 0,3 D |

## PXDR-P

**Corner radius type** **L/D≤5**

| Ø | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304S · SKD ~45 HRC | | Hardened steel 45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 4.770 | 3.580 | 4.770 | 2.860 | 4.770 | 2.150 | 4.770 | 1.430 |
| 12 | 3.980 | 2.980 | 3.980 | 2.390 | 3.980 | 1.790 | 3.980 | 1.190 |
| 16 | 2.980 | 2.240 | 2.980 | 1.790 | 2.980 | 1.340 | 2.980 | 900 |
| 20 | 2.390 | 1.790 | 2.390 | 1.430 | 2.390 | 1.070 | 2.390 | 720 |

Max cutting depth

| ap | ae |
|---|---|
| 0,05 D | 0,25 D |

| ap | ae |
|---|---|
| 0,03 D | 0,25 D |

## PXDR-N

**Corner radius type** **L/D≤5**

| Ø | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304S · SKD ~45 HRC | | Hardened steel SUS304S · SKD 45~55 HRC | | Hardened steel 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 4.770 | 3.580 | 3.820 | 2.290 | 3.180 | 1.150 | 3.180 | 950 |
| 12 | 3.980 | 2.980 | 3.180 | 1.910 | 2.650 | 950 | 2.650 | 800 |
| 16 | 2.980 | 2.240 | 2.390 | 1.430 | 1.990 | 720 | 1.990 | 600 |
| 20 | 2.390 | 1.790 | 1.910 | 1.150 | 1.590 | 570 | 1.590 | 480 |

Max cutting depth

| ap | ae |
|---|---|
| 0,03 D | 0,25 D |

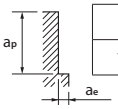
| ap | ae |
|---|---|
| 0,02 D | 0,2 D |

# CUTTING CONDITIONS



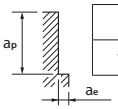
## PXSH For both PXMZ straight shank holder / PXMC collet

### Side milling L/D≤4

| | Hardened Steel - Prehardened Steel SCM • SKD61• NAK80 | | Hardened Steel ~55HRC | | ~62HRC | | ~66HRC | | ~70HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 110 ~ 130 | | 80 ~ 100 | | 60 ~ 80 | | 50 ~ 70 | | 40 ~ 60 | |
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 12 | 3.180 | 2.290 | 2.390 | 1.720 | 1.860 | 940 | 1.590 | 690 | 1.330 | 510 |
| 16 | 2.390 | 2.290 | 1.790 | 1.720 | 1.390 | 930 | 1.190 | 690 | 1.000 | 510 |
| 20 | 1.910 | 2.290 | 1.430 | 1.720 | 1.110 | 930 | 960 | 690 | 800 | 510 |
| 25 | 1.530 | 2.450 | 1.150 | 1.840 | 890 | 1.000 | 760 | 730 | 640 | 510 |
| Depth of cut |  ap / ae: 1 D / 0,05 D; aeMax=1mm | | ap / ae: 1 D / 0,03 D; aeMax=1mm | | | | ap / ae: 1 D / 0,02 D; aeMax=0,5mm | | | |

## PXSH For both PXMZ straight shank holder / PXMC collet

### Side milling 4<L/D≤5

| | Hardened Steel - Prehardened Steel SCM • SKD61• NAK80 | | Hardened Steel ~55HRC | | ~62HRC | | ~66HRC | | ~70HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 75 ~ 95 | | 55 ~ 75 | | 40 ~ 60 | | 35 ~ 55 | | 25 ~ 45 | |
| Ø | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) | S (min-1) | F (mm/min) |
| 12 | 2.260 | 1.630 | 1.730 | 1.250 | 1.330 | 480 | 1.190 | 340 | 930 | 200 |
| 16 | 1.690 | 1.620 | 1.290 | 1.240 | 1.000 | 480 | 900 | 350 | 700 | 200 |
| 20 | 1.350 | 1.620 | 1.040 | 1.250 | 800 | 480 | 720 | 350 | 560 | 200 |
| 25 | 1.080 | 1.730 | 830 | 1.330 | 640 | 720 | 570 | 550 | 450 | 360 |
| Depth of cut |  ap / ae: 1 D / 0,03 D; aeMax=1mm | | ap / ae: 1 D / 0,02 D; aeMax=1mm | | | | ap / ae: 0,7 D / 0,02 D; aeMax=0,5mm | | | |

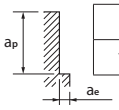
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Please adjust the cutting condition when the overhang length islonger.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.
5. Use an air blow or a suitable cutting uid with high smoke retardantproperties.

# CUTTING CONDITIONS



## PXSH For both PXMZ straight shank holder / PXMC collet

### High Speed Side milling L/D≤4

| | Hardened Steel - Prehardened Steel SCM • SKD61• NAK80 | | Hardened Steel ~55HRC | | ~62HRC | | ~66HRC | | ~70HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cutting Speed | 160 ~ 180 | | 140 ~ 160 | | 95 ~ 115 | | 80 ~ 100 | | 60 ~ 80 | |
| Ø | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) | S (min$^{-1}$) | F (mm/min) |
| 12 | 4.510 | 2.600 | 3.980 | 2.290 | 2.790 | 1.130 | 2.390 | 860 | 1.860 | 600 |
| 16 | 3.380 | 2.600 | 2.990 | 2.300 | 2.090 | 1.130 | 1.790 | 860 | 1.390 | 600 |
| 20 | 2.710 | 2.600 | 2.390 | 2.290 | 1.670 | 1.130 | 1.430 | 860 | 1.110 | 600 |
| 25 | 2.170 | 2.780 | 1.910 | 2.440 | 1.340 | 1.210 | 1.150 | 920 | 890 | 640 |
| Depth of cut |   | | | | | | | | | |
| | ap: 1 D | ae: 0,05 D | ap: 1 D | ae: 0,03 D | ap: 1 D | ae: 0,015 D | ap: 1 D | ae: 0,01 D | | |
| | aeMax=1mm | | aeMax=1mm | | aeMax=0,5mm | | aeMax=0,2mm | | | |

1. Tools can cause sparks. Do not use flammable fluids.
2. Use a rigid and precise machine and holder.
3. When chattering occurs, reduce the speed and feed simultaneously.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.
5. Use an air blow or a suitable cutting uid with high smoke retardant properties.

Caution: Sparks generated during operation or heat caused by tool breakage can cause fire.
Be sure to use all proper fire - prevention measures.
The conditions below are for high speed / high precision machining centers.

# CUTTING CONDITIONS



## PXBE-P

**Ball nose type L/D≤5**

| Ø | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304S · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | |
|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 4.770 | 2.150 | 3.820 | 1.720 | 3.180 | 1.430 | 3.180 | 950 |
| 12 | 3.980 | 1.790 | 3.180 | 1.430 | 2.650 | 1.190 | 2.650 | 800 |
| 16 | 2.980 | 1.340 | 2.390 | 1.070 | 1.990 | 900 | 1.990 | 600 |
| 20 | 2.390 | 1.070 | 1.910 | 860 | 1.590 | 720 | 1.590 | 480 |

Max cutting depth

| ap | Pf |
|---|---|
| 0,07D | 0,15 D |

| ap | Pf |
|---|---|
| 0,04D | 0,1 D |

## PXBE-N

**Ball nose type L/D≤3,5**

| Ø | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304S · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | | Hardened steel 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 7.960 | 3.580 | 7.960 | 3.580 | 6.370 | 2.290 | 4.770 | 1.430 | 3.180 | 480 |
| 12 | 6.630 | 2.980 | 6.630 | 2.980 | 5.310 | 1.910 | 3.980 | 1.190 | 2.650 | 400 |
| 16 | 4.970 | 2.240 | 4.970 | 2.240 | 3.980 | 1.430 | 2.980 | 900 | 1.990 | 300 |
| 20 | 3.980 | 1.790 | 3.980 | 1.790 | 3.180 | 1.150 | 2.390 | 720 | 1.590 | 240 |

Max cutting depth

| ap | Pf |
|---|---|
| 0,05D | 0,15 D |

| ap | Pf |
|---|---|
| 0,04D | 0,1 D |

| ap | Pf |
|---|---|
| 0,03D | 0,05 D |

## PXBM

**Ball nose type L/D≤3,5**

| Ø | Mild steel - Carbon steel Cast iron SS400 · S55C · FC250 ~750 N/mm2 | | Alloy steel Tool steel SCM · SKT · SKS · SKD ~30 HRC | | Stainless steel Hardened steel SUS304S · SKD ~45 HRC | | Hardened steel Titanium alloy steel (wet) Ti-6Al-4V 45~55 HRC | | Hardened steel 55~60 HRC | |
|---|---|---|---|---|---|---|---|---|---|---|
| | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) | S ($min^{-1}$) | F (mm/min) |
| 10 | 7.960 | 4.770 | 7.960 | 4.770 | 6.360 | 3.050 | 4.770 | 1.910 | 3.180 | 640 |
| 12 | 6.600 | 3.900 | 6.600 | 3.900 | 5.300 | 2.500 | 3.950 | 1.500 | 2.600 | 550 |
| 16 | 4.950 | 4.500 | 4.950 | 4.500 | 3.950 | 2.900 | 2.950 | 1.800 | 1.900 | 600 |
| 20 | 3.950 | 3.500 | 3.950 | 3.500 | 3.150 | 2.300 | 2.350 | 1.500 | 1.600 | 500 |

Max cutting depth

| ap | Pf |
|---|---|
| 0,02 D | 0,05 D |

## PXAL

**Side milling L/D≤3**

| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 16.000 | 4.800 |
| 12 | 13.300 | 3.990 |
| 14 | 11.400 | 3.420 |
| 16 | 10.000 | 3.600 |
| 18 | 8.900 | 3.210 |
| 20 | 8.000 | 3.840 |
| 22 | 7.300 | 3.510 |
| 25 | 6.400 | 3.840 |
| Depth of cut | ap: 0,7 D | ae: 0,2 D |

## PXAL

**Side milling 3<L/D≤5**

| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 9.600 | 2.310 |
| 12 | 8.000 | 1.920 |
| 14 | 6.900 | 1.660 |
| 16 | 6.000 | 1.730 |
| 18 | 5.400 | 1.560 |
| 20 | 4.800 | 1.850 |
| 22 | 4.400 | 1.690 |
| 25 | 3.900 | 1.880 |
| Depth of cut | ap: 0,7 D | ae: 0,08 D |

## PXAL

**Side milling 5<L/D≤7**

| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 6.400 | 1.390 |
| 12 | 5.400 | 1.170 |
| 14 | 4.600 | 1.000 |
| 16 | 4.000 | 1.040 |
| 18 | 3.600 | 940 |
| 20 | 3.200 | 1.110 |
| 22 | 2.900 | 1.010 |
| 25 | 2.600 | 1.130 |
| Depth of cut | ap: 0,7 D | ae: 0,04 D |

# CUTTING CONDITIONS



## PXAL

**Slot milling L/D≤3**

| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 16.000 | 4.800 |
| 12 | 13.300 | 3.990 |
| 14 | 11.400 | 3.420 |
| 16 | 10.000 | 3.000 |
| 18 | 8.900 | 2.670 |
| 20 | 8.000 | 2.400 |
| 22 | 7.300 | 2.190 |
| 25 | 6.400 | 1.920 |
| Depth of cut | ap<br>0,5 D | |

## PXAL

**Slot milling 3<L/D≤5**

| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 9.600 | 2.160 |
| 12 | 8.000 | 1.800 |
| 14 | 6.900 | 1.560 |
| 16 | 6.000 | 1.350 |
| 18 | 5.400 | 1.220 |
| 20 | 4.800 | 1.080 |
| 22 | 4.400 | 990 |
| 25 | 3.900 | 880 |
| Depth of cut | ap<br>0,35 D | |

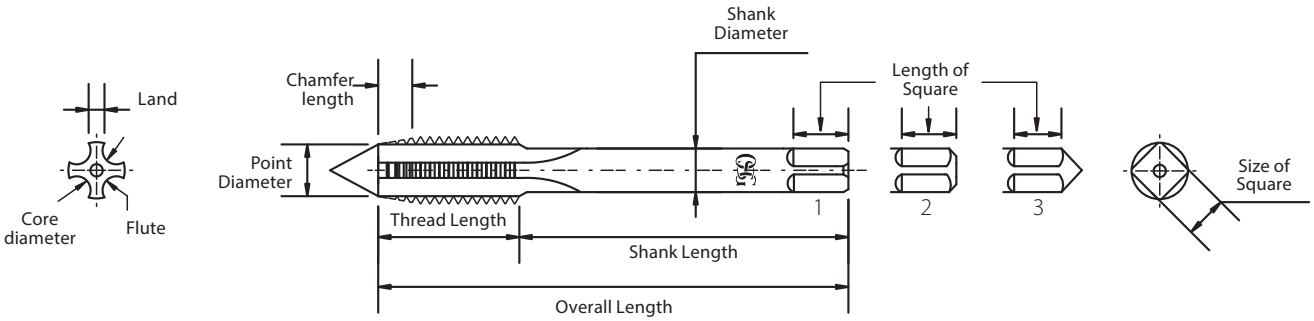
## PXAL

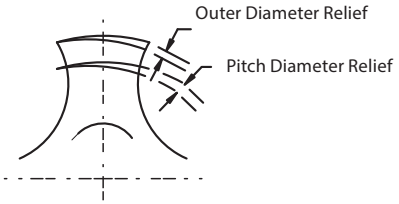
**Slot milling 5<L/D≤7**

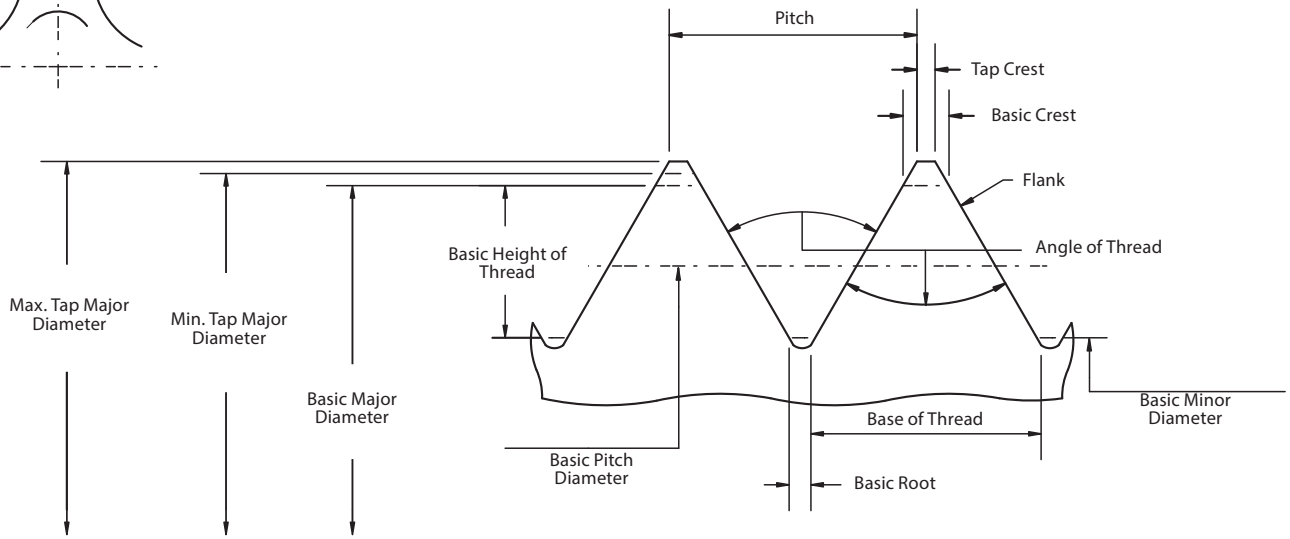
| | Aluminium Alloy Expanding Material<br>A5052 • A7075 | |
|---|---|---|
| Ø | S<br>(min$^{-1}$) | F<br>(mm/min) |
| 10 | 6.400 | 960 |
| 12 | 5.400 | 810 |
| 14 | 4.600 | 690 |
| 16 | 4.000 | 600 |
| 18 | 3.600 | 540 |
| 20 | 3.200 | 480 |
| 22 | 2.900 | 440 |
| 25 | 2.600 | 390 |
| Depth of cut | ap<br>0,2 D | |

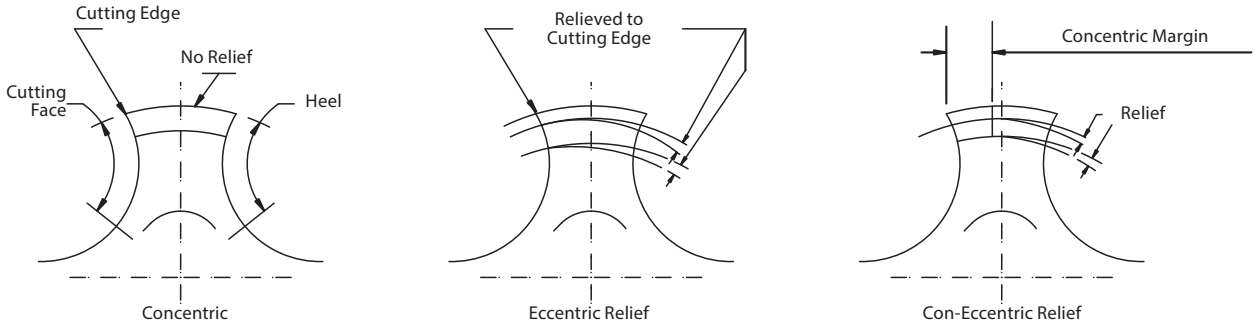
1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the depth of cut is large or when machines with low rigidity are used.
3. Please adjust the cutting condition when the overhang length is longer.
4. Please consider the overhang length as the total length of replaceable head and overhang length of shank holder.
5. When milling copper and copper alloys, lower the rotational speed by 20 to 40%, feed rate by 50 to 80%, and cutting depth by ap 50 to 80% in accordance with the table above.
6. Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.

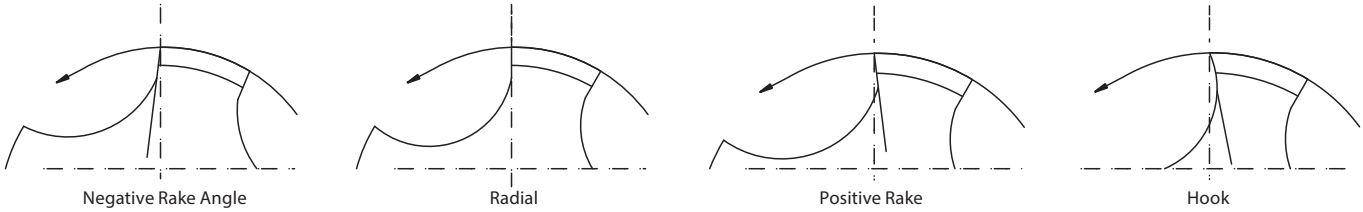
## Illustration of tap terms



# NOMENCLATURE



## Tap & Screw thread

**Allowance:** The minimum clearance or maximum interference which is intended between mating parts.

**Angle of Thread:** The angle included between the flanks of a thread measured in an axial plane.

**Back Taper:** A slight taper on the threaded portion of the tap, making the pitch diameter near the shank smaller than that at the chamfer.

**Basic:** The theoretical or nominal standard size from which all variations are made.

**Chamfer:** The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper, 8 to 10 threads long, plug, 3 to 5 threads, semi (or modified) bottom = 2.5
- 3 threads and bottoming, 1-1/2 threads.

**Crest:** The top surface joining the two sides or flanks of a thread.

**Cutting Face:** The leading side of the land.

**Flute:** The longitudinal channels formed on a tap to create cutting edges on the thread profile.

**Heel:** The following side of the land.

**Height of Thread:** In profile, distance between crest and bottom section of thread measured to the axis.

**Hook Face:** A concave cutting face of the land. This may be varied for different materials and conditions.

**Interrupted Thread:** Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

**Land:** Threaded sections between the flutes of a tap.

**Lead of Thread:** The distance a screw thread advances axially in one turn.

**Major Diameter:** The largest diameter of the screw or nut on a straight screw thread.

**Minor Diameter:** The smallest diameter of the screw or nut on a straight screw thread.

**Neck:** The reduced diameter, on some taps, between the threaded portion and the shank.

**Pitch:** The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis.

**Pitch Diameter:** On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

**Point Diameter:** The diameter at the leading end of the chamfered portion.

**Radial:** The straight face of a land, the plane of which passes through the axis of the tap.

**Rake:** The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

**Relief:** The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.
- **Chamfer Relief:** The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.
- **Con-eccentric Relief:** Radial relief in the thread form starting back of a concentric margin.
- **Eccentric Thread Relief:** Radial relief in the thread form starting at the cutting edge and continuing to the heel.

**Root:** The bottom surface joining the flanks of two adjacent threads.
**Side or Flank Thread:** The surface of the thread which connects the crest to the root.

**Shank:** The portion of the tap by which it is held.

**Spiral Point:** An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

**Square:** The squared end of the tap shank by which the tap is driven.

**Thread:** The helical formed portion of the tap which produces the pitch in a pre-existing hole.

**Thread Lead Angle:** The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

**Threads per Inch:** The number of threads in one inch of length.
**Thread:**
- **Single:** A thread in which lead is equal to pitch.
- **Double:** A thread in which lead is equal to twice the pitch.
- **Triple:** A thread in which lead is equal to triple the pitch.

# HARDNESS CONVERSION TABLE



## Approximate conversion value for hardness

| Hardness | | | | Traction | |
|---|---|---|---|---|---|
| HRA | HRC | HV | HB | Kgf/mm2 | N/mm2/Mpa |
| | | 120 | 114 | 42 | 410 |
| | | 125 | 119 | 43 | 420 |
| | | 130 | 123 | 45 | 440 |
| | | 135 | 128 | 46 | 450 |
| | | 140 | 133 | 48 | 470 |
| | | 145 | 138 | 49 | 480 |
| | | 150 | 142 | 51 | 500 |
| | | 155 | 147 | 52 | 510 |
| | | 160 | 152 | 54 | 530 |
| | | 165 | 157 | 55 | 540 |
| | | 170 | 161 | 56 | 550 |
| | | 175 | 166 | 58 | 570 |
| | | 180 | 171 | 59 | 580 |
| | | 185 | 176 | 61 | 600 |
| | | 190 | 180 | 62 | 610 |
| | | 195 | 185 | 64,5 | 630 |
| | | 200 | 190 | 66,5 | 650 |
| | | 205 | 195 | 67,5 | 660 |
| | | 210 | 199 | 69,5 | 680 |
| | | 215 | 204 | 70,5 | 690 |
| | | 220 | 209 | 72,5 | 710 |
| | | 225 | 214 | 73,5 | 720 |
| | | 230 | 218 | 75,5 | 740 |
| | | 235 | 223 | 76,5 | 750 |
| 60,7 | 20,5 | 240 | 228 | 78,5 | 770 |
| 61,2 | 21,5 | 245 | 233 | 79,5 | 780 |
| 61,6 | 22 | 250 | 237 | 81,5 | 800 |
| 62,4 | 24 | 260 | 247 | 84,5 | 830 |
| 63,1 | 25,5 | 270 | 256 | 88 | 860 |
| 63,8 | 27 | 280 | 266 | 91 | 890 |
| 64,5 | 28,5 | 290 | 275 | 95 | 930 |
| 65,2 | 30 | 300 | 285 | 98 | 960 |
| 65,8 | 31 | 310 | 294 | 101 | 990 |
| 66,4 | 32 | 320 | 304 | 104 | 1020 |
| 67 | 33,5 | 330 | 313 | 108 | 1060 |
| 67,6 | 34,5 | 340 | 323 | 111 | 1090 |
| 68,1 | 35,5 | 350 | 332 | 114 | 1120 |
| 68,7 | 36,5 | 360 | 342 | 118 | 1160 |
| 69,2 | 37,5 | 370 | 351 | 121 | 1190 |
| 69,8 | 39 | 380 | 361 | 124 | 1220 |
| 70,3 | 40 | 390 | 370 | 129 | 1260 |
| 70,8 | 41 | 400 | 380 | 132 | 1290 |
| 71,4 | 42 | 410 | 389 | 136 | 1330 |
| 71,8 | 42,5 | 420 | 399 | 139 | 1360 |
| 72,3 | 43,5 | 430 | 408 | 143 | 1400 |
| 72,8 | 44,5 | 440 | 418 | 146 | 1430 |
| 73,3 | 45,5 | 450 | 427 | 150 | 1470 |
| 73,6 | 46 | 460 | 432 | 153 | 1500 |
| 74,1 | 47 | 470 | 442 | 157 | 1540 |
| 74,5 | 47,5 | 480 | 450 | 160 | 1570 |
| 74,9 | 48,5 | 490 | 456 | 164 | 1610 |
| 72,3 | 49 | 500 | 466 | 168 | 1650 |
| 75,7 | 50 | 510 | 475 | 171 | 1680 |
| 76,1 | 50,5 | 520 | 483 | 175 | 1720 |
| 76,4 | 51 | 530 | 492 | 180 | 1760 |
| 76,7 | 51,5 | 540 | 500 | 183 | 1790 |
| 77 | 52,5 | 550 | 509 | 187 | 1830 |
| 77,4 | 53 | 560 | 517 | 191 | 1870 |
| 77,8 | 53,5 | 570 | 526 | 195 | 1910 |
| 78 | 54 | 580 | 535 | 198 | 1940 |
| 78,4 | 54,5 | 590 | 543 | 202 | 1980 |
| 78,6 | 55 | 600 | 552 | 206 | 2020 |
| 79,2 | 56,5 | 620 | 569 | 214 | 2100 |
| 79,8 | 57,5 | 640 | 586 | 222 | 2180 |
| 80,3 | 58,5 | 660 | | | |
| 80,8 | 59 | 680 | | | |
| 81,3 | 60 | 700 | | | |
| 81,8 | 61 | 720 | | | |
| 82,2 | 62 | 740 | | | |
| 82,6 | 62,5 | 760 | | | |
| 83 | 63,5 | 780 | | | |
| 83,4 | 64 | 800 | | | |
| 83,8 | 64,5 | 820 | | | |
| 84,1 | 65,5 | 840 | | | |
| 84,4 | 66 | 860 | | | |
| 84,7 | 66,5 | 880 | | | |
| 85 | 67 | 900 | | | |
| 85,3 | 67,5 | 920 | | | |
| 85,6 | 68 | 940 | | | |

# SURFACE TREATMENTS



Generally, a tap properly designed and used under ideal conditions will produce surface results without the use of superficial treatments. However, under certain conditions and types of materials, additional tap life, improvement in finish and better gaging will be noted through the use of surface treatments applied to the finished tap.

The treatments applied can be divided into two groups: those that penetrate the surface, and those that are applied to the external surface itself.

The second group covers a wider range of choices including external treatments such as TiN, TiCN, TiAlN and oxide finishes.

**Steam Oxide:**
A black oxided surface ($Fe_3O_4$) produced on the surface of a finished tap by means of a steam furnace. This oxidized surface is porous and helps retain cutting fluid in the working portion of the tap. The materials on which steam oxide has shown improvement in performance are stainless steels, steel forgings, tool and die steels, hot and cold rolled steels, and high nickel alloys.

**Nitride:**
A hard superficial case, approximately 69 HRC, on the surface of a finished tap produced by means of an ion furnace. The advantages of a Nitride surface treatment is the increase in wear resistance due to the higher surface hardness. This surface treatment is very effective in both abrasive and tough materials such as cast iron, plastics and high silicon cast aluminium. Note: Extra caution is needed when selecting a Nitride surface treatment because the increased hardness is not recommended for fast spiral flute taps and taps smaller than machine screw No. 2.

**Titanium Nitride (TiN):**
A thin deposit (approx. 0.0001") applied to the surface of a finished tap utilizing PVD coating technology. TiN coating increases the surface hardness and wear resistance. Use of TiN coating on standard tools will help increase tool life in harder materials (up to 32 HRC), such as stainless steels, steel forgings, tool and die steels and hot and cold rolled steels. TiN coating also works very well with water-base cutting fluids.

**Titanium Carbon Nitride (TiCN):**
Similar to TiN, TiCN is applied utilizing PVD coating technology. This coating combines high hardness (approx. 2800 vickers) with the anti-seizure properties of Nitride. A lower coefficient of friction helps reduce welding by 75% over TiN coated tools. These features make TiCN especially beneficial in non-ferrous material and hardened steels. OSG's special TiCN coating is incorporated into many of our stocked items.

**Titanium Aluminium Nitride (TiAlN):**
TiAlN is applied using PVD coating technology. The addition of aluminium reduces friction and increases the coating oxidation temperature. As a result, TiAlN has increased resistance to heat and oxidation wear. This makes TiAlN better suited for High Speed/High Heat applications. OSG's special TiAlN coating is incorporated into many of our tools.

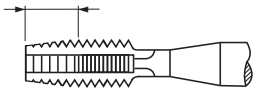
**Chrome Nitride (CrN):**
An extremely high surface lubricity makes CrN the proper selection of coating for non-ferrous materials. Aluminium (6061, 7075, etc.) and copper alloys (bronze, brass, etc.) are notorious for their tendency to adhere to the tool when heat is generated. This coating negates the effects of heat by reducing the amount of friction caused when these materials are being machined, while adding increased hardness.

**Diamond:**
OSG's patented Ultra-Fine diamond coating is grown on the tools at our laboratories. It is ideal for materials such as graphite, aluminium, and copper alloys. Commonly mistaken for a "Diamond-like" coating because of its shiny and smooth surface, this tool promotes finer surface finishes versus the competition's diamond coating and exponentially more tool life than that of PVD coated tools. Special processes enable high adherence to the tool and prevent it from flaking off. Diamond is not intended to cut steel.

# CHAMFER FORMS

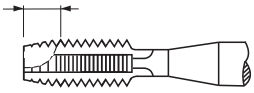


### FORM A



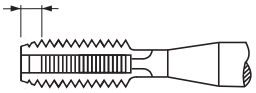
- Long
- 6 - 8 threads
- For short through holes
- Increases the torque and therefore the possibility danger of breakage

### FORM B



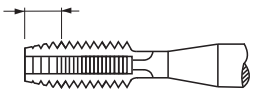
- Medium
- 3,5 - 5,5 threads
- With spiral point, useful for through holes
- For all through holes and deep tapping holes
- Efficient in tough and hard materials

### FORM C



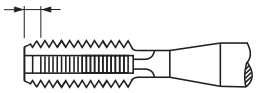
- Short
- 2 - 3 threads
- For blind holes
- For aluminium, grey cast iron and brass

### FORM D



- Medium
- 3,5 - 5 threads
- For through and blind holes with sufficient run-out

### FORM E



- Extremely short
- 1,5 - 2 threads
- For blind holes with little run-out depth

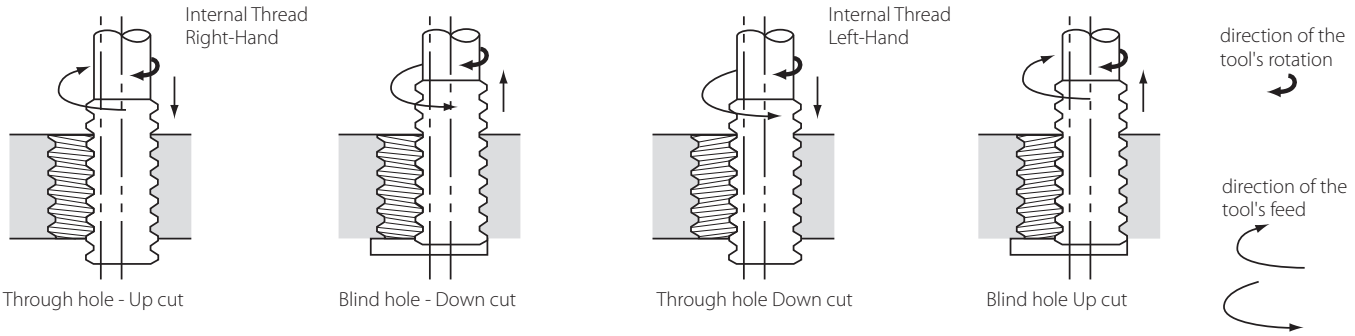


## Type of taps & features

| Type | Features | Application |
|---|---|---|
| **Spiral Fluted Taps** | • Spiral flute<br>• Chips flow out against tapping direction (ejected from holes)<br>• Lower tapping torque and applicable for tapping to the bottom of holes<br>• Good cutting action | • For blind holes<br>• Materials where chips come out continuously in coil shape |
| **Spiral Pointed Taps** | • Spiral point(Chip Drive)<br>• Pushes chips forward with low cutting torque<br>• Shallow and unique flute form provides strong structure<br>• Good cutting action | • For through holes<br>• Materials where chips come out continuously in coil shape<br>• High speed tapping |
| **Forming Taps** | • Taps do not produce chips<br>• Precise uniformity of tapped thread limit<br>• Excellent rigidity | • For both through & blind holes<br>• Materials with Formability |
| **Straight Fluted Taps Hand Taps** | • Straight flute<br>• Strong cutting edges<br>• Applicable for various cuttig conditions<br>• Easy to re-grind | • For both through & blind holes (short thread depth only)<br>• Materials where chips come out in powder form<br>• Hard materials |

## By CNC simultaneious three-axis control

OSG's Thread Mills are developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left hand threads can all be produced with this one tool by simply changing the direction of rotation and/or feed.




## Threading proces

1-2 Move to edge (maintain clearance)
2-3 Cut with helical milling
3-4 Mill the circumference of the circle
4-5 Pull away from the edge
5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.

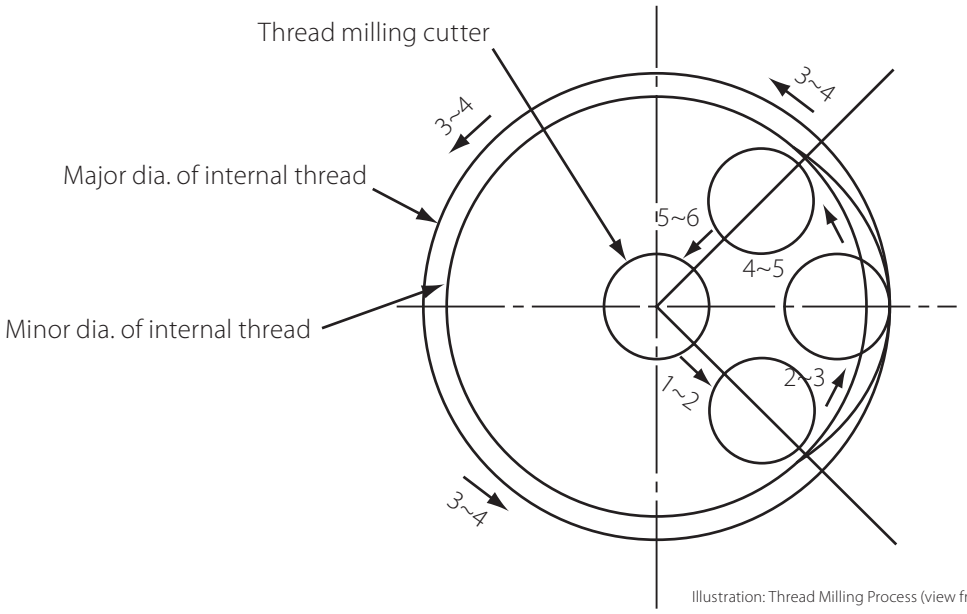



Illustration: Thread Milling Process (view from above)

# TAP DRILL SIZES GUIDE



## Recommended drill sizes for cutting taps

### M

According to DIN 13
and DIN-ISO 965-1

| Dia | P | |
|---|---|---|
| M 1 | 0,25 | 0,75 |
| M 1,1 | 0,25 | 0,85 |
| M 1,2 | 0,25 | 0,95 |
| M 1,4 | 0,3 | 1,10 |
| M 1,6 | 0,35 | 1,25 |
| M 1,7 | 0,35 | 1,35 |
| M 1,8 | 0,35 | 1,45 |
| M 2 | 0,4 | 1,60 |
| M 2,2 | 0,45 | 1,75 |
| M 2,3 | 0,4 | 1,90 |
| M 2,5 | 0,45 | 2,05 |
| M 2,6 | 0,45 | 2,15 |
| M 3 | 0,5 | 2,50 |
| M 3,5 | 0,6 | 2,90 |
| M 4 | 0,7 | 3,30 |
| M 4,5 | 0,75 | 3,70 |
| M 5 | 0,8 | 4,20 |
| M 5,5 | 0,9 | 4,60 |
| M 6 | 1 | 5,00 |
| M 7 | 1 | 6,00 |
| M 8 | 1,25 | 6,80 |
| M 9 | 1,25 | 7,80 |
| M 10 | 1,5 | 8,50 |
| M 11 | 1,5 | 9,50 |
| M 12 | 1,75 | 10,20 |
| M 14 | 2 | 12,00 |
| M 16 | 2 | 14,00 |
| M 18 | 2,5 | 15,50 |
| M 20 | 2,5 | 17,50 |
| M 22 | 2,5 | 19,50 |
| M 24 | 3 | 21,00 |
| M 27 | 3 | 24,00 |
| M 30 | 3,5 | 26,50 |
| M 33 | 3,5 | 29,50 |
| M 36 | 4 | 32,00 |
| M 39 | 4 | 35,00 |
| M 42 | 4,5 | 37,50 |
| M 45 | 4,5 | 40,50 |
| M 48 | 5 | 43,00 |
| M 52 | 5 | 47,00 |
| M 56 | 5,5 | 50,50 |
| M 60 | 5,5 | 54,50 |
| M 64 | 6 | 58,00 |
| M 68 | 6 | 62,00 |

### MF

According to DIN 13
and DIN-ISO 965-1

| Dia | P | |
|---|---|---|
| M 2 | 0,25 | 1,75 |
| M 2,2 | 0,25 | 1,95 |
| M 2,3 | 0,25 | 2,05 |
| M 2,5 | 0,35 | 2,15 |
| M 3 | 0,25 | 2,75 |
| M 3 | 0,35 | 2,65 |
| M 3,5 | 0,35 | 3,15 |
| M 4 | 0,35 | 3,65 |
| M 4 | 0,5 | 3,50 |
| M 4,5 | 0,5 | 4,00 |
| M 5 | 0,35 | 4,65 |
| M 5 | 0,5 | 4,50 |
| M 5 | 0,75 | 4,20 |
| M 6 | 0,5 | 5,50 |
| M 6 | 0,75 | 5,25 |
| M 7 | 0,5 | 6,50 |
| M 7 | 0,75 | 6,25 |
| M 8 | 0,5 | 7,50 |
| M 8 | 0,75 | 7,25 |
| M 8 | 1 | 7,00 |
| M 9 | 0,75 | 8,20 |
| M 9 | 1 | 8,00 |
| M 10 | 0,5 | 9,50 |
| M 10 | 0,75 | 9,25 |
| M 10 | 1 | 9,00 |
| M 10 | 1,25 | 8,80 |
| M 11 | 1 | 10,00 |
| M 12 | 0,5 | 11,50 |
| M 12 | 1 | 11,00 |
| M 12 | 1,25 | 10,80 |
| M 12 | 1,5 | 10,50 |
| M 13 | 1 | 12,00 |
| M 14 | 0,75 | 13,20 |
| M 14 | 1 | 13,00 |
| M 14 | 1,25 | 12,75 |
| M 14 | 1,5 | 12,50 |
| M 15 | 1 | 14,00 |
| M 15 | 1,5 | 13,50 |
| M 16 | 0,75 | 15,20 |
| M 16 | 1 | 15,00 |
| M 16 | 1,25 | 14,80 |
| M 16 | 1,5 | 14,50 |
| M 17 | 1 | 16,00 |
| M 18 | 1 | 17,00 |
| M 18 | 1,5 | 16,50 |
| M 18 | 2 | 16,00 |
| M 20 | 1 | 19,00 |
| M 20 | 1,5 | 18,50 |
| M 20 | 2 | 18,00 |
| M 22 | 1 | 21,00 |
| M 22 | 1,5 | 20,50 |
| M 22 | 2 | 20,00 |

### MF

According to DIN 13
and DIN-ISO 965-1

| Dia | P | |
|---|---|---|
| M 24 | 1 | 23,00 |
| M 24 | 1,5 | 22,50 |
| M 24 | 2 | 22,00 |
| M 25 | 1 | 24,00 |
| M 25 | 1,5 | 23,50 |
| M 26 | 1,5 | 24,50 |
| M 27 | 1 | 26,00 |
| M 27 | 1,5 | 25,50 |
| M 27 | 2 | 25,00 |
| M 28 | 1,5 | 26,50 |
| M 28 | 2 | 26,00 |
| M 30 | 1 | 29,00 |
| M 30 | 1,5 | 28,50 |
| M 30 | 2 | 28,00 |
| M 32 | 1,5 | 30,50 |
| M 32 | 2 | 30,00 |
| M 33 | 1,5 | 31,50 |
| M 33 | 2 | 31,00 |
| M 34 | 1,5 | 32,50 |
| M 35 | 1,5 | 33,50 |
| M 36 | 1,5 | 34,50 |
| M 36 | 2 | 34,00 |
| M 36 | 3 | 33,00 |
| M 38 | 1,5 | 36,50 |
| M 39 | 1,5 | 37,50 |
| M 39 | 2 | 37,00 |
| M 39 | 3 | 36,00 |
| M 40 | 1,5 | 38,50 |
| M 40 | 2 | 38,00 |
| M 40 | 3 | 37,00 |
| M 42 | 1,5 | 40,50 |
| M 42 | 2 | 40,00 |
| M 42 | 3 | 39,00 |
| M 45 | 1,5 | 43,50 |
| M 45 | 2 | 43,00 |
| M 45 | 3 | 42,00 |
| M 48 | 1,5 | 46,50 |
| M 48 | 2 | 46,00 |
| M 48 | 3 | 45,00 |
| M 50 | 1,5 | 48,50 |
| M 50 | 2 | 48,00 |
| M 50 | 3 | 47,00 |
| M 52 | 1,5 | 50,50 |
| M 52 | 2 | 50,00 |
| M 52 | 3 | 49,00 |
| M 56 | 1,5 | 54,50 |
| M 56 | 2 | 54,00 |
| M 56 | 3 | 53,00 |
| M 58 | 1,5 | 56,50 |
| M 60 | 1,5 | 58,50 |
| M 60 | 2 | 58,00 |
| M 60 | 3 | 57,00 |

### MJ

According to
DIN-ISO 5855

| Dia | P | |
|---|---|---|
| MJ 3 | 0,5 | 2,60 |
| MJ 4 | 0,7 | 3,40 |
| MJ 5 | 0,8 | 4,30 |
| MJ 6 | 1 | 5,10 |
| MJ 8 | 1,25 | 6,90 |
| MJ 10 | 1,5 | 8,70 |
| MJ 12 | 1,75 | 10,50 |
| MJ 16 | 2 | 14,30 |

# TAP DRILL SIZES GUIDE



## Recommended drill sizes for cutting taps

### UN

According to ASME
B 1.1

| Dia | P | |
|---|---|---|
| 1 ⅛ | 8 | 25,40 |
| 1 ¼ | 8 | 28,60 |
| 1 ⅜ | 8 | 32,00 |
| 1 ½ | 8 | 35,00 |
| 1 ⅝ | 8 | 38,10 |
| 1 ¾ | 8 | 41,50 |
| 1 ⅞ | 8 | 44,50 |
| 2 | 8 | 47,70 |
| 2 ¼ | 8 | 54,00 |

### UNC

According to ASME
B 1.1

| Dia | P | |
|---|---|---|
| Nr. 1 | 64 | 1,50 |
| Nr. 2 | 56 | 1,80 |
| Nr. 3 | 48 | 2,00 |
| Nr. 4 | 40 | 2,30 |
| Nr. 5 | 40 | 2,60 |
| Nr. 6 | 32 | 2,80 |
| Nr. 8 | 32 | 3,40 |
| Nr. 10 | 24 | 3,80 |
| Nr. 12 | 24 | 4,50 |
| ¼ | 20 | 5,10 |
| ⅝ | 18 | 6,60 |
| ⅜ | 16 | 8,00 |
| ⅞ | 14 | 9,40 |
| ½ | 13 | 10,80 |
| ⅝ | 12 | 12,30 |
| ⅝ | 11 | 13,60 |
| ¾ | 10 | 16,50 |
| ⅞ | 9 | 19,50 |
| 1 | 8 | 22,30 |
| 1 ⅛ | 7 | 25,00 |
| 1 ¼ | 7 | 28,00 |
| 1 ½ | 6 | 34,00 |
| 1 ¾ | 5 | 39,50 |
| 2 | 4,5 | 45,00 |

### UNJC

According to ASME
B 1.1 and ISO 3161

| Dia | P | |
|---|---|---|
| Nr. 1 | 64 | 1,53 |
| Nr. 2 | 56 | 1,81 |
| Nr. 3 | 48 | 2,10 |
| Nr. 4 | 40 | 2,30 |
| Nr. 5 | 40 | 2,65 |
| Nr. 6 | 32 | 2,85 |
| Nr. 8 | 32 | 3,50 |
| Nr. 10 | 24 | 3,90 |
| Nr. 12 | 24 | 4,60 |
| ¼ | 20 | 5,25 |
| ⅝ | 18 | 6,70 |
| ⅜ | 16 | 8,10 |
| ⅞ | 14 | 9,50 |
| ½ | 13 | 11,00 |
| ⅝ | 12 | 12,30 |
| ⅝ | 11 | 13,80 |
| ¾ | 10 | 16,75 |

### UNF

According to ASME
B 1.1

| Dia | P | |
|---|---|---|
| Nr. 0 | 80 | 1,25 |
| Nr. 1 | 72 | 1,55 |
| Nr. 2 | 64 | 1,85 |
| Nr. 3 | 56 | 2,15 |
| Nr. 4 | 48 | 2,40 |
| Nr. 5 | 44 | 2,70 |
| Nr. 6 | 40 | 2,95 |
| Nr. 8 | 36 | 3,50 |
| Nr. 10 | 32 | 4,10 |
| Nr. 12 | 28 | 4,60 |
| ¼ | 28 | 5,50 |
| ⅝ | 24 | 6,90 |
| ⅜ | 24 | 8,50 |
| ⅞ | 20 | 9,90 |
| ½ | 20 | 11,50 |
| ⅝ | 18 | 13,00 |
| ⅝ | 18 | 14,50 |
| ¾ | 16 | 17,50 |
| ⅞ | 14 | 20,50 |
| 1 | 12 | 23,30 |
| 1 ⅛ | 12 | 26,50 |
| 1 ¼ | 12 | 29,75 |
| 1 ⅜ | 12 | 33,00 |
| 1 ½ | 12 | 36,00 |

### UNJF

According to ASME
B1.15 and ISO 3161

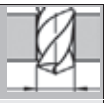
| Dia | P | |
|---|---|---|
| Nr, 0 | 80 | 1,25 |
| Nr, 1 | 72 | 1,55 |
| Nr. 2 | 64 | 1,85 |
| Nr. 3 | 56 | 2,15 |
| Nr. 4 | 48 | 2,40 |
| Nr. 5 | 44 | 2,70 |
| Nr. 6 | 40 | 2,95 |
| Nr. 8 | 36 | 3,60 |
| Nr. 10 | 32 | 4,10 |
| Nr. 12 | 28 | 4,70 |
| ¼ | 28 | 5,60 |
| ⅝ | 24 | 7,00 |
| ⅜ | 24 | 8,60 |
| ⅞ | 20 | 10,00 |
| ½ | 20 | 11,60 |
| ⅝ | 18 | 13,00 |
| ⅝ | 18 | 14,50 |

### UNEF

According to ASME
B 1.1

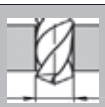
| Dia | P | |
|---|---|---|
| ¼ | 32 | 5,55 |
| ⅝ | 32 | 7,20 |
| ⅜ | 32 | 8,80 |
| ⅞ | 28 | 10,20 |
| ½ | 28 | 11,80 |
| ⅝ | 24 | 13,20 |
| ⅝ | 24 | 14,80 |

### NPSF

| Dia | P |  |
|---|---|---|
| ⅛ | 27 | 6,15 |
| ⅛ | 27 | 8,4 |
| ¼ | 18 | 11,1 |
| ⅜ | 18 | 14,3 |
| ½ | 14 | 17,9 |
| ¾ | 14 | 23,3 |
| 1 | 11,5 | 29 |

### NPT

According to ASME
B1.20.1 taper 1:16

| |  | | | | |
|---|---|---|---|---|---|
| Dia | P | D | d1 | D1 | Depth |
| 1/16 | 27 | 6,15 | 5,95 | 6,39 | 10,70 |
| ⅛ | 27 | 8,40 | 8,31 | 8,74 | 10,80 |
| ¼ | 18 | 11,10 | 10,73 | 11,36 | 15,60 |
| ⅜ | 18 | 14,30 | 14,15 | 14,80 | 16,00 |
| ½ | 14 | 17,90 | 17,47 | 19,32 | 20,80 |
| ¾ | 14 | 23,30 | 22,79 | 23,67 | 21,30 |
| 1 | 11 ½ | 29,00 | 28,64 | 29,69 | 25,60 |
| 1 ¼ | 11 ½ | 37,70 | 37,37 | 38,45 | 26,10 |
| 1 ½ | 11 ½ | 43,70 | 43,44 | 44,52 | 26,10 |
| 2 | 11 ½ | 55,60 | 55,45 | 56,56 | 26,50 |
| 2 ½ | 8 | 66,30 | 66,14 | 67,62 | 36,30 |
| 3 | 8 | 82,30 | 81,90 | 83,52 | 38,50 |

# TAP DRILL SIZES GUIDE



## Recommended drill sizes for cutting taps

### Pg
According to DIN 40430

| Dia | P | |
|---|---|---|
| 7 | 20 | 11,4 |
| 9 | 18 | 14 |
| 11 | 18 | 17,25 |
| 13,5 | 18 | 19 |
| 16 | 18 | 21,25 |
| 21 | 16 | 27 |
| 29 | 16 | 35,5 |
| 36 | 16 | 45,5 |
| 42 | 16 | 52,5 |
| 48 | 16 | 58 |

### Tr
According to ISO

| Dia | P | |
|---|---|---|
| 8 | 1,5 | 6,6 |
| 9 | 2 | 7,2 |
| 10 | 2 | 8,2 |
| 11 | 3 | 8,25 |
| 12 | 3 | 9,25 |
| 14 | 3 | 11,25 |
| 16 | 4 | 12,25 |
| 18 | 4 | 14,25 |
| 20 | 4 | 16,25 |
| 22 | 5 | 17,25 |
| 24 | 5 | 19,25 |
| 26 | 5 | 21,25 |
| 28 | 5 | 23,25 |
| 30 | 6 | 24,25 |
| 32 | 6 | 26,25 |
| 34 | 6 | 28,25 |
| 36 | 6 | 30,25 |
| 38 | 7 | 31,5 |
| 40 | 7 | 33,5 |
| 42 | 7 | 35,5 |
| 44 | 7 | 37,5 |
| 46 | 8 | 38,5 |
| 48 | 8 | 40,5 |
| 50 | 8 | 42,5 |

### G
According to DIN EN ISO 228

| Dia | P | |
|---|---|---|
| 1/16 | 28 | 6,80 |
| 1/8 | 28 | 8,70 |
| 1/4 | 19 | 11,80 |
| 3/8 | 19 | 15,25 |
| 1/2 | 14 | 19,00 |
| 5/8 | 14 | 21,00 |
| 3/4 | 14 | 24,50 |
| 7/8 | 14 | 28,25 |
| 1 | 11 | 30,75 |
| 1 1/8 | 11 | 35,50 |
| 1 1/4 | 11 | 39,50 |
| 1 3/8 | 11 | 41,90 |
| 1 1/2 | 11 | 45,25 |
| 1 3/4 | 11 | 51,00 |
| 2 | 11 | 57,00 |
| 2 1/4 | 11 | 63,00 |
| 2 1/2 | 11 | 72,60 |
| 3 | 11 | 85,00 |

### BSW
According to BS 84

| Dia | P | |
|---|---|---|
| 1/16 | 60 | 1,20 |
| 3/32 | 48 | 1,90 |
| 1/8 | 40 | 2,50 |
| 5/32 | 32 | 3,20 |
| 3/16 | 24 | 3,60 |
| 7/32 | 24 | 4,60 |
| 1/4 | 20 | 5,10 |
| 5/16 | 18 | 6,50 |
| 3/8 | 16 | 7,90 |
| 7/16 | 14 | 9,20 |
| 1/2 | 12 | 10,50 |
| 9/16 | 12 | 12,00 |
| 5/8 | 11 | 13,40 |
| 3/4 | 10 | 16,40 |
| 7/8 | 9 | 19,25 |
| 1 | 8 | 22,00 |
| 1 1/8 | 7 | 24,75 |
| 1 1/4 | 7 | 27,50 |
| 1 3/8 | 6 | 30,00 |
| 1 1/2 | 6 | 33,50 |
| 1 5/8 | 5 | 35,50 |
| 1 3/4 | 5 | 39,00 |
| 1 7/8 | 4 1/2 | 41,50 |
| 2 | 4 1/2 | 44,50 |

### BSF
According to BS 84

| Dia | P | |
|---|---|---|
| 3/16 | 32 | 4,00 |
| 7/32 | 28 | 4,60 |
| 1/4 | 26 | 5,30 |
| 5/16 | 22 | 6,80 |
| 3/8 | 20 | 8,30 |
| 7/16 | 18 | 9,70 |
| 1/2 | 16 | 11,00 |
| 9/16 | 16 | 12,70 |
| 5/8 | 14 | 14,00 |
| 3/4 | 12 | 16,80 |
| 7/8 | 12 | 19,80 |
| 1 | 10 | 22,70 |
| 1 1/8 | 9 | 25,50 |
| 1 1/4 | 9 | 28,50 |
| 1 3/8 | 8 | 31,50 |
| 1 1/2 | 8 | 34,50 |
| 1 5/8 | 8 | 38,00 |

### Rp
According to DIN EN 10226-2

| Dia | P | |
|---|---|---|
| 1/16 | 28 | 6,55 |
| 1/8 | 28 | 8,60 |
| 1/4 | 19 | 11,50 |
| 3/8 | 19 | 15,00 |
| 1/2 | 14 | 18,50 |
| 5/8 | 14 | 20,50 |
| 3/4 | 14 | 24,00 |
| 1 | 11 | 30,25 |
| 1 1/4 | 11 | 39,00 |
| 1 1/2 | 11 | 45,00 |
| 2 | 11 | 56,50 |
| 2 1/2 | 11 | 72,20 |
| 3 | 11 | 85,00 |

### BA
According to BS 949 part 2

| Dia | P | |
|---|---|---|
| 0 | 1 | 5,00 |
| 1 | 0,9 | 4,40 |
| 2 | 0,81 | 3,90 |
| 3 | 0,73 | 3,40 |
| 4 | 0,66 | 3,00 |
| 5 | 0,59 | 2,60 |
| 6 | 0,53 | 2,30 |
| 7 | 0,48 | 2,00 |
| 8 | 0,43 | 1,80 |
| 9 | 0,39 | 1,50 |
| 10 | 0,35 | 1,30 |
| 11 | 0,31 | 1,20 |
| 12 | 0,28 | 1,00 |
| 13 | 0,25 | 0,95 |
| 14 | 0,23 | 0,75 |

### Rc
According to DIN EN 10226-2 taper 1/16

| Dia | P | d1 | D1 | A | B min |
|---|---|---|---|---|---|
| 1/16 | 28 | 6,30 | 6,49 | 8,31 | 10,00 |
| 1/8 | 28 | 8,30 | 8,50 | 8,31 | 10,10 |
| 1/4 | 19 | 11,00 | 11,35 | 12,37 | 15,00 |
| 3/8 | 19 | 14,50 | 14,85 | 12,77 | 15,40 |
| 1/2 | 14 | 18,10 | 18,49 | 16,83 | 20,50 |
| 3/4 | 14 | 23,50 | 23,98 | 18,13 | 21,80 |
| 1 | 11 | 29,60 | 30,11 | 21,42 | 26,00 |
| 1 1/4 | 11 | 38,10 | 38,78 | 23,72 | 28,30 |
| 1 1/2 | 11 | 44,00 | 44,67 | 23,72 | 28,30 |
| 2 | 11 | 55,60 | 56,48 | 28,02 | 32,60 |
| 2 1/2 | 11 | 71,10 | 72,00 | 31,32 | 37,10 |
| 3 | 11 | 83,60 | 84,71 | 34,42 | 40,20 |

# TAP DRILL SIZES GUIDE



## Recommended drill sizes for forming taps

### M

According to DIN 13
and DIN-ISO 965-1

| | | 6 HX | | 6 GX | | 7 GX | |
|---|---|---|---|---|---|---|---|
| Dia | P | Min. | Max. | Min. | Max. | Min. | Max. |
| 1 | 0,25 | 0,87 | 0,89 | - | - | - | - |
| 1,2 | 0,25 | 1,07 | 1,09 | - | - | - | - |
| 1,4 | 0,3 | 1,244 | 1,263 | - | - | - | - |
| 2 | 0,4 | 1,82 | 1,84 | 1,85 | 1,88 | - | - |
| 2,2 | 0,45 | 2,01 | 2,04 | 2,02 | 2,06 | - | - |
| 2,5 | 0,45 | 2,31 | 2,34 | 2,32 | 2,36 | - | - |
| 3 | 0,5 | 2,77 | 2,81 | 2,79 | 2,84 | 2,81 | 2,85 |
| 3,5 | 0,6 | 3,23 | 3,27 | 3,24 | 3,3 | - | - |
| 4 | 0,7 | 3,66 | 3,72 | 3,69 | 3,73 | 3,71 | 3,77 |
| 5 | 0,8 | 4,61 | 4,68 | 4,65 | 4,71 | 4,66 | 4,73 |
| 6 | 1 | 5,51 | 5,59 | 5,55 | 5,63 | 5,56 | 5,64 |
| 8 | 1,25 | 7,37 | 7,45 | 7,4 | 7,47 | 7,42 | 7,5 |
| 10 | 1,5 | 9,24 | 9,33 | 9,26 | 9,35 | 9,3 | 9,39 |
| 12 | 1,75 | 11,1 | 11,2 | 11,14 | 11,24 | 11,17 | 11,28 |
| 14 | 2 | 12,96 | 13,08 | 13 | 13,12 | 13,04 | 13,16 |
| 16 | 2 | 14,96 | 15,08 | 15 | 15,12 | 15,04 | 15,16 |
| 18 | 2,5 | 16,66 | 16,81 | | | | |
| 20 | 2,5 | 18,66 | 18,81 | | | | |
| 22 | 2,5 | 20,66 | 20,81 | | | | |
| 24 | 3 | 22,39 | 22,56 | | | | |
| 27 | 3 | 25,39 | 25,56 | | | | |
| 30 | 3,5 | 28,09 | 28,28 | | | | |
| 33 | 3,5 | 31,09 | 31,28 | | | | |
| 36 | 4 | 33,8 | 34,01 | | | | |
| 39 | 4 | 36,8 | 37,01 | | | | |
| 42 | 4,5 | 39,52 | 39,73 | | | | |
| 45 | 4,5 | 42,52 | 42,73 | | | | |

### MF

According to DIN 13
and DIN-ISO 965-1

| | | 6 HX | |
|---|---|---|---|
| Dia | P | Min. | Max. |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| - | - | - | - |
| 8 | 1 | 7,50 | 7,56 |
| 10 | 1 | 9,50 | 9,56 |
| 10 | 1,25 | 9,35 | 9,43 |
| 12 | 1 | 11,50 | 11,56 |
| 12 | 1,25 | 11,35 | 11,43 |
| 12 | 1,5 | 11,21 | 11,30 |
| 14 | 1,5 | 13,25 | 13,34 |
| 16 | 1,5 | 15,25 | 15,34 |
| 18 | 1,5 | 17,25 | 17,34 |
| 20 | 1,5 | 19,25 | 19,34 |

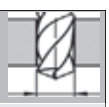
## Recommended drill sizes for wire insert taps

### EG M

According to DIN 8140

| Dia | P | |
|---|---|---|
| 2 | 0,4 | 2,10 |
| 2,5 | 0,45 | 2,65 |
| 3 | 0,5 | 3,15 |
| 4 | 0,7 | 4,20 |
| 5 | 0,8 | 5,25 |
| 6 | 1 | 6,30 |
| 8 | 1,25 | 8,40 |
| 10 | 1,5 | 10,50 |
| 12 | 1,75 | 12,50 |
| 16 | 2 | 16,60 |
| 20 | 2,5 | 20,70 |

### EG UNC

| Dia | P |  |
|---|---|---|
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| - | - | - |
| Nr. 4 | 40 | 3,10 |
| Nr. 6 | 32 | 3,80 |
| Nr. 8 | 32 | 4,40 |

### EG UNF

| Dia | P | |
|---|---|---|
| - | - | - |
| - | - | - |
| Nr. 10 | 32 | 5,10 |
| ¼ | 28 | 6,60 |
| 5⁄16 | 24 | 8,25 |
| ⅜ | 24 | 9,80 |
| 7⁄16 | 20 | 11,50 |
| ½ | 20 | 13,10 |

## Tapping

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Oversize Pitch Diameter** | **Incorrect Tap** | • Use proper pitch diameter limits of taps.<br>• Use longer chamfered taps. |
| | **Chip Packing** | • Use spiral point or spiral fluted taps.<br>• Reduce number of flutes to provide extra chip room.<br>• Use larger hole size.<br>• If tapping a blind hole, allow deeper holes where applicable or shorten the thread length of the parts.<br>• Use proper lubricant. |
| | **Galling** | • Apply proper surface treatment such as steam oxide or TiN.<br>• Use proper cutting lubricant.<br>• Reduce tapping speed.<br>• Use proper cutting angle in accordance with material being tapped.<br>• Use larger hole size. |
| | **Operating Conditions** | • Apply proper tapping speed.<br>• Correct alignment of tap and drilled hole.<br>• Use proper tapping speed to avoid torn or rough threads.<br>• Use lead screw tapper.<br>• Use proper tapping machine with suitable power.<br>• Avoid misalignment of the tap and drilled hole from loose spindle or worn holder. |
| | **Tool Conditions** | • Obtain proper indexing angle for the flutes at the cutting edge.<br>• Grind proper cutting angle and chamfer angle.<br>• Avoid too narrow a land width.<br>• Remove burrs from regrinding. |
| **Oversize Internal Diameter** | **Hole Size** | • Use minimum hole size.<br>• Avoid tapered hole.<br>• Use proper chamfered taps. |
| | **Galling** | Galling solutions 1 through 4 under "Tool Conditions" can be applied to this specific problem. |

# TROUBLE SHOOTING



## Tapping

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Undersize Pitch Diameter** | **Incorrect Tap** | • Use oversize taps:<br>a. Use for cutting materials such as copper alloy, aluminium alloy, and cast iron.<br>b. Use for cutting tubing which will have "spring back" action after tapping.<br>• Apply proper chamfer angle.<br>• Increase cutting angle. |
| | **Damaged Thread** | Use proper reversing speed to avoid damaging tapped thread on the way out of the hole. |
| | **Left-over Chips** | • Increase cutting performance to avoid any left over chips in the hole.<br>• Remove left over chips from the hole for gage checking. |
| **Undersize Internal Diameter** | **Hole Size** | Use maximum drill size. |

| Tool Life | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Undersize Pitch Diameter** | **Chamfer Too Short** | Increase chamfer length. |
| | **Wrong Cutting Angle** | Apply proper cutting angle. |
| | **Galling** | • Use thread relieved taps.<br>• Reduce land width.<br>• Apply surface treatment such as steam oxide or TiN.<br>• Use proper cutting lubricant.<br>• Reduce tapping speed.<br>• Use larger hole size.<br>• Obtain proper alignment between tap and work. |
| | **Chip Packing** | • Use spiral pointed or spiral fluted taps.<br>• Use larger drill size. |
| **Chattering on Tapped Thread** | **Tool Free Cutting** | • Reduce cutting angle.<br>• Reduce amount of thread relief. |
| **Undersize Internal Diameter** | **Hole Size** | • Avoid too narrow a land.<br>• Do not grind the bottom of the flute. |

# TROUBLE SHOOTING



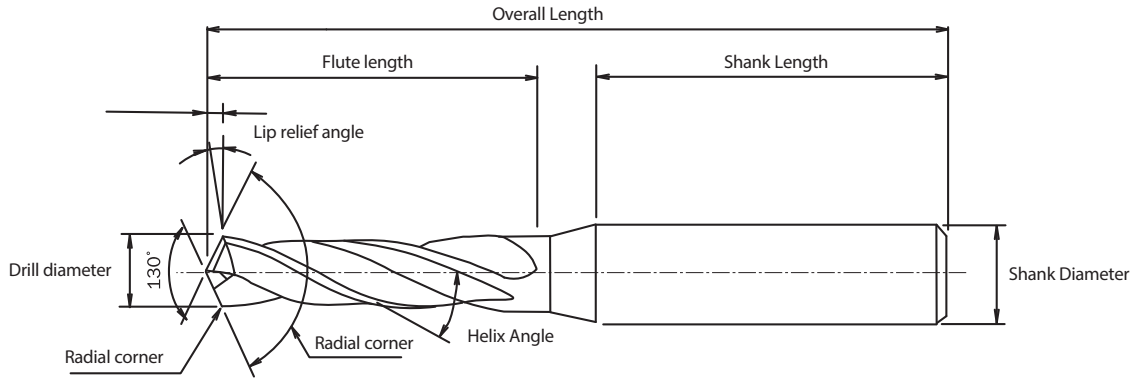
## Tapping

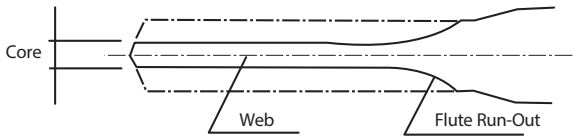
| Tool Life | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Breakage** | **Incorrect Tap Selection** | • Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps.<br>• Apply correct surface treatment such as steam oxide or TiN. |
| | **Excessive Tapping Torque** | • Use larger drill size.<br>• Try to shorten thread length.<br>• Increase cutting angle.<br>• Use a tap with more thread relief and reduced land width.<br>• Use spiral pointed or spiral fluted taps. |
| | **Operating Conditions** | • Reduce tapping speed.<br>• Avoid misalignment between tap and the hole and tapered hole.<br>• Use floating type of tapping holder.<br>• Use tapping holder with torque adjustment.<br>• Avoid hitting bottom of the hole with tap. |
| | **Tool Condition** | • Do not grind the bottom of the flute.<br>• Avoid too narrow a land width.<br>• Remove all worn sections when regrinding the flutes.<br>• Regrind tool more frequently. |
| **Chipping** | **Incorrect Tap Selection** | • Reduce cutting angle.<br>• Use a different kind of high-speed steel tap.<br>• Reduce hardness of the tap.<br>• Increase chamfer length.<br>• Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps. |
| | **Operating Conditions** | 1• Reduce tapping speed.<br>• Avoid misalignment between tap and hole.<br>• Avoid sudden return of reverse in blind hole tapping.<br>• Avoid galling.<br>• Use large hole size. |
| **Wear** | **Incorrect Tap Selection** | • Use specially designed taps for tapping heat treated material.<br>• Change to a type of high-speed steel tap that contains vanadium.<br>• Apply special surface treatment such as steam oxide or TiN.<br>• Increase chamfer length. |
| | **Operating Conditions** | • Reduce tapping speed.<br>• Apply proper cutting lubricants.<br>• Avoid work hardening.<br>• Use larger hole size. |
| | **Tool Condition** | • Grind proper cutting angle.<br>• Avoid hardness reduction from grinding process. |

# TECHNICAL • DRILLING

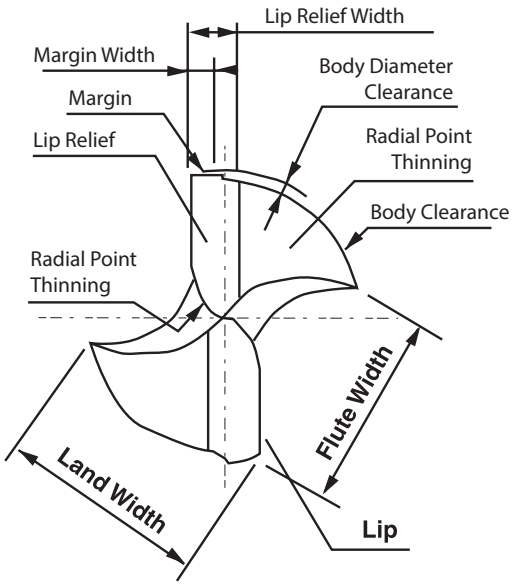
# NOMENCLATURE



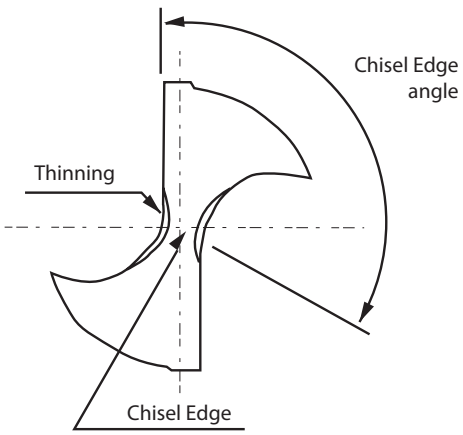



**OSG Drill**




**Conventional Drill**



# DRILL CHARACTERISTICS



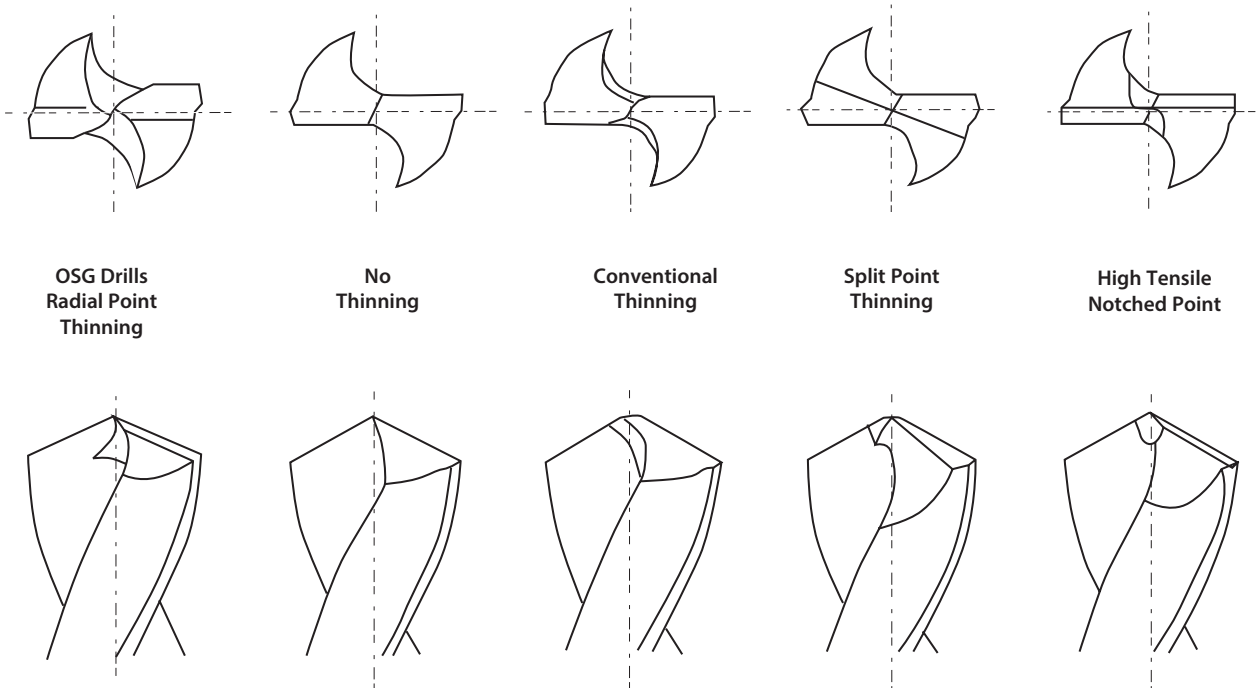
## OSG drill characteristics

**Unique Point Design**

With OSG drills, the chisel edge in the centre section of a conventional drill is eliminated. Instead, there is a radius cutting edge. This provides a better biting action than a conventional drill, where the chisel edge is easily crushed against the harder to drill material.

OSG drills have a chip pocket for smooth chip action along the radius cutting edge. Also, the point angle is 130˚ instead of the conventional 118˚. This creates small broken chips rather than the long, stringy chips created by a conventional drill.

## Point thinning



**OSG Drills Radial Point Thinning** | **No Thinning** | **Conventional Thinning** | **Split Point Thinning** | **High Tensile Notched Point**

# CUTTING CONDITIONS

**Technical | Drills**

For excellent results, it is best to follow established criterion for maximizing tool efficiency. Feed per table, expressed as F (mm/min) shows the drills' cutting efficiency. Although the spindle speed significantly influences the life of HSS drills, feed rate does not. Therefore, increasing feed rate will help improve cutting efficiency. However, if feed rate is too high, chips may end up being too thick. Users should be careful to find the appropriate feed rate for their particular operation.

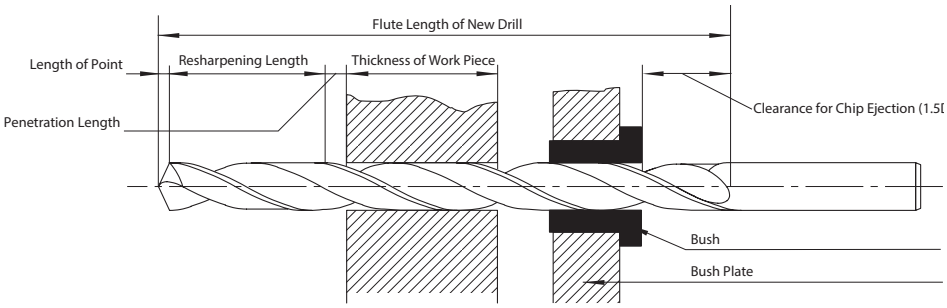
The range of appropriate feed rates for carbide alloy drills is smaller than that of HSS drills because carbide alloy drills have negative chamfered cutting edge. If a feed rate outside the recommended range is used, tool life declines considerably. Carbide alloy drills, however, have higher heat resistance than HSS tools. Also, cutting efficiency can be improved by using a higher cutting speed (i.e. increasing the number of revolutions per minute).

Similar to cutting speed, feed and cutting fluid, flute length is a critical determinant of tool life. Considering drilling depth, bush and resharpening requirements, flute length should usually be as short as possible. Unnecessarily long flute length can cause instability because of lower rigidity and possible twisting or/and deflection (depending on the holder). For most operations, suitable flute length can be calculated by using the following formula.

| Formulas | |
|---|---|
| $N = \frac{1{,}000V}{\pi Dc}$<br>$V = \frac{\pi Dc N}{1.000}$<br>$F = f \cdot N$ | $V$ : **Cutting Speed** (m/min)<br>$F$ : **Feed/min.** (mm/rev)<br>$Dc$ : **Drill Dia.** (mm)<br>$N$ : **Speed** (min-1)<br>$\pi$ : **The ratio of the circumference of a circle**<br>$f$ : **Feed rate/rev.** (mm/rev) |

## Depth of Hole* + 1.5×Dc** + Resharpening Length + Penetration Length

*(Includes bush length and distance between bush and work piece.) **(D = Drill Diameter)




## Recommended Cutting Fluid Selection Table-Based on Work Material

| Tool | Coated HSS Drill | | | | | | Coated Carbide Drill | | | Coated Carbide Drill | | | Diamond Coated Carbide Drill | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type of Supply | Wet | | | | Dry | | Wet | | | Wet | Dry | | Wet | | | | Dry | |
| Type of Cutting Fluid | Non Water Soluble | Water Soluble | | | Dry | Semi Dry | Non Water Soluble | Water Soluble | | Water Soluble | Dry | Semi Dry | Non Water Soluble | Water Soluble | | | Dry | Semi Dry |
| Work Material | JIS N (JIS N) | JIS A1 Emulsion (JIS A-1) | JIS A2 Soluble (JIS A-2) | JIS A3 Solution (JIS A-3) | Air Blow | Mist | JIS N (JIS N) | JIS A1 Emulsion (JIS A-1) | JIS A2 Soluble (JIS A-2) | JIS A3 Solution (JIS A-3) | Air Blow | Mist | JIS N (JIS N) | JIS A1 Emulsion (JIS A-1) | JIS A2 Soluble (JIS A-2) | JIS A3 Solution (JIS A-3) | Air Blow | Mist |
| Carbon Steel | | o | | | o | o | | o | | | o | o | | x | x | x | x | x |
| Cast Iron | | o | o | | o | o | | o | o | | o | o | | | | | x | x |
| High Hardened Steel | | o | | | | o | | o | | | | o | | x | x | x | x | x |
| Stainless Steel | | o | | | x | o | | o | | | | | | x | x | x | x | x |
| Titanium Alloy | | o | | | x | | | o | | | x | | | x | x | x | x | x |
| Heat Resistant Alloy (ex. Inconel®) | | o | | | x | | | o | | | | | | x | x | x | x | x |
| Aluminium Alloy | | o | o | | | | | o | o | | | | | o | o | | x | o |
| Copper | o | | | | | | o | | | | x | | o | | | | x | o |

# DIFFICULT TO MACHINE MATERIALS



## Drilling

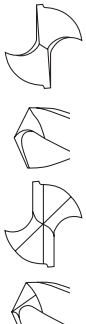
Certain materials have special characteristics (listed below), that make drilling difficult. In order to successfully drill these materials it is critical to use proper cutting conditions based on information about the material and the tool and to understand how variations of these characteristics can influence the final outcome.

## Characteristics of difficult to machine materials

| Characteristics | Effect(s) |
|---|---|
| High hardness | Chipping of the cutting edge |
| High tensile strength | Tool wear |
| Low heat conductivity | High temperature at cutting edge |
| High work hardening | High thrust force and torque |
| Contains hardened grain | Chip trouble (discharging, shape) |
| High ductility | Bad surface finish |
| High affinity | |

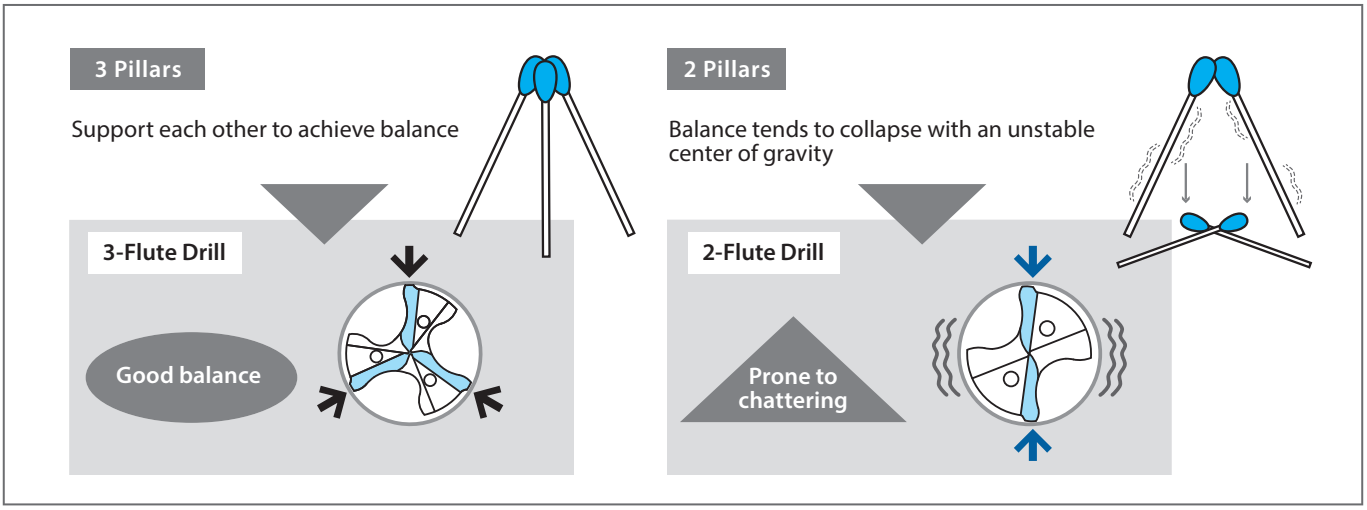
| Work Material | Characteristics | Machining recommendations | Recommended drills | |
|---|---|---|---|---|
| **Austenitic Stainless Steel SUS304-SUS316** | • High work hardening<br>• High tensile strength at high temperatures<br>• Low heat conductivity<br>• High ductility. Easy to get build up at the edge. => chipping | • Use tough drill material with sharp cutting edge and coating<br>• High feed rate<br>• High coolant supply | ADO-SUS-3D<br>ADO-SUS-5D<br>EX-SUS-GDS<br>EX-SUS-GDR | ADO-3D<br>NEXUS-GDS<br>NEXUS-GDR<br>EX-SUS-GDN |
| **Die Steel SKD11** | • Made of hard carbide grain (under 0.4%C =>carbide grain is melted) | • Use high rigid HSS coated tools<br>• Use lower cutting speed and higher feed rate | AD-2D<br>ADO-3D | ADO-3D<br>AD-4D<br>ADO-5D<br>VPH-GDS |
| **High Manganese Steel SCMnH** | • High tensile strength and high toughness<br>• High work hardening | • Use rigid tools, machine and work clamping device | | VPH-GDS |
| **Titanium Alloy Ti-6Al-4V** | • High tensile strength per Lower case<br>• Low heat conductivity<br>• Chemically active high affinity with tools | • Use sufficient coolant and low cutting speed to maintain low cutting temperature. | EX-SUS-GDS | ADO-SUS-3D<br>ADO-SUS-5D |
| **Heat Resistant Alloy Inconel-Hastelloy** | • High hardness<br>• High work hardening<br>• Tough Difficult to machine | • Improve rigidity of tools and machines<br>• Use an stub drill with coating and rigidity | AD-2D<br>VPH-GDS | WH55-5D<br>AD-4D |
| **High Hardened Quenched and Tempered Steels** | • High hardness<br>• High shearing stress<br>• High cutting resistance | • Use a drill made from high hardened and rigid material if the work material is over 45 HRC, use a carbide drill. | AD-2D | VPH-GDS<br>ADO-15D/ 20D/30D |
| **High Silicon Aluminium Alloy AC9A-A390** | • High hardened grain causes large wear on tools | • Use a drill made from high hardened material<br>• Provide sufficient coolant supply | D-GDN | |
| **Kovar Fe-Ni-Co** | • Low thermal expansion material<br>• Tend to Build-up, but easy to machine | • Use high helix and sharp edge drill | WX-MS-GDS<br>EX-SUS-GDS<br>EX-SUS-GDR | NEXUS-GDS<br>NEXUS-GDR |
| **Co-Cr Alloy** | • Better anti-rust, better rigidity<br>• Harmonize with organism | • Easy to break chips, but recommended to use better drill on wear resistance | ADO-3D<br>AD-4D | ADO-3D<br>ADO-5D |
| **Composite C-FRP - G-FRP** | • Tough fibre causes extreme wear<br>• Tend to have naps and peel off | • Use sharp and wear resistant tools<br>• Design the tool to prevent naps and peeling | D-STAD | |

| Type | Design | Characteristics & applications |
|---|---|---|
| **R Thinning** | | • For heavy drilling<br>• Good chamfering<br>• Creates small chips<br>• Reduces thrust force |
| **X Thinning** | | • Good chamfering<br>• For drills with large web diameter<br>• Reduces thrust force |
| **N Thinning** | | • For drills with small web diameter and/or with small point angle<br>• Large chip pocket<br>• High strength at the point |
| **S Thinning** | | • For drills with small web diameter and/or with small point angle<br>• High strength at the point<br>• Easy to regrind |

| Type | Design | Characteristics & applications |
|---|---|---|
| **W+R<br>W Thinning,<br>W + R Thinning** |  | • For heavy drilling<br>• Prevents chipping on cutting edge<br>• For high hardened materials<br>• Prevents chipping that can occur when drilling in high hardened steel materials<br>• High strength on the cutting edge<br>• Reduces thrust force |
| **Three-rake Thinning** | | • Accurate at cutting edge tolerance<br>• Better hole size control not good for high feed rate |

# QUICK GUIDE FOR ADO-TRS






**The collapse of balance greatly affects hole quality**

| | | ADO-TRS | Competitor (3FL) | Competitor (2FL) |
|---|---|---|---|---|
| Hole Expansion Comparison | Entry | 0,005mm | 0,051mm | 0,025mm |
| | Middle | 0,002mm | 0,039mm | 0,022mm |
| | Exit | 0,003mm | 0,05mm | 0,018mm |
| Roundness Cylindricity | | 16 µm 28 µm | 30 µm 32 µm | 52 µm 40 µm |

| | | | | | |
|---|---|---|---|---|---|
| **Tool** | ADO-TRS | **Cutting Speed** | 90m/min (1.791min$^{-1}$) | **Coolant** | Water Soluble 3MPa |
| **Work Material** | SCM420H | **Feed** | 3FL 1,075mm/min (0.6mm/rev) / 2FL 537mm/min (0.3mm/rev) | **Machine** | Horizontal Machining Center |

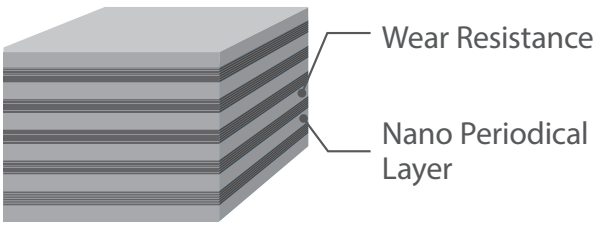
The quality of the pre-drilled hole will affect the performance of the next process such as tapping.

## EgiAs Coating

### EgiAs coating with high toughness and wear resistance characteristics

Constructed with extreme toughness, high wear and heat resistance characteristics to ensure stable and consistent tool life.

EgiAs

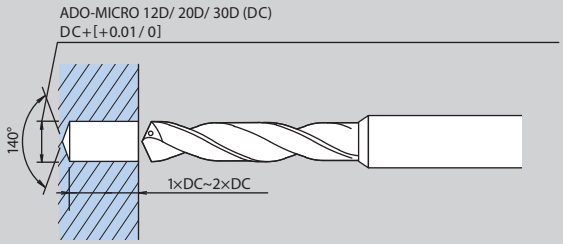



| Coating Color | Coating Structure | Hardness (Hv) | Oxidation Temperature (C°) | Heat Resistance | Adhesion Strength | Wear Resistance | Welding Resistance | Toughness |
|---|---|---|---|---|---|---|---|---|
| Interference Color | Periodic Nano-layered | 40 | 1.100 | ◎ | ◎ | ◎ | ◎ | ◎ |

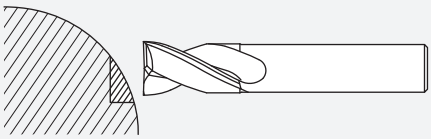
## Recommended drilling method for deep-holes

**1 ADO-MICRO 2D**
Make a pilot hole with the ADO-MICRO 2D.

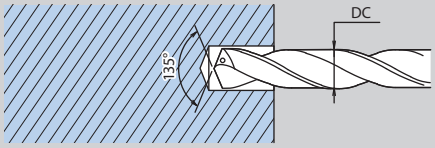
ADO-MICRO 12D/20D/30D
ADO-MICRO 2D (140°)
The ADO-MICRO 2D (140° point angle) is the recommended pilot hole drills of the ADO-MICRO 12D/20D/30D.



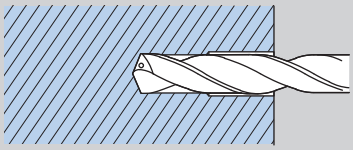

When working on a curved surface, use the FX-ZDS (end mill for counterboring) or the ADF (carbide flat drill) to counterbore a flat surface before drilling a pilot hole.



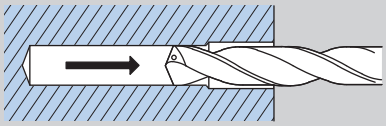
**2** Insert the long drill into a pilot hole with a low revolution of 500 to 1,000 $min^{-1}$ (n).




**3** Increase the revolution to the designated speed and start drilling.



**4** After drilling, move the drill away from the bottom of the hole; then reduce its speed to 500 to 1,000 $min^{-1}$ (n) while pulling it out of the hole.



Make sure to use internal coolant supply when drilling.

## For drilling applications exceeding Ø2

Carbide Drill Series
AD & ADO

Carbide Drill Series for Stainless Steel and Titanium Alloy
ADO-SUS

## OPERATIONAL GUIDELINE

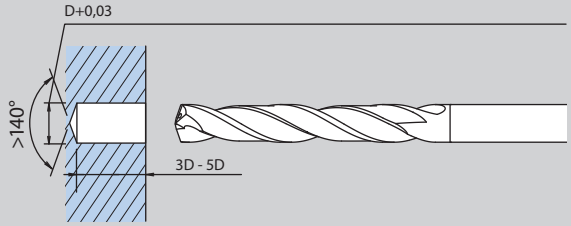
**1 ADO-5D/ADO-TRS-5D**

Make a pilot hole with the ADO-5D or ADO-TRS-5D.

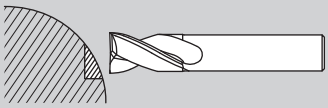
ADO-40D /ADO-50D

ADO-5D/ADO-TRS-5D (140°)

The ADO-5D and ADO-TRS-5D (140° point angle) are the recommended pilot hole drills of the ADO-40D/50D.




When working on a curved surface, use the ADF (carbide flat drill) to counterbore a flat surface before drilling a pilot hole.

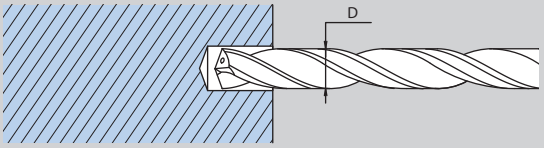


If it is difficult to process or if the straightness of the hole needed to be improved, use the coolant-through carbide drill ADO-20/30D after drilling a pilot hole, then process with the ADO-40/50D.

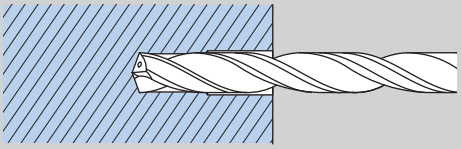
When processing with 3 tools, the ADO-40/50D may be used at a more aggressive cutting condition than those listed in the recommended cutting condition table.

**2 (n)300~500min-1**

Insert the long drill into the pilot hole with a low speed reverse (revolution of about 300 to 500 min-1 (n).

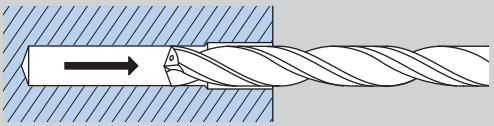



**3** Increase the revolution to the designated speed and start drilling.



**4 (n)300~500min-1**

After drilling, move the drill away from the bottom of the hole, then reduce its speed to 300 to 500 min-1 (n) while pulling it out of the hole.



Make sure to use internal coolant supply when drilling.

## Manufacturable Range of Special Sizes

| Diameter range | Maximum overall length | Maximum flute length | Maximum drilling depth of hole | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| 3 | 209 | 159 | | | 150 | | | | | | |
| ~4 | 262 | 212 | | | | 200 | | | | | |
| ~5 | 315 | 265 | | | | | 250 | | | | |
| ~6 | 428 | 378 | | | | | | | 360 | | |
| ~7 | 456 | 406 | | | | | | | | 380 | |
| ~8 | 500 | 450 | | | | | | | | | 430 |
| ~9 | 500 | 450 | | | | | | | | 420 | |
| ~10 | 500 | 450 | | | | | | | | 420 | |
| ~11 | 500 | 450 | | | | | | | | 420 | |
| ~12 | 500 | 450 | | | | | | | | 420 | |
| ~13 | 500 | 450 | | | | | | | | 410 | |
| ~14 | 500 | 450 | | | | | | | | 410 | |
| ~15 | 500 | 450 | | | | | | | | 410 | |
| ~16 | 500 | 450 | | | | | | | | 410 | |

The above chart indicates the maximum overall length and maximum flute length of each range's maximum diameter.
For sizes and lengths outside of the above parameters, please consult with your OSG sales representative.

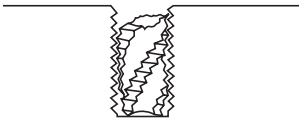
Manufacturable range

# DRILLING INSTRUCTIONS

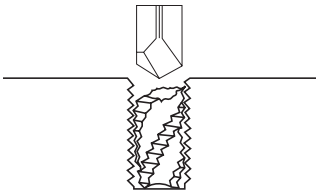


## Work procedure for removing damaged tap in hole

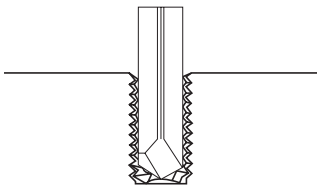
**EX-H-DRL**



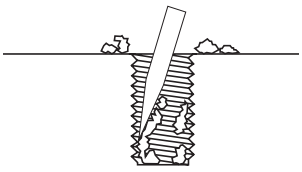
Position the drill at the centre of the damaged tap, securing both the workpiece and the drill firmly. When the head of the damaged tap is protruding, grind the damaged surface flat to make the centre of the damaged tap easier to drill.



Make an initial, centred approach by drilling lightly, then quickly withdrawing the drill. For this step, do not use lubrication.



Select an appropriate drill by consulting the table. Drill the hole at a fixed feed speed, stopping the operation occasion-ally to remove chip waste. In addition, use plenty of high quality cutting fluid.



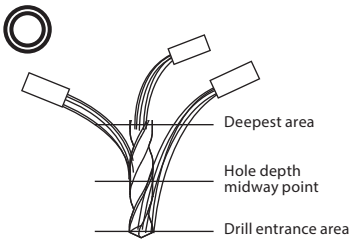
Once the hole has been cleared, the peripheral remnants of the tap can be removed with ease. Once the hole is cleaned, tapping can be resumed.

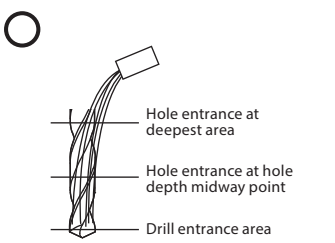
## Cutting conditions and procedures to note

1. Use a drilling speed of 20-25 m/min.
2. Hand feed of 0.01mm - 0.05mm/rev. is the norm.
3. Use a rigid holder.
4. Select a high quality cutting oil and apply sufficient amounts.
5. This tool should not be used to drill soft steel, aluminium alloy equivalents, or other soft materials.
6. Resharpening should be done periodically.
7. For through hole processing of heat treated steel etc., using a cut off - positioned under the work material - to prevent breakage caused by sudden torque.

## Guide for drilling with TDXL

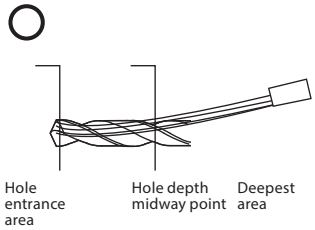
### Vertical Machine



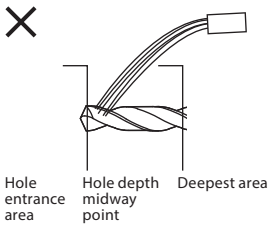




Allow the coolant to move along the drill if the discharge flow rate is low or the number of nozzles is little.

### Horizontal Machine




If there are little coolant nozzles, increase the amount of coolant and its discharge pressure and allow the coolant to move along the drill so that it is applied constantly to the entrance.




If there are little coolant nozzles, the coolant that is applied to the hole entrance will stray from the hole along the way

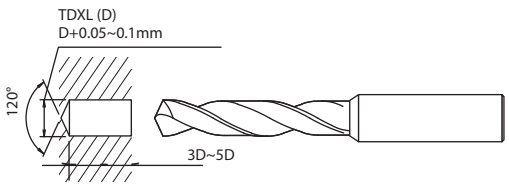
**1. Make a pilot hole**

Recommended drill : EX-SUS-GDS

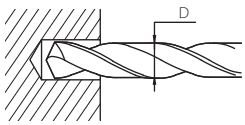
For a pilot hole, select 0.05mm to 0.1mm larger size drill than TDXL. For deep hole, we recommend to drill deeper pilot hole.

For a vertical machining center. When drilling many holes in a small area with vertical machining center. We recommend only centering by 130 degree point angle LDS to avoid chips building up in pilot holes, which can cause drill chipping or breakage. When drilling the pilot hole it is recommended to make the hole 3xD in depth, at a feed rate equal to (Drill φx 0.01) per revolution. Straightness will be less accurate than a comparable operation in a horizontal machining center.

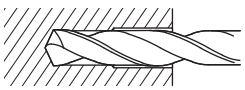
We recommended to use point angle from 120 degree and over.



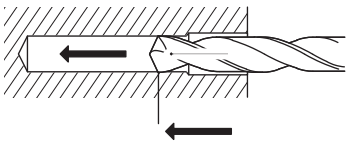

**2. Insert the TDXL into a pilot hole with low revolution. (~500 min$^{-1}$)**




**3. Start supplying the coolant.**

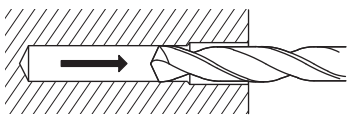


**4. Increase the revolution to the designated speed and start drilling. At the start of drilling, set the feed rate to 1% of the drill dia. and increase the feed rate when the depth reaches between 3xD and 5xD.**



Increase feed rate to between 1 and 2%
Set it to 1% D between 3xD and 5xD

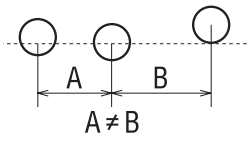
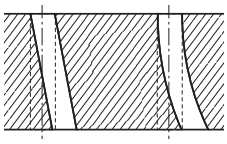
**5. After drilling, move the drill away from the bottom of the hole; then reduce its speed while pulling it out of the hole.**



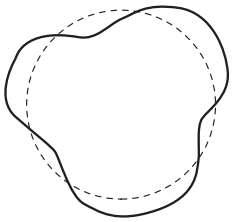
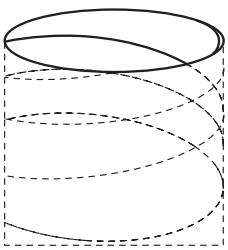
# TROUBLE SHOOTING



## Drilling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Hole expansion** | **Large run out after attachment to the machine**<br>**Large spindle run out** | • Check holder and/or select another one<br>• Check the spindle<br>• Check run out after fixing to the chuck |
| | **Non-symmetric point angle**<br>**Large lip height**<br>**Run out of chisel edge** | • Regrind correctly<br>• Check precision after regrinding |
| **Irregular hole size** | **Non-symmetric point angle**<br>**Large lip height**<br>**Run out of chisel edge**<br>**Major margin wear** | • Regrind correctly<br>• Check precision after regrinding |
| | **Large run out after attachment to machine**<br>**Loose hold**<br>**Low work holding rigidity** | • Check holder and/or select another one<br>• Check the spindle<br>• Check run out after fixing to the chuck |
| | **Feed rate is too high** | Decrease the feed rate |
| | **Not enough coolant** | Change method of coolant supply, or increase volume |
| **Poor accuracy**<br>**Irregular pitch**<br>  | **Large run out after attachment to machine**<br>**Large spindle run out** | • Check holder and/or select another one<br>• Check the spindle<br>• Check run out after fixing to the chuck |
| | **Run out when cutting** | 1. Increase rigidity of tools and machines<br>2. Increase work clamping rigidity<br>3. Select a thinning for low cutting resistance<br>4. Use centring<br>5. Double-check that the work piece is horizontal<br>6. Use a drill bush |
| | **Poor alignment accuracy** | Check alignment before operation |
| **Bad hole perpendicularity**<br>  | **Excessive tool wear** | Regrind correctly |
| | **Poor position accuracy** | Increase position accuracy |
| | **Non-symmetric point angle**<br>**Large lip height**<br>**Run out of chisel edge** | • Regrind correctly<br>• Check precision after regrinding |
| | **Not enough drill rigidity** | Use a more rigid drill |
| | **Drilling surface is not horizontal**<br>**Poor alignment accuracy** | • The work piece must be horizontal or pre-drilled<br>• Use centring |

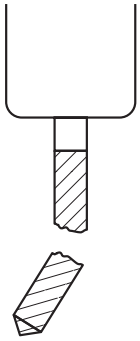
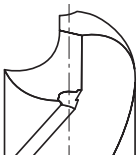
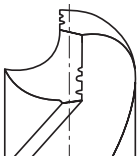
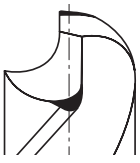
## Drilling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Bad cylindrical accuracy**  | **Non-symmetric point angle**<br>**Large lip height**<br>**Run out of chisel edge** | • Regrind correctly<br>• Check precision after regrinding |
| | **Large run out after attachment to machine**<br>**Large spindle run out**<br>**Loose clamping of work material** | • Check holder and/or select another one<br>• Check the spindle<br>• Check work clamping after fixing to the machine |
| | **Relief angle is too large** | Regrind correctly |
| | **Low drill rigidity** | Use a more rigid drill |
| **Poor surface finish** | **Poor regrinding** | Regrind correctly |
| | **Not suitable coolant for the material Not enough coolant** | Change method of coolant supply, or increase volume Select higher quality coolant |
| | **Large run out after attachment to machine large spindle run out** | • Check holder and/or select another one<br>• Check the spindle |
| | **Feed rate is too high** | Reduce the feed rate |
| | **Excessive wear on cutting edge**<br>**Build up on margin is too large** | • Regrind correctly<br>• Use a coated tool |
| | **Chip packing** | • Use the most suitable drill (consider flute form & helix angle)<br>• Change cutting conditions (feed rate, try step feed) |
| **Bad cylindrical shape**  | **Non-symmetric point angle**<br>**Large lip height**<br>**Run out of chisel edge**<br>**Large margin wear** | • Regrind correctly<br>• Check precision after regrinding |
| | **Feed rate is too low** | Increase feed rate |

# TROUBLE SHOOTING



## Drilling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Breakage**  | **Deflection and recess of machine and work material** | Increase the rigidity of machine, drill and work clamping |
| | **Relief angle is too small** | Regrind precisely |
| | **Feed rate is too high** | Decrease the feed rate |
| | **Excessive tool wear** | Regrind |
| | **Chip packing** | Use the most suitable drill (consider flute form & helix angle) Change cutting conditions (feed rate, try step feed) |
| | **Difficulty entering the material** | • Use a highly rigid tool and machine<br>• Increase work clamping rigidity<br>• Select a thinning for low cutting resistance<br>• Use centring<br>• The work piece should be horizontal<br>• Use drill bush |
| **Chipping of corner edge**  | **Inappropriate tool material** | Use the most suitable tool material |
| | **Uneven hardness distribution on the work material** | • Use the most suitable tool material<br>• Change cutting conditions (feed rate, drilling speed) or machining method |
| | **Drilling speed or feed rate too high** | Reduce drilling speed or feed rate |
| | **Not enough coolant** | Change coolant method and increase volume |
| **Chipping of cutting edge**  | **Large run out after attachment to machine Large spindle run out** | • Check holder and/or select another one<br>• Check the spindle<br>• Check run out after fixing to the chuck |
| | **Drilling speed or feed rate** | Reduce drilling or feed rate |
| | **Relief angle is too small** | Regrind correctly |
| | **Tool not suitable for work material** | Use the most suitable tool material |
| **Abnormal wear on the corner part**  | **Regrinding should have occurred earlier** | Regrind sooner |
| | **Poor alignment accuracy** | Check /adjust alignment before drilling |
| | **Drilling speed or feed rate too high** | Decrease the drilling speed |
| | **Point shape is inappropriate** | Select correct point dimensions |
| | **Tool not suitable for work material** | Use the most suitable tool material |
| | **Inappropriate coolant type** | Change coolant |

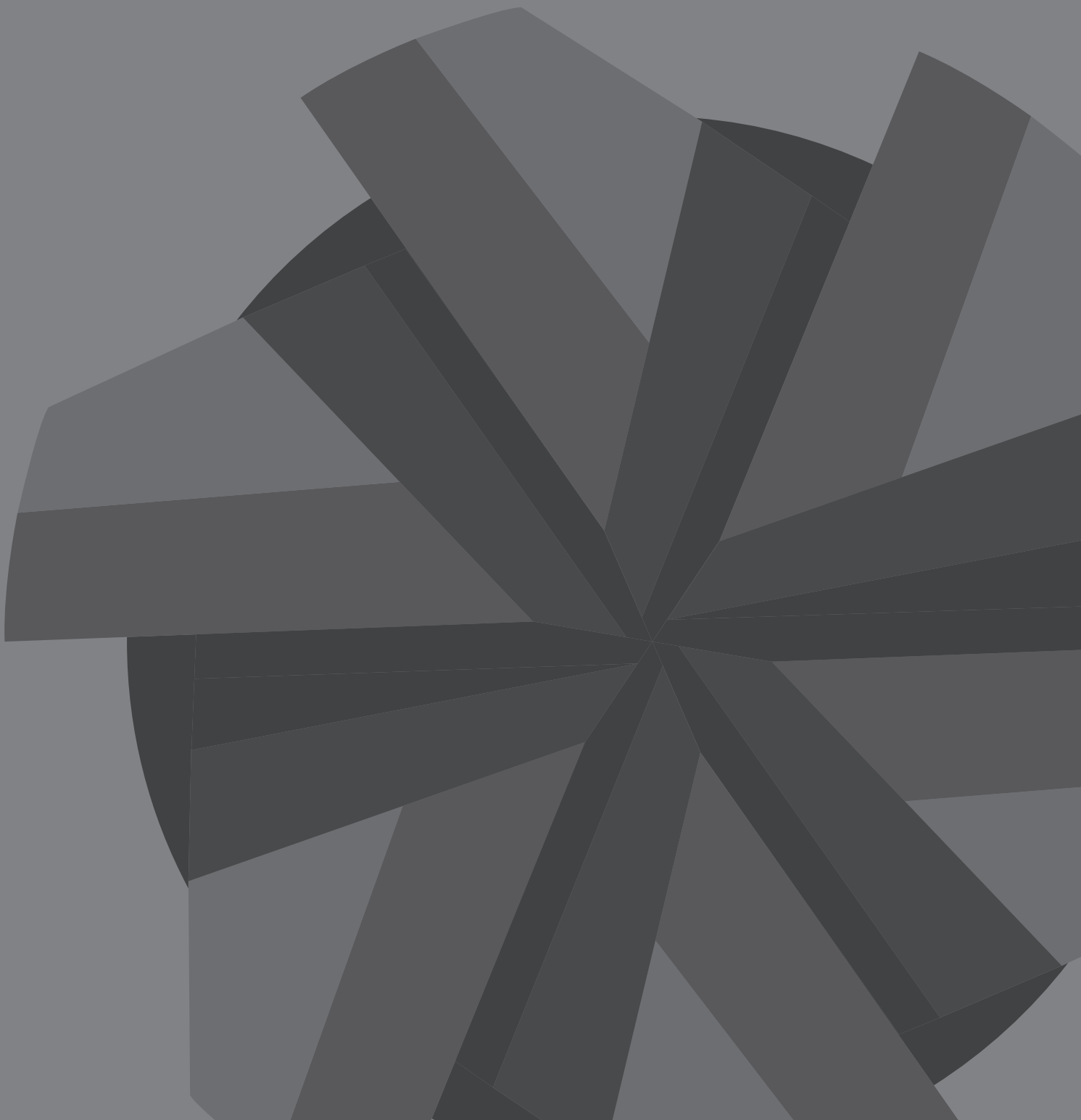
# TROUBLE SHOOTING



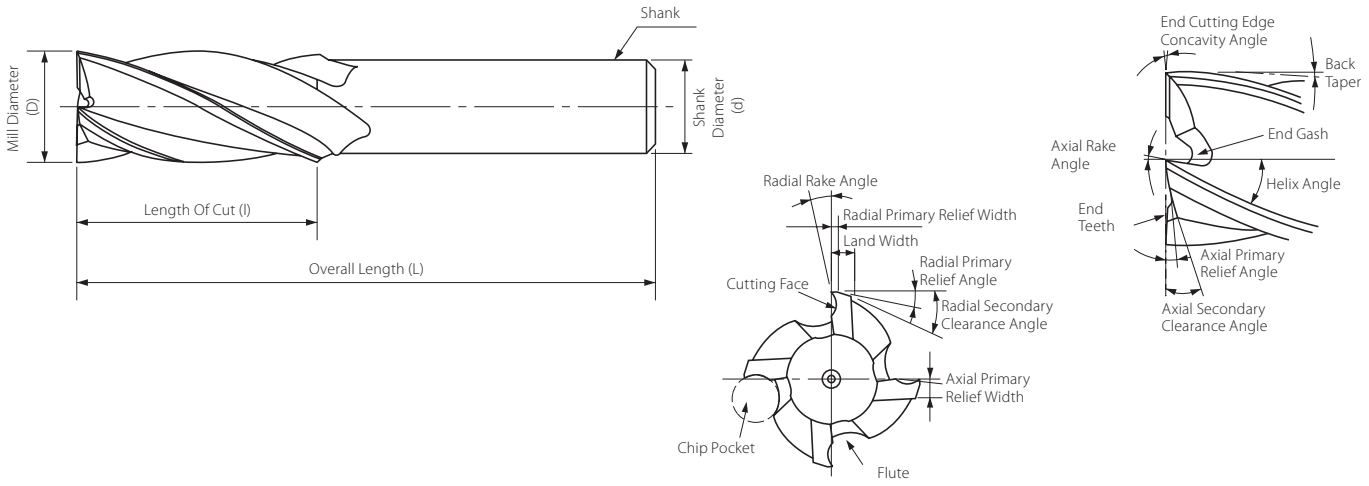
## Drilling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Wear, chipping and crushing of the chisel edge** | **Feed rate is too high** | Decrease feed rate |
| | **Point shape is inappropriate** | Select correct point dimensions |
| | **Tool not suitable for work material** | Choose suitable tool material |
| | **Relief angle is too small** | Regrind precisely |
| **Chipping of the margin** | **Bush size is too large** | Select correct bush size |
| **Margin build-up** | **High heat generation due to large wear on the cutting edge** | Regrind correctly |
| | **Coolant is not sufficient** | Change coolant method and increase volume |
| | **Coolant is not suitable** | Change coolant |
| | **Bad chip discharging / Ductile material** | Change drills or alter cutting conditions |
| **Tang breakage** | **Shank slippage due to defect** | Eliminate the defect |
| | **Defective inner surface of morse taper holder** | Change holders or correct the surface of the morse taper holder |
| | **Inaccurate regrinding** | Regrind correctly |
| **Chattering sounds** | **Relief angle is too large** | Regrind correctly |
| | **Low tool rigidity** | Use a more rigid drill |
| **Chips roll around the drill** | **Long chips**<br>**Chips are stuck in the flute** | Change drill and cutting conditions |
| **One-sided wear** | **Poor alignment accuracy** | Check/adjust the alignment |
| | **Large run out after attachment to machine** | Decrease run out when fixing to the chuck |

# TECHNICAL • MILLING

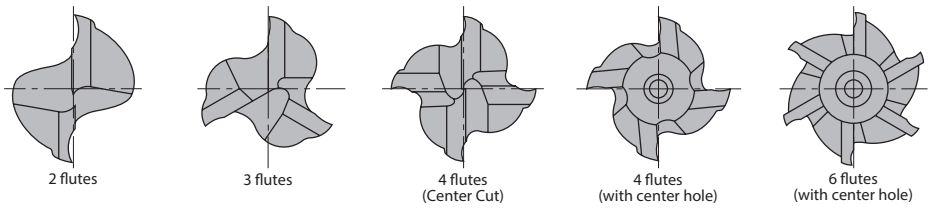


## Terminology



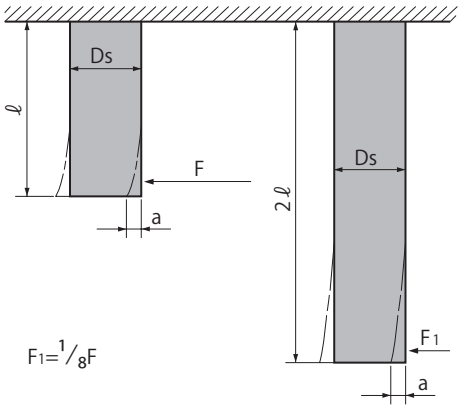

### Number of flutes

The number of flutes should be determined by the work material, dimensions of the work piece and milling conditions. In general, an end mill with a small number of flutes and large chip room is used for roughing, and an end mill with a large number of flutes is used for finishing.



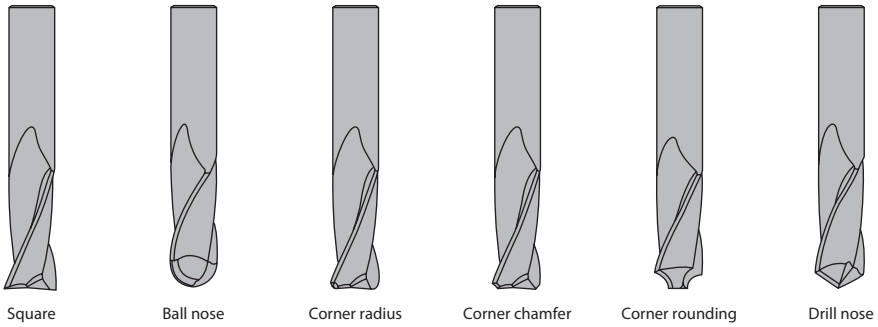

### Length of cut

The shorter the end mill, the smaller the deflection and the stronger the rigidity. Because rigidity varies in proportion to length of cut by a factor to the power of 3 (for example, when the length of cut doubles, the rigidity decreases to 1/8), it is necessary to keep the length of cut as short as possible.




### End profile

Stocked end profiles are typically square end ball nose and corner radius, Corner chamfer, corner rounding and drill nose end profiles can be supplied via special order.



# TROUBLE SHOOTING



## Milling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Chip packing** | **Too great cutting amount**<br>**Not enough chip room**<br>**Not enough coolant pressure** | • Adjust feed or speed<br>• Use end mill with fewer flutes<br>• Apply more coolant. Use air |
| **Rough surface finish** | **Feed too fast**<br>**Slow speed**<br>**Too much wear**<br>**Chip biting**<br>**No end tooth concavity** | • Slow down to correct feed<br>• Use higher speed<br>• Regrind earlier stage<br>• Cut less amount per pass<br>• Add margin (touch primary with oilstone) |
| **Burr** | **Too much wear on primary relief**<br>**Incorrect conditions**<br>**Impropoer cutting angle** | • Regrind sooner<br>• Correct milling conditions<br>• Change to correct cutting edge |
| **No dimensional accuracy** | **Too tough conditions**<br>**Lack of accuracy (machine & holder)**<br>**Not enough rigidity (machine & holder)**<br>**Not sufficient number of flutes** | • Change to easier condition<br>• Repair machine or holder<br>• Change machine or holder or condition<br>• Use end mill with geater number of flutes |
| **No perpendicular side** | **Feed too fast**<br>**Too geat cutting amount**<br>**Too long flute length or long overall length**<br>**Not sufficient number of flutes** | • Slow down to correct feed<br>• Reduce cutting amount<br>• Use proper length tool. Hold shank deeper<br>• Use end mill with greater number of flutes |

# TROUBLE SHOOTING



## Milling

| Dimensional Accuracy | | |
|---|---|---|
| **Specific Problem** | **Cause** | **Solution** |
| **Chipping** | **Feed too fast**<br>**Feed too fast on first cut**<br>**Not enough rigidity of machine tool & holder**<br>**Loose tool holder**<br>**Loose fixture (workpiece)**<br>**Lack of rigidity (tool)**<br><br>**Teeth too sharp** | • Slow down to propoer feed<br>• Slow down on first bite<br>• Change rigid machine tool or holder<br>• Tighten tool holder<br>• Tighten workpiece fixture<br>• Use shortest end mill available. Hold shank deeper. Try down cut.<br>• Change to lower cutting edge, primary relief |
| **Wear** | **Speed too fast**<br>**Hard material**<br><br>**Biting chips**<br><br><br>**Improper feed speed (too slow)**<br>**Improper cutting angle**<br>**Too low primary relief angle** | • Slow down, use more coolant<br>• Use higher grade, tool material, add surface treatment<br><br>• Change feed speed to change chip size or clear chips with coolant or air pressure<br><br>• Increase feed speed. Try down cut<br>• Change to correct cutting angle<br>• Change to larger relief angle |
| **Breakage** | **Feed too fast**<br>**Too large cutting amount**<br>**Too long flute length or long overall length**<br>**Too much wear** | • Slow down feed<br>• Adjust to smaller cutting amount per teeth<br>• Hold shank deeper, use shorter end mill<br>• Regrind at earlier stage |
| **Chattering** | **Feed and speed too fast**<br>**Not enough rigidity**<br><br>**Too much relief angle**<br><br>**Loose holder ( workpiece)**<br>**Cutting too deep**<br>**Too long flute length or long overall length** | • Correct feed and speed<br>• Use beter machine tool or holder or change conditions<br><br>• Change to smaller relief angle.<br>Add margin (touch primary with oilstone)<br><br>• Hold workpiece tighter<br>• Correct to smaller cutting depth<br>• Hold shank deeper, use shorter end mill or try down cut |
| **Short tool life (dull teeth)** | **Too much cutting friction**<br>**Tough work material**<br>**Improper cutting angle** | • Regrind at earlier stage<br>• Select premium tool<br>• Change cutting angle & primary |

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