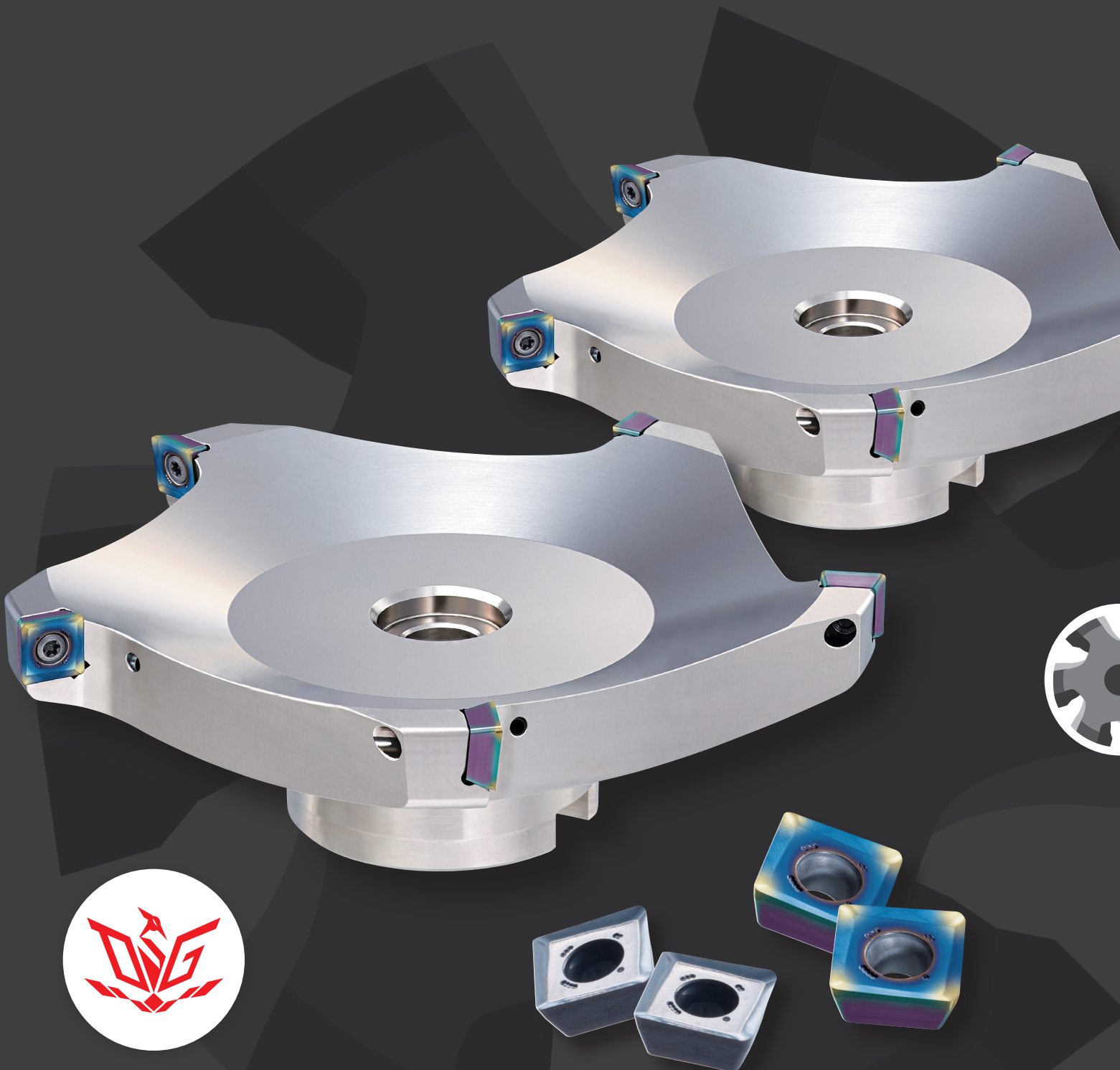




Phoenix facemill Disc Cutter

# PFDC

Volume 1



# KEY FEATURES: PHOENIX PFDC

## Lightweight large-diameter disc cutter that can be mounted on small machining centers

### PFDC Ø125 with BT30



Combined with an arbor, the total weight is less than 3kg

Facemill Arbor  
BT30-FMA25,4-45  
0,90kg  
Weight

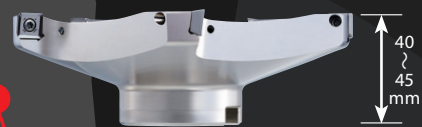
+

PFDC Ø125  
1 kg  
Tool Weight

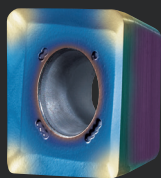
= Total Weight  
**1.9kg**

No special arbor required,  
easy tool management

Thin Steel Body  
Lightweight and  
high tool rigidity



Economical 4-corner  
insert with 90°  
cutting angle



Breaker shape with  
sharp cutting edge  
suitable for non-ferrous  
metal machining

Insert grade XP4610 (DLC coating)  
suitable for resin machining and long  
tool life in non-ferrous metal machining

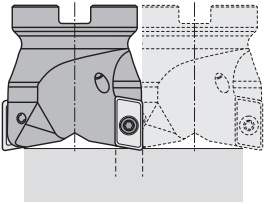
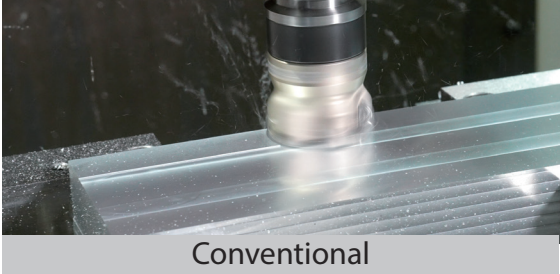
Improved chip evacuation  
with internal coolant

Achieves high-speed rotary machining  
Balance grade G6.3 is guaranteed for the  
cutter body (with inserts installed)

## Uniform machined surface with no seams in 1-pass

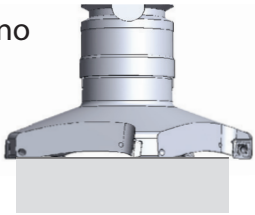

Enables 1-pass milling with a wide cutting width, which was difficult to achieve with conventional small machining centers.

**Occurrence of seams with multiple paths**

Conventional

**One pass with no seams**

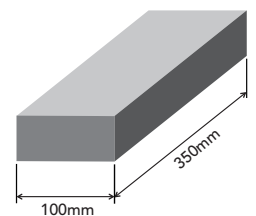



PFDC

## Face milling of A5052

Tool	<b>PFDC09R125M22,5</b> Ø125 x 5 flutes
Insert (grade)	SDHT09T308FR-NM (CK010)
Work Material	A5052
Cutting Speed	1.000 m/min (2.547min <sup>-1</sup> )
Feed	1.273 mm/min (0,1mm/t)
Depth of Cut	ap=0,1mm ae=100mm
Coolant	Air Blow
Machine	Vertical Machining Center (BT30)

Milling Surface

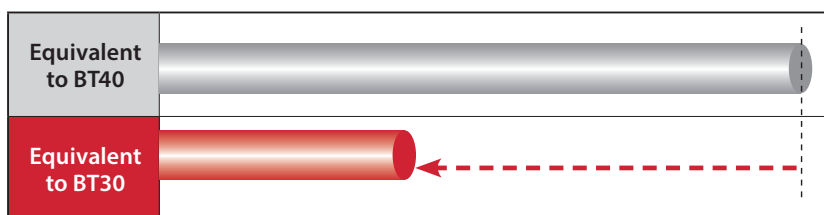


Watch it in action



## Energy saving by using a small machining center

consumption diagram



The above diagram is based on internal data.

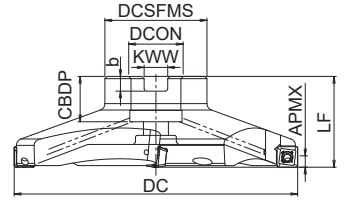
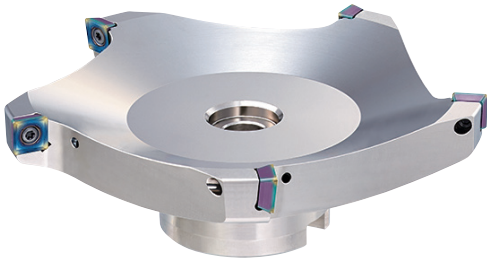
(kWh)

A large reduction in power consumption can be achieved by replacing the machining process that was conventionally done by a machining center equivalent to BT40 with a small machining center equivalent to BT30.



# PFDC

## Milling | Indexables



- Face milling disk cutter
- Economical 4-corner insert with 90° cutting angle
- Bore type with coolant hole
- 80 -125 mm



EDP	Designation	ZEFP	DC	LF	APMX	DCON	RPMX (min <sup>-1</sup> )	(Kg)	DCSFMS	KWW	b	CBDP
7835101	PFDC09R080M22-4	4	80	40	5	22	10.000	0,5	45	10,4	6,5	20
7835102	PFDC09R080M25.4-4	4	80	45	5	25,4	10.000	0,6	50	9,5	6	23
7835103	PFDC09R100M22-4	4	100	40	5	22	10.000	0,7	45	10,4	6,5	20
7835104	PFDC09R100M25.4-4	4	100	45	5	25,4	10.000	0,83	50	9,5	6	23
7835105	PFDC09R125M22-5	5	125	40	5	22	10.000	1	45	10,4	6,5	20
7835106	PFDC09R125M25.4-5	5	125	45	5	25,4	10.000	1,07	50	9,5	6	23

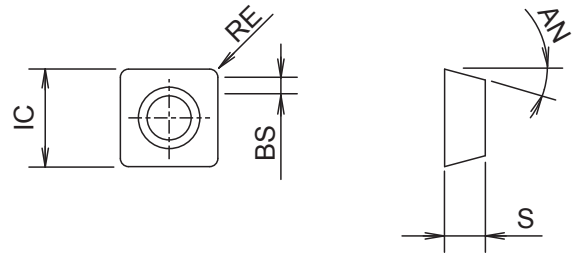
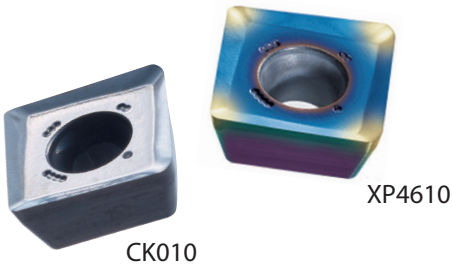
For balancing purposes, a hole may be present on the flute of the cutter

### Accessories and spare parts

Applicable cutter DC	EDP	Designation	Specification
80 - 125	7808110	FS30573 (Torx 8)	Clamping screw Wrench
80 - 125	7808205	T8-D (Torx 8)	

# PFDC INSERTS

Milling | Indexable | Inserts



- 90° Facemill cutter
- 4-corner inserts

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						●	●						



# CUTTING DATA

Milling | Indexables

## PFDC

Work Material	Component	Material Symbol	Vc (m/min) Cutting Speed	fz(mm/t) Feed per Tooth	ap(mm) Depth of Cut
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

1. The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on actual cutting condition.  
2. Please use within a range that does not exceed the maximum spindle speed of 10,000(min<sup>-1</sup>)

## (Thermoplastic Resin) Face milling of Cast Acrylic

Tool	<b>PFDC09R125M22,5</b> Ø125x5 flutes
Insert (grade)	SDHT09T308FR-NM (XP4610)
Work Material	Cast Acrylic
Cutting Speed	2.000 m/min (5.000 min <sup>-1</sup> )
Feed	762 mm/min (0,03mm/t)
Depth of Cut	ap=0,2mm ae=100mm
Cutting Direction	Down Milling
Coolant	Air-Blow
Machine	Vertical Machining Center



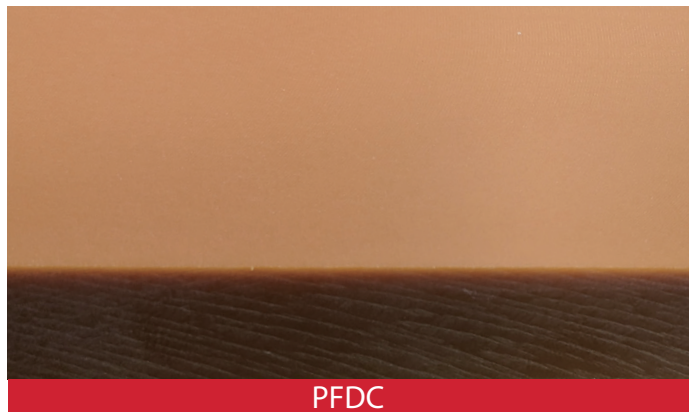
After

Before

When machined with an insert of XP4610 grade, the surface became transparent.

## (Thermosetting Resin) Face milling of Paper bakelite

Tool	<b>PFDC09R100M22-4</b> Ø100x4 flutes
Insert (grade)	SDHT09T308FR-NM (XP4610)
Work Material	Paper bakelite
Cutting Speed	2.200 m/min (7.000 min <sup>-1</sup> )
Feed	2.800 mm/min (0,1mm/t)
Depth of Cut	ap=0,2mm ae=80mm
Cutting Direction	Down Milling
Coolant	Air-Blow
Machine	Vertical Machining Center



PFDC

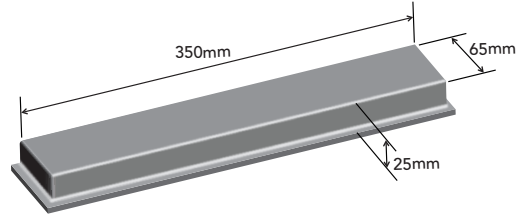
Bakelite is a work material stacked in layers. The PFDC (XP4610) exhibited no edge chipping even under high-speed cutting condition and enabled stable machining.

# CUTTING DATA

Milling | Indexables

## Part Processing of Semiconductor Manufacturing Equipment without Cutter Path Seams

Tool	PFDC09R125M22,5 Ø125x5 flutes	Competitor Ø50x5 flutes
Insert (grade)	SDHT09T308FR-NM (CK010)	DLC Coated Carbide Insert
Work Material	A5052	
Cutting Speed	2.000 m/min (5.000 min <sup>-1</sup> )	1.300 m/min (8.000 min <sup>-1</sup> )
Feed	2.000 mm/min (0,08mm/t)	2.000 mm/min (0,05mm/t)
Depth of Cut	a <sub>p</sub> =0,2mm a <sub>e</sub> =65mm	a <sub>p</sub> =0,2mm a <sub>e</sub> =32,5mm
Number of Passes	1 Pass	2 Passes
Coolant	Water-soluble	
Machine	Vertical Machining Center	



The Ø125 PFDC enables 1-pass machining and improves machining efficiency. There is also no cutter path seam.

## Comparison of Machined Surface after Finishing in ADC12

Tool	PFDC09R125M22,5 Ø125x5 flutes	Competitor Ø125x6 flutes
Insert (grade)	SDHT09T308FR-NM (CK010)	Uncoated
Work Material	ADC12	
Cutting Speed	1.500 m/min (3.820 min <sup>-1</sup> )	
Feed	2.292 mm/min (0,12mm/t)	2.292 mm/min (0,1mm/t)
Depth of Cut	a <sub>p</sub> =0,1mm a <sub>e</sub> =90mm	
Coolant	Water-soluble	
Machine	Vertical Machining Center	



The competitor product generated a chattering noise at Vc 1.500m/min, whereas the PFDC was able to process without any trouble.

## (Thermoplastic Resin) Face milling of MC901 Nylon

Tool	PFDC09R125M22,5 Ø125x5 flutes
Insert (grade)	SDHT09T308FR-NM (XP4610)
Work Material	MC901 Nylon
Cutting Speed	2.750 m/min (7.000 min <sup>-1</sup> )
Feed	3.500 mm/min (0,1mm/t)
Depth of Cut	a <sub>p</sub> =0,2mm a <sub>e</sub> =100mm
Cutting Direction	Down Milling
Coolant	Air-blow
Machine	Vertical Machining Center



With the PFDC (XP4610), good machined surface free of galling and burnt is achieved.





shaping your dreams

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