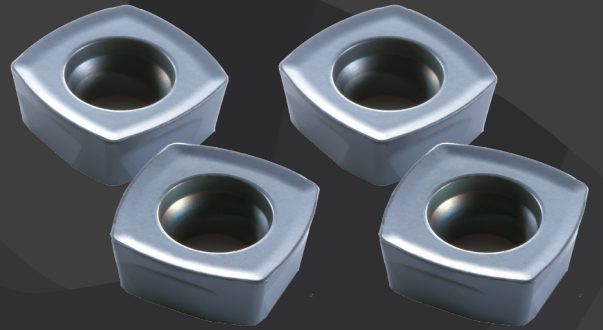




High feed radius cutter series

PHC

Volume 1



KEY FEATURES: PHOENIX PHC



1 High performance

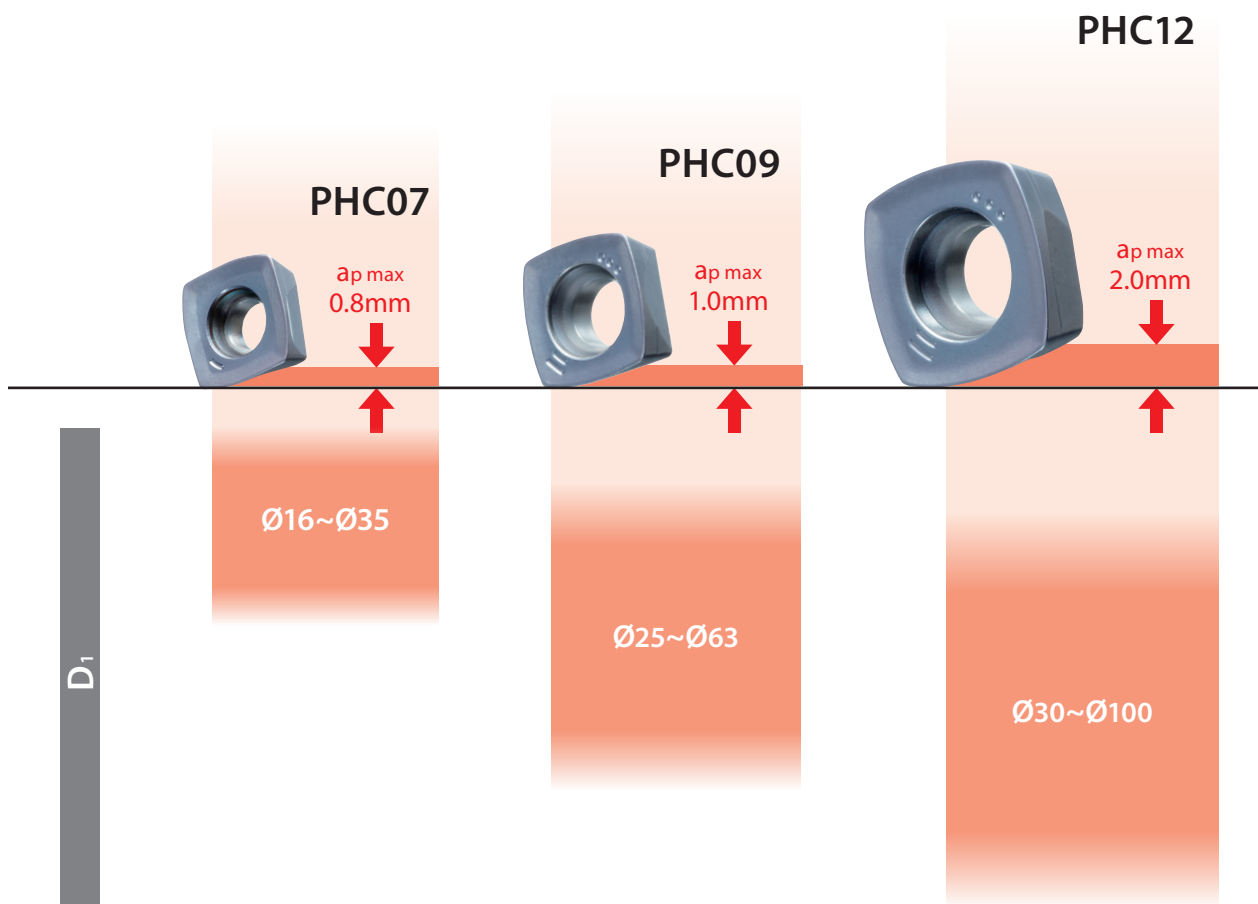
2 High feed radius cutter

3 Straight shank type



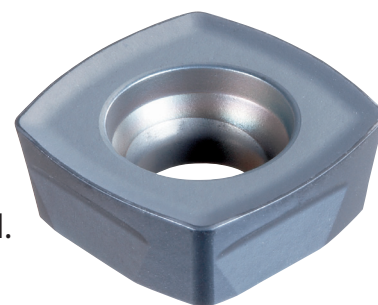
Broad Product Variations

The PHC has product variations and sizes to accommodate a wide range of machining needs. PHC achieves processing time reduction in roughing. High efficiency processing is possible even on small machining centers with low resistance specifications.



Ideal configuration for rough milling

PHC inserts have economical 4-corner design. The chipbreaker geometry enhances cutting performance while ensuring the rigidity of the cutter. Trouble-free chip evacuation capability with smooth chip control.



Cutting force reduced by changing depth of cut (ae)

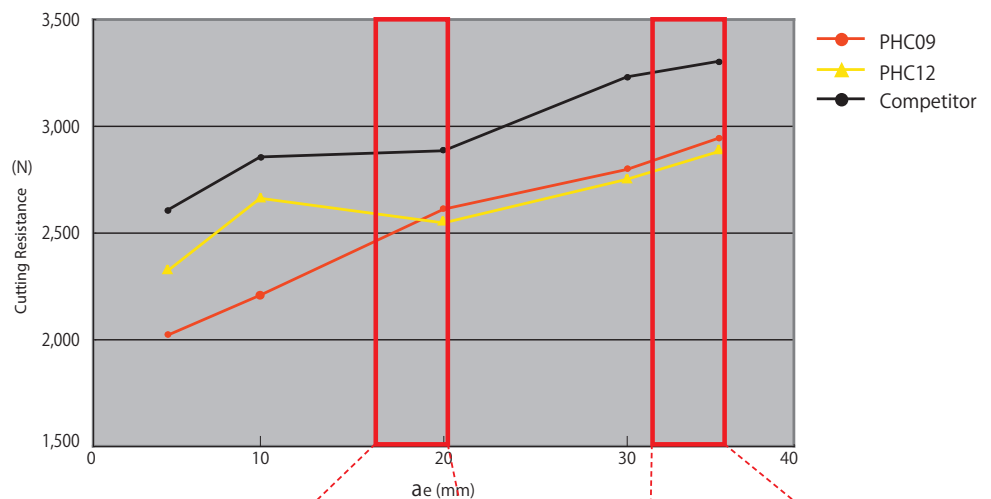
The PHC exhibited a lower cutting force versus the competitor

Tool selection:

- PHC09 - multiple cutters for highly efficient milling
- PHC12 - milling intermittently or with a long overhang length

Processing data of PHC Ø50

Tool	PHC09R050M22-5	PHC12R050M22-4
Insert Grade	SDMT09T308SR-GM (XP3035)	SXMT120410SR-GM (XP3035)
Work Material	S50C	
Cutting Speed	180m/min (1,150min ⁻¹)	
Feed	5.000 mm/min	
Depth of Cut	$a_p=1\text{mm}$ $a_e=5, 10, 20, 30, 35\text{mm}$	
Overhang Length	200 mm	
Coolant	Air Blow	
Machine	Vertical Machining Center	



Number of flutes making simultaneous contact

(ae)	5mm	10mm	20mm	30mm	35mm
PHC09	1 flute	2 flutes	3 flutes	3 flutes	4 flutes
PHC12	1 flute	2 flutes	2 flutes	3 flutes	3 flutes

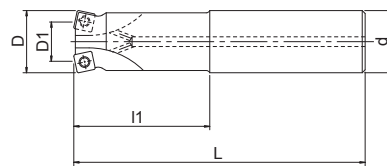
Even if the depth of cut (a_e) is increased for the PHC09 with close pitch, the design of the cutting edge suppresses the cutting force. This suppresses the load and vibrations imparted on the machine, which enables high efficiency machining.

PHC SS NEW SIZES

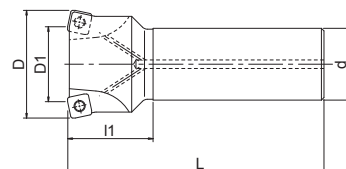
Milling | Indexables



Type 1



Type 2



- High feed radius cutter for long over hang
- 4 corners high feed inserts
- Cylindrical type
- 16 - 40 mm



EDP	Designation	Z	D	D1	d	L	l1	ap max	Applicable inserts type	Type	Price
7800750	PHC07R016SS16-2S	2	16	7,4	16	100	30	0,8	SPMT07-	1	
7800755	PHC07R016SS16-2L	2	16	7,4	16	150	50	0,8	SPMT07-	1	
7800757	PHC07R018SS16-2L	2	18	9,4	16	150	25	0,8	SPMT07-	2	
7800751	PHC07R020SS20-3S	3	20	11,4	20	130	50	0,8	SPMT07-	1	
7800758	PHC07R020SS20-3L	3	20	11,4	20	160	80	0,8	SPMT07-	1	
7800760	PHC07R022SS20-3L	3	22	13,4	20	160	30	0,8	SPMT07-	2	
7800752	PHC07R025SS25-4S	4	25	16,4	25	140	60	0,8	SPMT07-	1	
7800761	PHC07R025SS25-4L	4	25	16,4	25	200	100	0,8	SPMT07-	1	
7800753	PHC07R030SS32-4S	4	30	21,4	32	150	70	0,8	SPMT07-	1	
7800764	PHC07R030SS32-4L	4	30	21,4	32	200	120	0,8	SPMT07-	1	
7800754	PHC07R032SS32-5S	5	32	23,4	32	150	70	0,8	SPMT07-	1	
7800765	PHC07R032SS32-5L	5	32	23,4	32	200	120	0,8	SPMT07-	1	
7800767	PHC07R035SS32-5L	5	35	26,4	32	200	50	0,8	SPMT07-	2	
7800700	PHC09R025SS25-2S	2	25	13,2	25	140	60	1	SDMT09-	1	
7800704	PHC09R025SS25-2L	2	25	13,2	25	200	120	1	SDMT09-	1	
7800701	PHC09R025SS25-3S	3	25	13,2	25	140	60	1	SDMT09-	1	
7800705	PHC09R025SS25-3L	3	25	13,2	25	200	120	1	SDMT09-	1	
7800716	PHC09R028SS25-3S	3	28	16,2	25	140	40	1	SDMT09-	2	
7800720	PHC09R028SS25-3L	3	28	16,2	25	200	40	1	SDMT09-	2	
7800717	PHC09R030SS32-3S	3	30	18,2	32	150	70	1	SDMT09-	1	
7800721	PHC09R030SS32-3L	3	30	18,2	32	200	120	1	SDMT09-	1	
7800702	PHC09R032SS32-3S	3	32	20,2	32	150	70	1	SDMT09-	1	
7800706	PHC09R032SS32-3L	3	32	20,2	32	200	120	1	SDMT09-	1	
7800718	PHC09R035SS32-3S	3	35	23,2	32	150	50	1	SDMT09-	2	
7800722	PHC09R035SS32-3L	3	35	23,2	32	200	50	1	SDMT09-	2	
7800703	PHC09R040SS32-4S	4	40	28,2	32	150	50	1	SDMT09-	2	
7800730	PHC12R030SS32-2S	2	30	13,4	32	150	70	2	SXMT12-	1	
7800708	PHC12R032SS32-2S	2	32	15,4	32	150	70	2	SXMT12-	1	
7800731	PHC12R035SS32-3S	3	35	18,4	32	150	50	2	SXMT12-	2	
7800709	PHC12R040SS32-3S	3	40	23,4	32	150	50	2	SXMT12-	2	

Accessories & spare parts

Applicable cutter	Clamping screw		Price	Wrench		Price
	Clamping screw	Clamping screw		Wrench	Wrench	
SPMT07 Ø 16 ~ 35	7808105	FS25550 (Torx 8)		7808205	T8-D (Torx 8)	
SDMT09 Ø 25 ~ 35	7808111	FS35572 (Torx 15)		7808208	T15-D (Torx 15)	
SDMT09 Ø 40	7808112	FS35586 (Torx 15)		7808208	T15-D (Torx 15)	
SXMT12 Ø 30 ~ 40	7808113	FS45510 (Torx 20)		7808209	T20-D (Torx 20)	

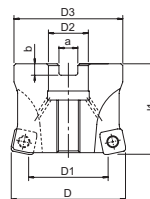


PHC BORE

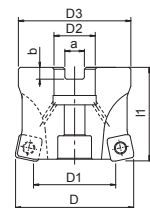
Milling | Indexables



Type 1



Type 2



- High feed radius cutter for long over hang
- 4 corners high feed inserts
- Bore types
- 40 - 100 mm






EDP	Designation	Z	D	D1	I1	D3	D2	a	b	ap max	Applicable inserts type	Type	Price
7800600	PHC09R040M16-4	4	40	28,2	40	38	16	8,4	5,6	1	SDMT09...	1	
7800601	PHC09R050M22-5	5	50	38,2	50	47	22	10,4	6,3	1	SDMT09...	2	
7800602	PHC09R052M22-5	5	52	40,2	50	47	22	10,4	6,3	1	SDMT09...	2	
7800603	PHC09R063M22-6	6	63	51,2	50	60	22	10,4	6,3	1	SDMT09...	2	
7800604	PHC09R066M22-7	7	66	54,2	50	60	22	10,4	6,3	1	SDMT09...	2	
7800607	PHC12R040M16-3	3	40	23,4	40	38	16	8,4	5,6	2	SXMT12...	1	
7800608	PHC12R050M22-4	4	50	33,4	50	47	22	10,4	6,3	2	SXMT12...	2	
7800609	PHC12R052M22-4	4	52	35,4	50	47	22	10,4	6,3	2	SXMT12...	2	
7800610	PHC12R063M22-5	5	63	46,4	50	60	22	10,4	6,3	2	SXMT12...	2	
7800611	PHC12R066M22-6	6	66	49,4	50	60	22	10,4	6,3	2	SXMT12...	2	
7800612	PHC12R080M27-7	7	80	63,4	50	76	27	12,4	7	2	SXMT12...	2	
7800613	PHC12R100M32-8	8	100	83,4	63	96	32	14,4	8	2	SXMT12...	2	

Milling | Indexables



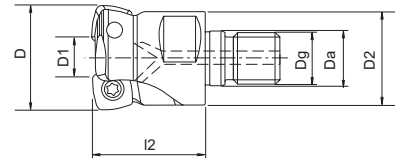
Bore

Accessories & spare parts

Applicable cutter	 Clamping screw		Price	 Power screw		Price	 Wrench		Price
	EDP	Designation		EDP	Designation		EDP	Designation	
SDMT09 Ø 40 ~ 63	7808112	FS35586 (Torx 15)					7808208	T15-D (Torx 15)	
SXMT12 Ø 40 ~ 100	7808113	FS45510 (Torx 20)					7808209	T20-D (Torx 20)	
Ø 40				7808150	PS0830 (M8x30)	15,60			

PHC SCREW FIT NEW SIZES

Milling | Indexables





- High feed radius cutter for long over hang
- 4 corners high feed inserts
- Screw fit type
- 16 - 40 mm



EDP	Designation	Z	D	D1	Dg	l2	D2	Wrench size	ap max	Applicable inserts type	Da	Price
7801520	PHC07R016SF8-2	2	16	7,4	8	27	14,5	10	0,8	SPMT07...	8,5	
7801523	PHC07R020SF10-3	3	20	11,4	10	33	18	14	0,8	SPMT07...	10,5	
7801525	PHC07R022SF10-3	3	22	13,4	10	33	18	14	0,8	SPMT07...	10,5	
7801526	PHC07R025SF12-4	4	25	16,4	12	35	23	17	0,8	SPMT07...	12,5	
7801529	PHC07R030SF16-4	4	30	21,4	16	40	28	22	0,8	SPMT07...	17	
7801530	PHC07R032SF16-5	5	32	23,4	16	40	28	22	0,8	SPMT07...	17	
7801532	PHC07R035SF16-5	5	35	26,4	16	40	28	22	0,8	SPMT07...	17	
7801500	PHC09R025SF12-3	3	25	13,2	12	35	23	17	1	SDMT09...	12,5	
7801501	PHC09R028SF12-3	3	28	16,2	12	35	23	17	1	SDMT09...	12,5	
7801502	PHC09R030SF16-3	3	30	18,2	16	40	28	22	1	SDMT09...	17	
7801503	PHC09R032SF16-3	3	32	20,2	16	40	28	22	1	SDMT09...	17	
7801504	PHC09R035SF16-3	3	35	23,2	16	40	28	22	1	SDMT09...	17	
7801505	PHC09R040SF16-4	4	40	28,2	16	40	28	22	1	SDMT09...	17	
7801506	PHC12R030SF16-2	2	30	13,4	16	40	28	22	2	SXMT12...	17	
7801507	PHC12R032SF16-2	2	32	15,4	16	40	28	22	2	SXMT12...	17	
7801508	PHC12R035SF16-3	3	35	18,4	16	40	28	22	2	SXMT12...	17	
7801509	PHC12R040SF16-3	3	40	23,4	16	40	28	22	2	SXMT12...	17	

Accessories & spare parts

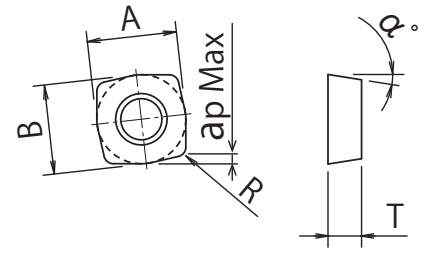
Applicable cutter	 Clamping screw		Price	 Wrench		Price
	EDP	Designation		EDP	Designation	
SPMT07 Ø 16 ~ 35	7808105	FS25550 (Torx 8)		7808205	T8-D (Torx 8)	
SDMT09 Ø 25 ~ 35	7808111	FS35572 (Torx 15)		7808208	T15-D (Torx 15)	
SDMT09 Ø 40	7808112	FS35586 (Torx 15)		7808208	T15-D (Torx 15)	
SXMT12 Ø 30 ~ 40	7808113	FS45510 (Torx 20)		7808209	T20-D (Torx 20)	

Milling | Indexables
Screw Fit



PHC INSERTS

Milling | Indexables



- High feed radius cutter for long over hang
- 4 corners inserts

EDP	Designation	Z	A x B	T	α	R	ap max	Grade	P		M		K		N		S		H		Price	
									dry	⊖	dry	⊖	GG	GGG	dry	⊖	dry	⊖	dry	⊖		
7814092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XP3035	●	●	○	○	○	○								
7828092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XP3025	●	●			○	○								
7827092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XC3020	●	●			○	○								
7825092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XC3030	●	●			○	○								
7813092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XP2040	○	○	○	●						○	○			
7826092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XP2025	○	○		●										
7816093	SPMT070305ER-SM	4	7x7	2,75	11°	0,5	0,8	XC5040			○							●				
7812092	SPMT070305SR-GM	4	7x7	2,75	11°	0,5	0,8	XC1015					●	●								
7814020	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1	XP3035	●	●	○	○	○	○								
7825020	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1	XC3030	●	●			○	○								
7813020	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1	XP2040	○	○	○	●						○	○			
7826020	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1	XP2025		○		●										
7815021	SDMT09T308ER-SM	4	9,52x9,52	3,97	15°	0,8	1	XC5035			●	○						○	○			
7816021	SDMT09T308ER-SM	4	9,52x9,52	3,97	15°	0,8	1	XC5040				○						●				
7812020	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1	XC1015					●	●								
7814022	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	2	XP3035	●	●	○	○	○	○								
7825022	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	2	XC3030	●	●			○	○								
7813022	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	2	XP2040	○	○	○	●						○	○			
7826022	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	2	XP2025		○		●										
7815023	SXMT120410ER-SM	4	12,7x12,7	4,76	9°	1	2	XC5035			●	○						○	○			
7816023	SXMT120410ER-SM	4	12,7x12,7	4,76	9°	1	2	XC5040				○						●				
7812022	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	2	XC1015					●	●								

Milling | Indexables



Inserts

CUTTING CONDITIONS

Milling | Indexables | Cutting conditions

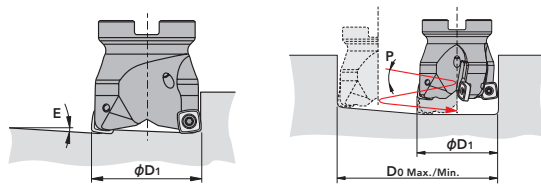
PHC

High feed radius cutter

	Work Material	Tensile Strength / Hardness	Vc (m/min)	Insert Size												Grade
				SDMT07...			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 (S5400-S10C)	~180HB	180 (60~250)	0,7 (0,3~1,5)	0,8	0,6	0,4	0,8 (0,3~1,5)	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/mm ²	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/mm ²	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

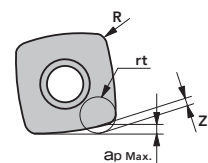
Maximum Ramping Angle (E)

Insert Size	SPMT07...			SDMT09...			SXMT12...					
	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)

SPMT07...	0,5	0,8	1,2	0,35
SDMT09...	0,8	1	2	0,7
SXMT12...	1	2	3	1,15



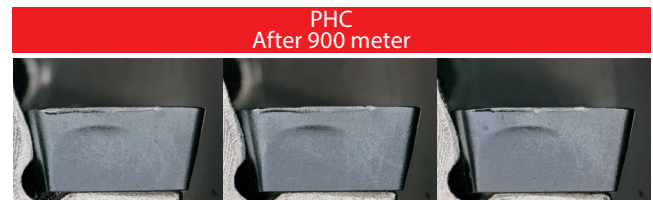
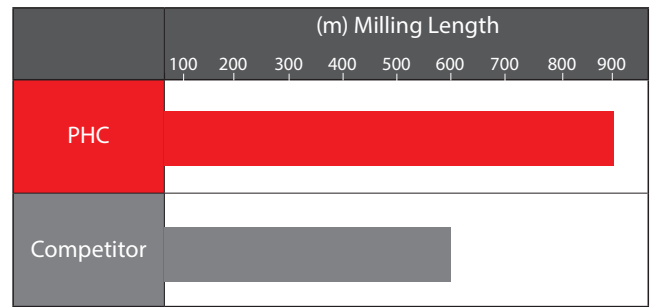
For machining purposes: create machining programs for the recommended simulated R. Unit: mm

CUTTING DATA

Rough milling of mold base

Tool	PHC07R020SS20-3S (Ø20x3)	Competitor
Insert Grade	SPMT070305SR-GM (XC3020)	Coated carbide insert
Work Material	S50C	
Cutting Speed	157m/min (2.500min ⁻¹)	
Feed	6.000mm/min (0.8mm/t)	
Depth of Cut	ap=0.5mm ae=14mm	
Coolant	Air Blow	
Machine	Vertical Machining Center	

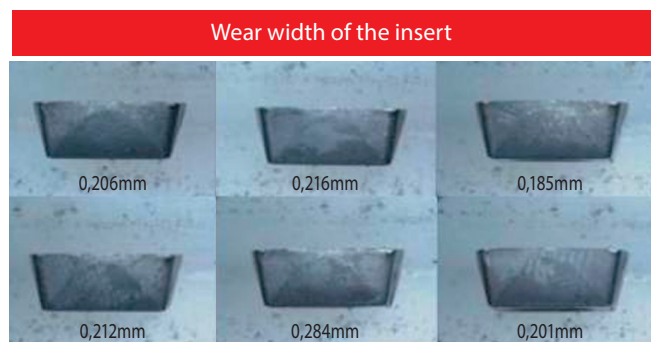
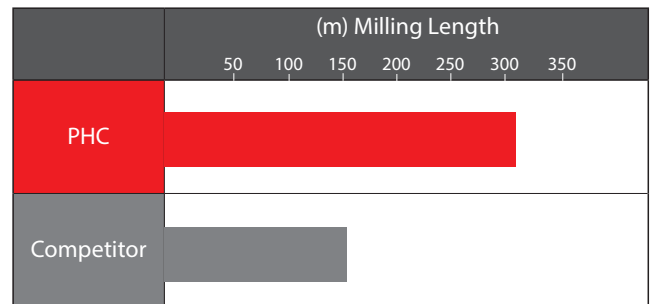
XC3020 with high wear resistance properties was able to suppress wear and achieve 1.5 times the durability.



Rough milling of die-casting dies

Tool	PHC09R063M22-6 (Ø20x3)	Competitor
Insert Grade	SDMT09T308SR-GM (XP2040)	Coated carbide insert
Work Material	DAC55 (48HRC)	
Cutting Speed	75m/min (379min ⁻¹)	118m/min (596min ⁻¹)
Feed	1.250mm/min (0.55mm/t)	600mm/min (0.25mm/t)
Depth of Cut	ap=0.7mm ae=22,5mm	
Coolant	Air Blow	
Overhang length	145 mm	
Machine	Vertical Machining Center	

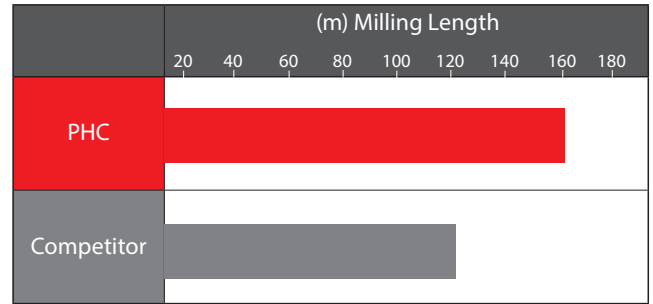
This product was able to mill at double the efficiency of a competitor's product while doubling the durability. Due to its low-resistance construction, it minimizes heat generation, resulting in a stable discharge of brownish chips.



Rough milling of die-casting dies

Tool	PHC09R050M22-5 (Ø50x5)	Competitor
Insert Grade	SDMT09T308SR-GM (XP2040)	Coated carbide insert
Work Material	SKD61 (48 HRC)	
Cutting Speed	80m/min (510min ⁻¹)	110m/min (700min ⁻¹)
Feed	1.360mm/min (0.53mm/t)	800mm/min (0.28mm/t)
Depth of Cut	ap=0.5mm ae=25mm	
Coolant	Air Blow	
Machine	Horizontal Machining Center	

Due to its low-resistance edge form, this product was able to mill at 1.7 times the efficiency of the competitor's tool, and achieved 1.4 times the durability. Additionally, the heat generated by the competitor's tool created a distortion in the workpiece, while the PHC was able to improve the process by suppressing the generation of heat.



Rough milling of plastic dies

Tool	PHC12R050M22-4 (Ø50x4)	Competitor
Insert Grade	SXMT120410SR-GM (XP2040)	Coated carbide insert
Work Material	PX5 (30HRC)	
Cutting Speed	157m/min (1.000min ⁻¹)	
Feed	3.000mm/min (0.75mm/t)	
Depth of Cut	ap=0.75mm ae=25mm	
Coolant	Water-Soluble	
Machine	Vertical Machining Center	

While rough milling a die using the same conditions as the competitor's tools, this product has doubled the durability.

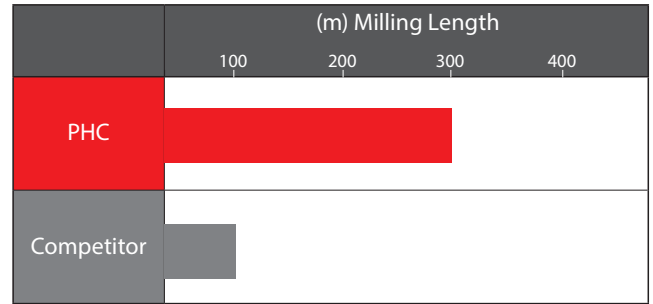


CUTTING DATA

Rough milling of plastic dies

Tool	PHC12R063M22-5 (Ø63x5)	Competitor
Insert Grade	SXMT120410SR-GM (XP2040)	Coated carbide insert
Work Material	HPM7 (33HRC)	
Cutting Speed	100m/min (505min ⁻¹)	
Feed	2.500mm/min (1mm/t)	
Depth of Cut	ap=1,5mm ae=40mm	
Coolant	Air Blow	
Machine	Vertical Machining Center	

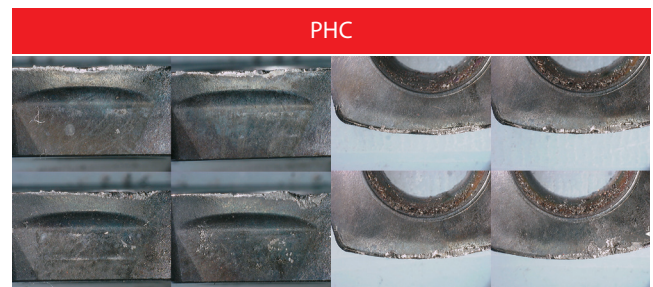
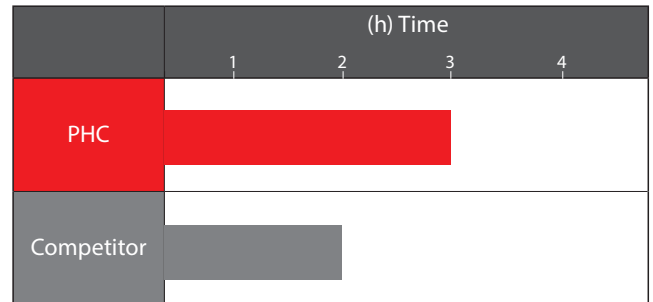
A competitor's product chipped prematurely, but the PHC exhibited minimum resistance, inhibiting chipping and allowing it to mill three times the distance under the same conditions.



Rough milling of press dies

Tool	PHC12R050M22-4 (Ø50x4)	Competitor
Insert Grade	SXMT120410SR-GM (XP2040)	Coated carbide insert
Work Material	SKD11 Equivalent	
Cutting Speed	112m/min (713min ⁻¹)	
Feed	2.400mm/min (0,84mm/t)	2.000mm/min (0,7mm/t)
Depth of Cut	ap=1,25mm ae=32,2mm	
Coolant	Air Blow	
Machine	Double column machining center	

This process consisted of rough-milling of steel for a press die. A competitor's product could not increase the feed rate due to chipping. The PHC was able to mill with stability while increasing the conditions by 20%, and also provided 1.5 times the durability.

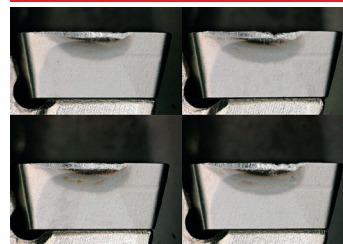
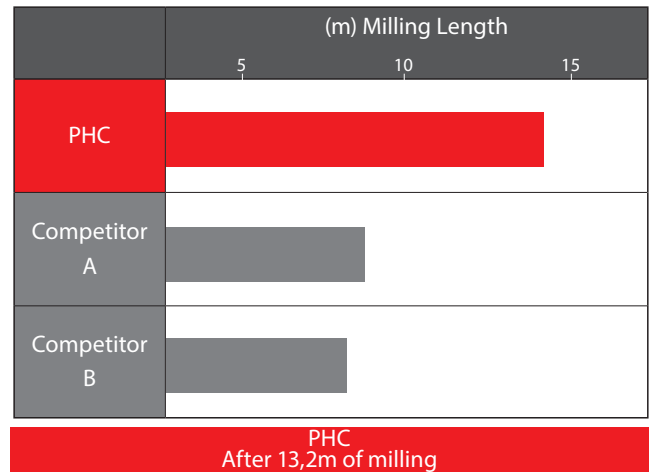


CUTTING DATA

Long tool life in Inconel 718

Tool	PHC07R025SS25-4S (Ø25x4)	Competitor
Insert Grade	SPMT070305ER-SM (XC5040)	Coated carbide insert
Work Material	Inconel 718 (41HRC)	
Cutting Speed	30m/min (382min ⁻¹)	
Feed	764mm/min (0.5mm/t)	
Depth of Cut	ap=0.5mm ae=25mm	
Coolant	Water-Soluble	
Machine	Horizontal machining center	

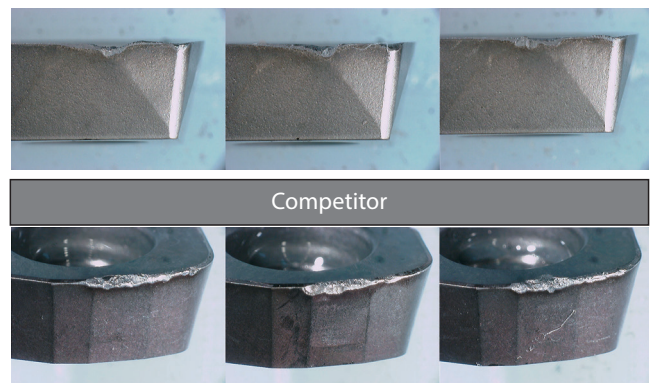
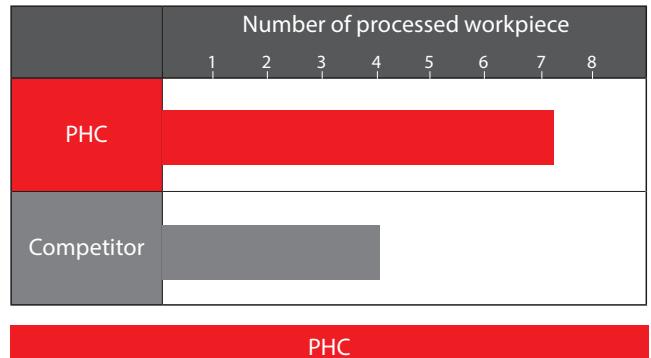
PHC (XC5040) was able to suppress wear to prolong durability. Furthermore, its unique flute geometry enables smooth chip evacuation, which contributed to an excellent surface finish.



Rough milling of press dies

Tool	PHC09R032SS32-3S (Ø32x3)	Competitor
Insert Grade	SDMT09T308ER-SM (XC5040)	Coated carbide insert
Work Material	SUS630	
Cutting Speed	80m/min (796min ⁻¹)	
Feed	800mm/min (0,33mm/t)	
Depth of Cut	ap=0.5mm ae=~32mm	
Coolant	Water Soluble	
Machine	Double column machining center	

A blade was rough-milled under the same conditions for comparison. This tool provided 1.75 times the durability, and milled in a stable manner with inserts exhibiting normal wear. Moreover, it was capable of continued milling.



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