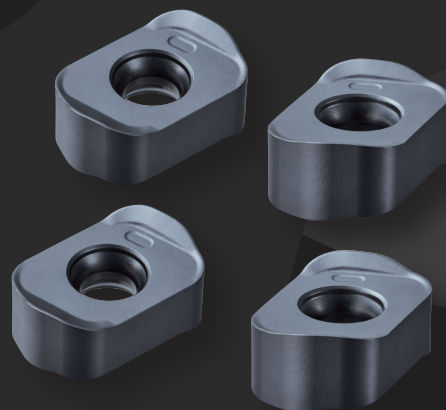
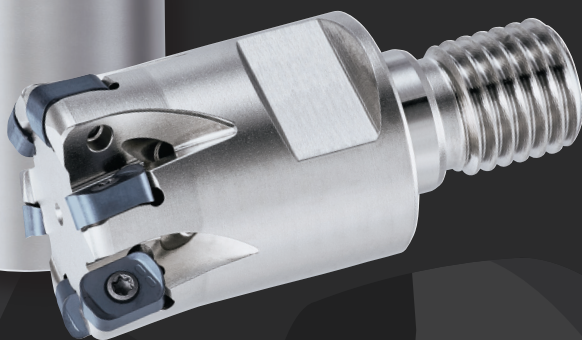




Double-Sided High-Feed Radius Cutter Series
Stable High-Feed Machining Powered by Strong Cutting Edges

PHCW

Volume 1



KEY FEATURES: PHOENIX PHCW

Double-Sided High-Feed Radius Cutter Series Phoenix High-Feed Radius Cutter W-Sided

Mold Machining Time Cannot be Reduced

Challenges

Sudden chipping or insert breakage

- Large variation in machining allowance
- Intermittent cutting and long overhang machining

Unable to increase feed rate

Solutions

Improved resistance to breakage and chipping

- Enhanced cutting edge strength
- Reduced cutting resistance

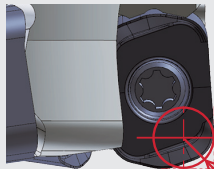
Stable machining even at high feed rates

Outstanding cutting edge strength delivers superior breakage resistance and shorter machining time!

■ Tough cutting edge enables highly efficient intermittent cutting and machining with long overhangs

Insert design that combines breakage resistance with low cutting force

Improved breakage resistance with simulated radius (R)



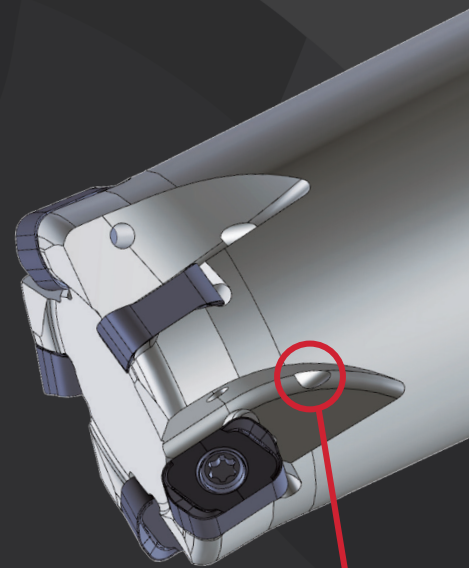
Simulated R2

High rigidity with low cutting resistance



Chip breaker with a large rake angle

Thick, robust insert



Cutter body with coolant holes to improve chip evacuation

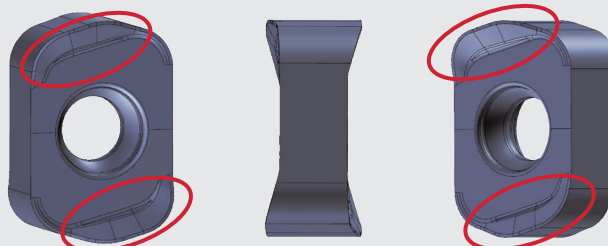
■ Multi-insert cutter body significantly improves machining efficiency

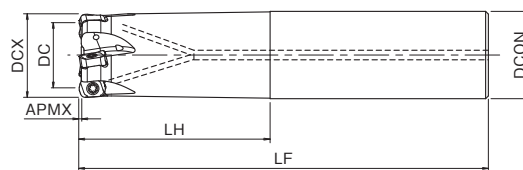
Lineup of cutter diameter and number of teeth

DCX	Ø16	Ø20	Ø25	Ø32	Ø40
PHCW SS	2	3	4	5	—
			5	6	
PHCW SF	2	3	4	5	6
			5	6	7

■ Reduced running costs

Economical double-sided, four-corner inserts



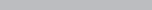


With coolant holes

- Double-Sided High-Feed Radius Cutter with Straight Shank

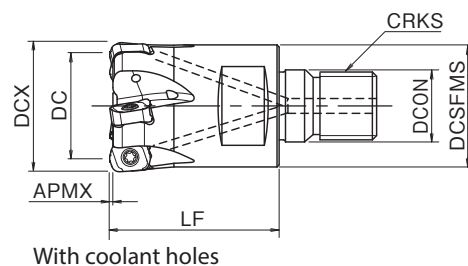
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Accessories & spare parts

 Clamping screw		Applicable Inserts	 Wrench		Applicable Inserts
7808108	FS25560 (Torx 8)	FNEU06...	7808205	T8-D (Torx 8)	FNEU06...

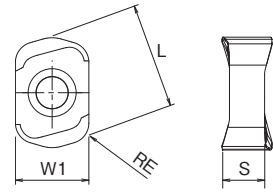


Milling | Indexables



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- Double-Sided High-Feed Radius Cutter Series

EDP	Designation	Z	LxW1	S	RE	Grade	Insert Breaker	P	M	K	N	S	H	Price
								dry	dry	GG	dry	dry	dry	
7813310	FNEU06T318SR-GL	4	9,5 x 6,45	3,63	1,8	XP2040	GL	○	○	○	○	○	○	
7825311	FNEU06T318SR-GM	4	9,5 x 6,45	3,63	1,8	XC3030	GM	●	○	○	○	○	○	
7814311	FNEU06T318SR-GM	4	9,5 x 6,45	3,63	1,8	XP3035	GM	●	○	○	○	○	○	
7813311	FNEU06T318SR-GM	4	9,5 x 6,45	3,63	1,8	XP2040	GM	○	○	○	○	○	○	

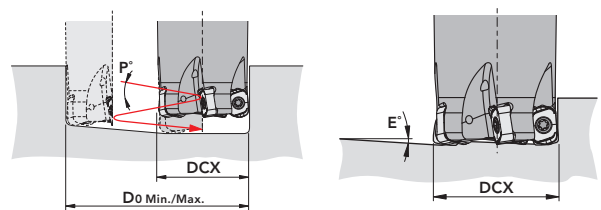
Cutting conditions

Work Material	Tensile Strength / Hardness	Milling Speed Vc (m/min)	Insert size				
			FNEU06...				
			Feed per Tooth fz (mm/t)	Depth of Cut ap (mm)			Price
				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)	1	0,8	0,5
	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	180 (60 ~ 250)	0,7 (0,3 ~ 1,3)	1	0,8	0,5
	Die Steel (SKD11-SKD61)	~280HB	180 (60 ~ 200)	0,7 (0,3 ~ 1,3)	0,8	0,6	0,4
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	160 (80 ~ 200)	0,4 (0,3 ~ 1,2)	0,8	0,6	0,4
	Stainless Steel (Wet) (SUS304,SUS420)	~250HB	120 (60 ~ 180)	0,4 (0,3 ~ 1,2)	0,8	0,6	0,4
K	Cast Iron (FC250)	~350N/mm ²	200 (100 ~ 300)	0,8 (0,4 ~ 1,5)	1	0,8	0,5
	Ductile Cast Iron (FCD400)	~800N/mm ²	180 (100 ~ 250)	0,7 (0,3 ~ 1,3)	1	0,8	0,5
S	Superalloy (Wet) (Inconel®718)	-	30 (25 ~ 60)	0,3 (0,2 ~ 0,7)	0,5	0,5	0,4
	Titanium Alloy (Ti-Al-4V)	-	80 (50 ~ 120)	0,4 (0,3 ~ 0,8)	0,5	0,5	0,3
H	Pre-hardened Steel (NAK80)	40~43HRC	120 (40 ~ 150)	0,4 (0,2 ~ 0,8)	0,5	0,5	0,3
	Steel for Die Casting (DAC55-DH31)	43~48HRC	90 (40 ~ 120)	0,3 (0,2 ~ 0,6)	0,5	0,5	0,3

The above cutting conditions are to be used as general guidelines. Adjustments may be necessary depending on the actual cutting conditions.

Maximum Ramping (E) and Helical (P) Angle

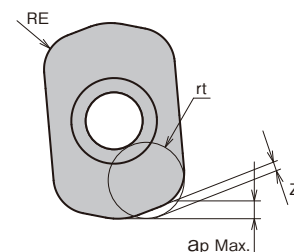
Insert Size	FNEU06...			
	DCX (mm)	Ramping Angle E°	Helical Milling (mm)	
			D0 Min.	D0 Max.
16	2	25	31	1,7
20	1,4	33	39	1,2
25	1	43	49	0,9
32	0,6	57	63	0,6
40	0,5	73	79	0,5

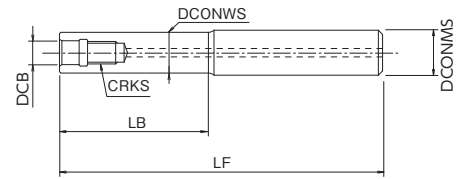


Cutting edge geometry definition for program creation

Insert Size	RE	ap Max.	rt	Z
FNEU06....	1,8	1	2	0,36

During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual cutter diameter.





- ## Milling | Indexables

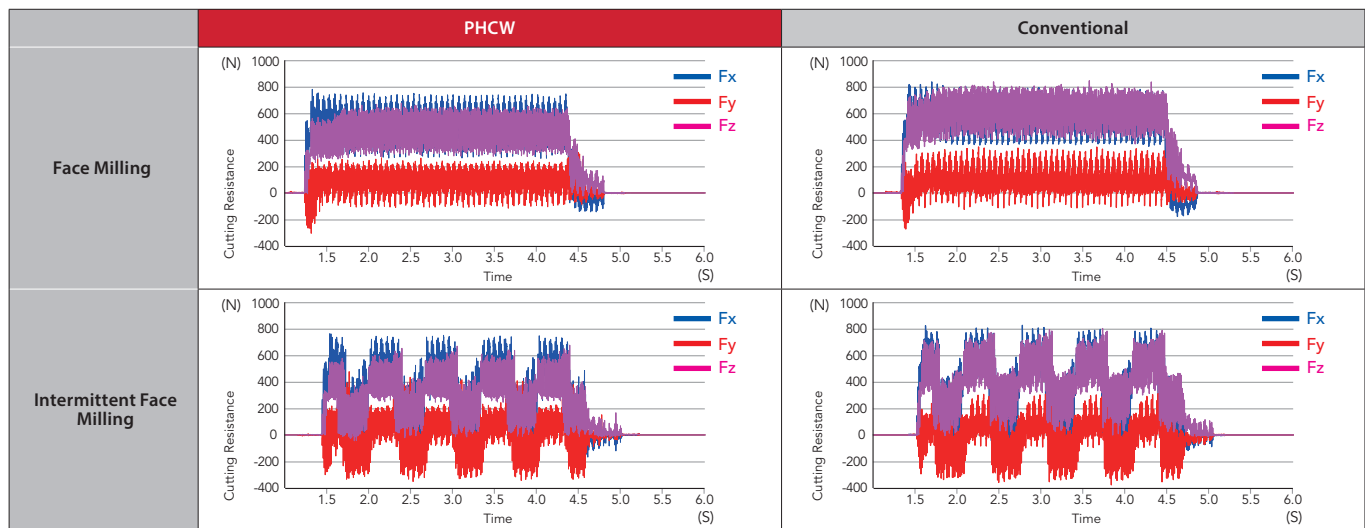
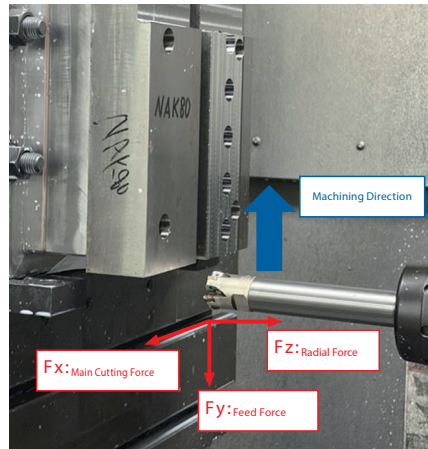
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CUTTING DATA

Milling | Indexables

Reduced cutting resistance for stable machining

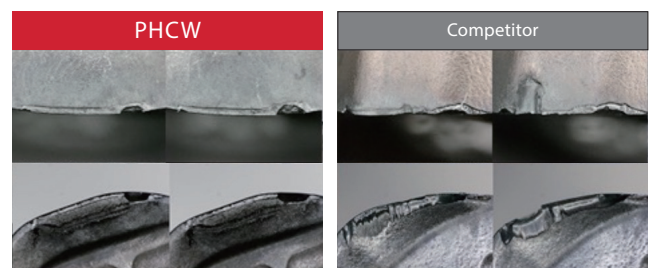
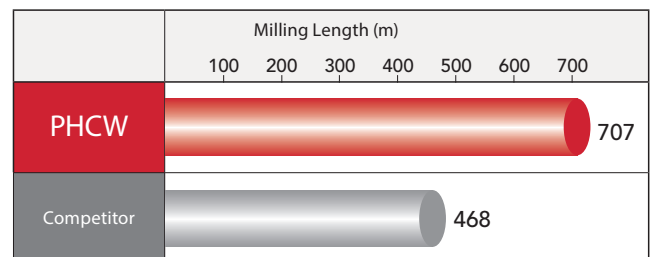
Tool	Head: PHCW06R032SF16-5 (Ø 32 x 5 flutes) Holder: SF-M16SS32-120CS
Insert Grade	FNEU06T318SR-GM (XP2040)
Work Material	NAK80 (40HRC)
Cutting Speed	150m/min (1.492min ⁻¹)
Feed	6.000mm/min (0,8mm/t)
Depth of cut	ap=0.3mm ae=20mm
Coolant	Air Blow
Overhang Length	165mm
Machine	Horizontal Machining Center (BT50)



PHCW delivers consistently low cutting resistance, even at L/D = 5D machining, enabling highly reliable operations.

Long tool life with a 5D overhang

Tool	Head: PHCW06R032SF16-5 (Ø 32 x 5 flutes) Holder: SF-M16SS32-120CS	Competitor
Insert Grade	FNEU06T318SR-GM (XP2040)	Coated Carbide Insert
Work Material	S50C	
Cutting Speed	150m/min (1.492min ⁻¹)	
Feed	6.000mm/min (0,8mm/t)	
Depth of cut	ap=0.75mm ae=20mm	
Coolant	Air Blow	
Overhang Length	125mm	
Machine	Horizontal Machining Center (BT50)	

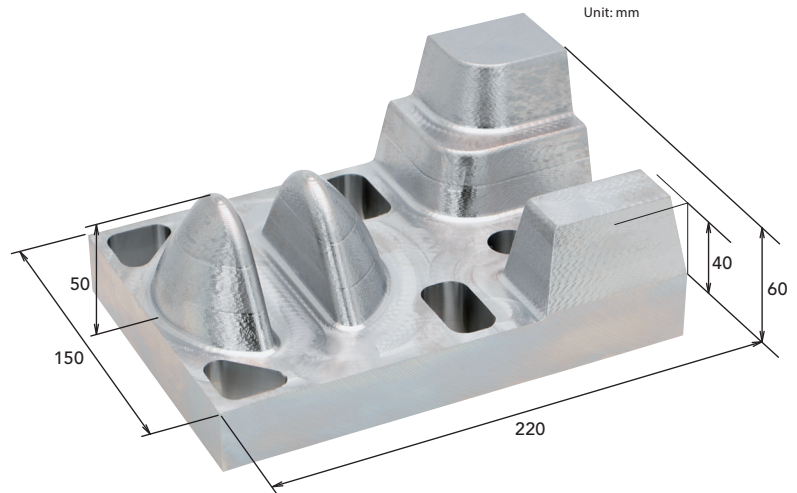


CUTTING DATA

Milling | Indexables

High-efficiency machining is possible even in intermittent profile cutting

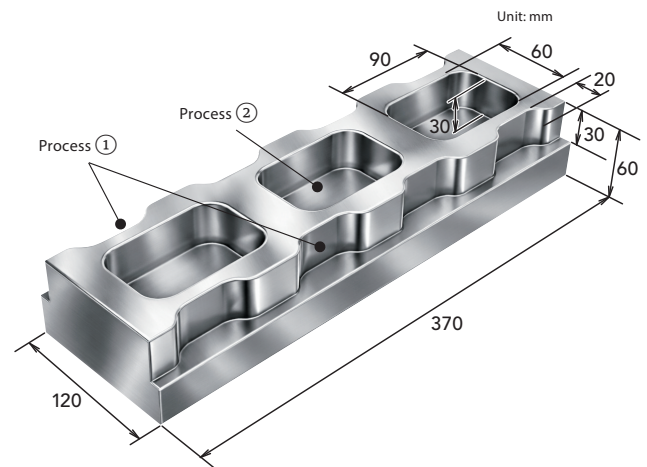
Tool	PHCW06R025S525-5S (Ø 25 x 5 flutes)
Insert Grade	FNEU06T318SR-GM (XP2040)
Work Material	NAK80 (40HRC)
Cutting Speed	150m/min (1.910min ⁻¹)
Feed	7.640mm/min (0,8mm/t)
Depth of cut	$a_p=0.5\text{mm}$ $a_e=20\text{mm}$
Coolant	Air Blow
Overhang Length	70mm
Machine	Vertical Machining Center (HSK-A63)
Machine Time	Approx. 1 hour
Cutting Amount	Approx. 1.700 cm ³



High-rigidity, low-cutting-force inserts allow high-efficiency roughing without reducing feed rates, even in intermittent machining zones.

No chipping and long tool life, even in SKD11 profile machining

Tool	Head: PHCW06R025SF12-4 (Ø 25 x 4 flutes) Holder: SF-M12S525-35	Competitor
Insert Grade	FNEU06T318SR-GM (XP2040)	Coated Carbide Insert
Work Material	SKD11 (Raw Material)	
Cutting Speed	160m/min (2.038min ⁻¹)	
Feed	8.153mm/min (1mm/t)	
Depth of cut	$a_p=0.6\text{mm}$ $a_e=10\text{mm}$	
Coolant	Air Blow	
Overhang Length	100mm	
Machine	Vertical Machining Center (HSK-A63)	



Tool	PHCW (Ø 25 x 4 flutes)	Competitor
Machining Details	Process ① Contour Milling Process ② Pocket Milling	Chipping Occurred in Process ① Contour Milling
Machining Time	Approx. 2 hours	Approx. 1 hour

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