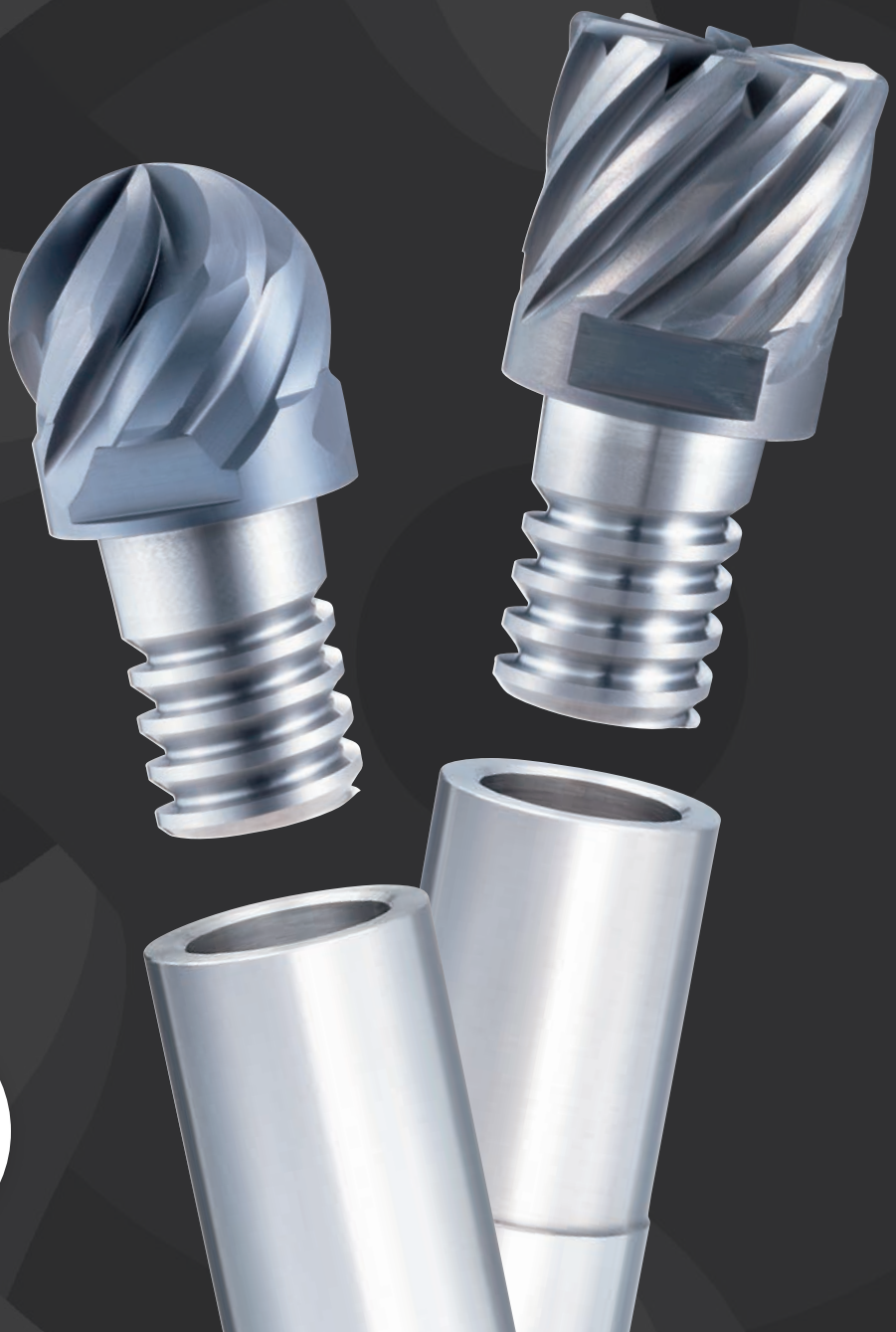
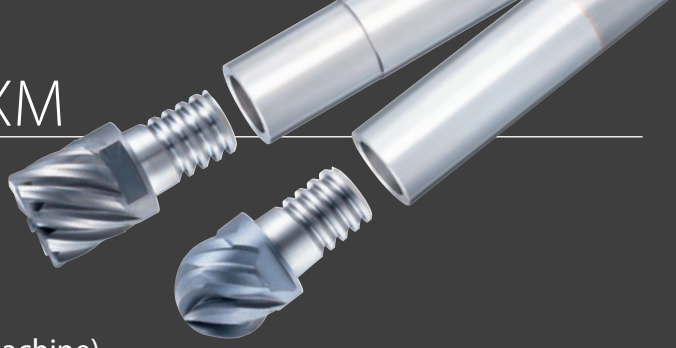
Exchangeable Milling

PXM

Volume 2



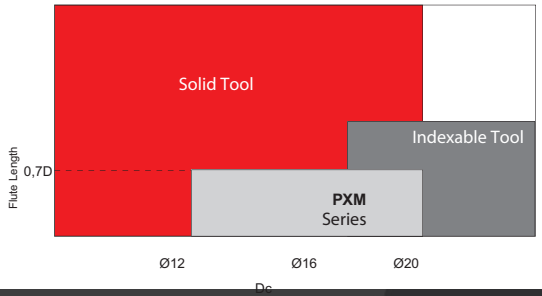
KEY FEATURES: PHOENIX PXM



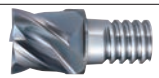
- Held at two surfaces to ensure runout precision and strength.
- Provided with buttress screws to facilitate coupling.
- Shortened tool replacement time. (Replaceable on machine)
- Numerous variations are possible by combining different heads and bodies.
- The lineup of cutter forms, which is backed by OSG's experience with carbide solid end mills, supports various types of milling.

Held at two surfaces, the end face and the taper, to ensure a high level of rigidity and precision.

Precision = Runout under 0,015 mm
Axial direction ±0,03 mm



Compared to solid tools	The large diameter offers cost advantages. To reduce the tool changing time, only the cutter tip needs to be replaced.
Compared to indexable tools	It provides flute quantity advantages to improve productivity, as well as a selection of cutter tips. It offers additional advantages in terms of initial costs and running costs.

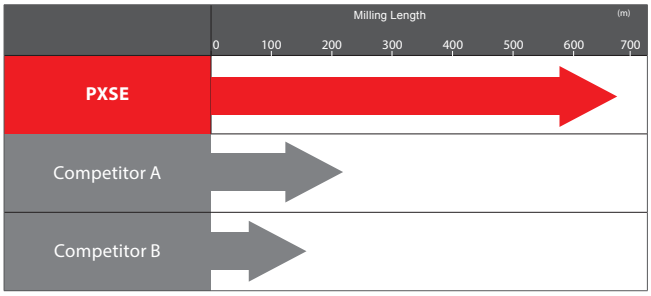
	Product series	Tool specification	Features	Size range	Z	Page
	PXNL		Low variable helix with roughing shape	12 - 25 mm	4	8
	PXNH		High variable helix with roughing shape	12 - 25 mm	4	8
	PXVC		High variable helix for L/D up to 7xD	12 - 25 mm	4	9
	PXSE		Variable helix for L/D up to 5xD	12 - 25 mm	4	10
	PXSM		Multi flute variable helix for L/D up to 5xD	12 - 25 mm	6 - 10	11
	PXRE		Corner radius with straight flute for L/D up to 5xD	12 - 20 mm	2 - 3	12
	PXDR-P		Corner radius with high helix flute for L/D up to 7xD	12 - 20 mm	3	12
	PXDR-N		Corner radius with high helix flute for L/D up to 7xD	12 - 20 mm	3	12
	PXBE-P		3 flute ball nose for L/D up to 7xD	12 - 20 mm	3	13
	PXBE-N		3 flute ball nose for L/D up to 5xD	12 - 20 mm	3	13
	PXBM		Multi flute ball nose for L/D up to 5xD	12 - 20 mm	4 - 6	13

PROCESSING DATA

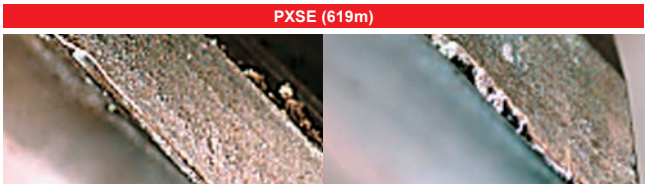
Milling | Indexables

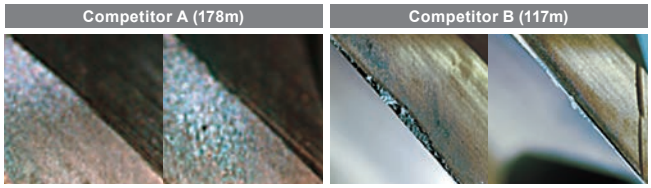
PXSE Side milling in SCM440

Tool	Head: PXSE120C12-04R000 Holder: PXMZ-C12SS12-S100
Size	Ø12
Work Material	SCM440 (180HB)
Cutting Speed	100m/min(2.650min^{-1})
Feed	1.060mm/min(0,1mm/t)
Milling Method	Side Milling
Depth of Cut	ap=5mm ae=3mm
Coolant	Air Blow
Machine	BT40 Vertical Machining Center



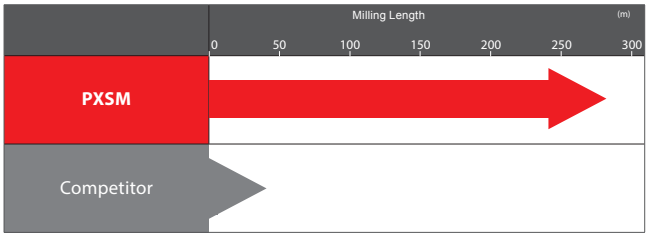
Durability that overwhelms the competitor's product. Heavy machining is possible.



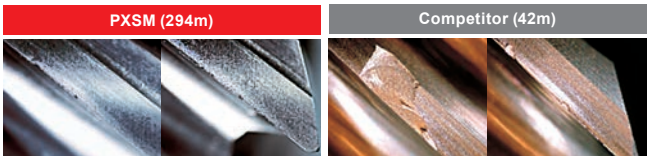


PXSM Side milling in S50C

Tool	Head: PXSM160C16-06R000 Holder : PXMZ-C16SS16-S100
Size	Ø16
Work Material	S50C
Cutting Speed	100m/min(1,990min^{-1})
Feed	1,195mm/min(0.1mm/t)
Milling Method	Side Milling
Depth of Cut	ap=8mm ae=1.6mm
Coolant	Air Blow
Machine	BT40 Horizontal Machining Center

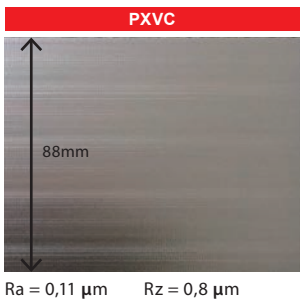


Unique design of PXSM gives stable machining.



PXVC Achieved better surface roughness

Tool	Head: PXVC220C20-04R005 Holder: PXMZ-C20SS20-L150L	Conventinal Solid End Mill
Size	Ø22×R0,5	Ø20
Work Material	SKD61 (40HRC)	
Cutting Speed	50m/min(723min^{-1})	50m/min(796min^{-1})
Feed	300mm/min(0,104 mm/t)	60mm/min(0,019 mm/t)
Milling Method	Side Milling	
Depth of Cut	ap=17,6mm (0,8D) ae=0,05mm	ap=88mm (4,4D) ae=0,05mm
Coolant	Air Blow	
Machine	Vertical Machining Center	



Ra = 0,11 µm Rz = 0,8 µm

Ra = 0,77 µm Rz = 5 µm

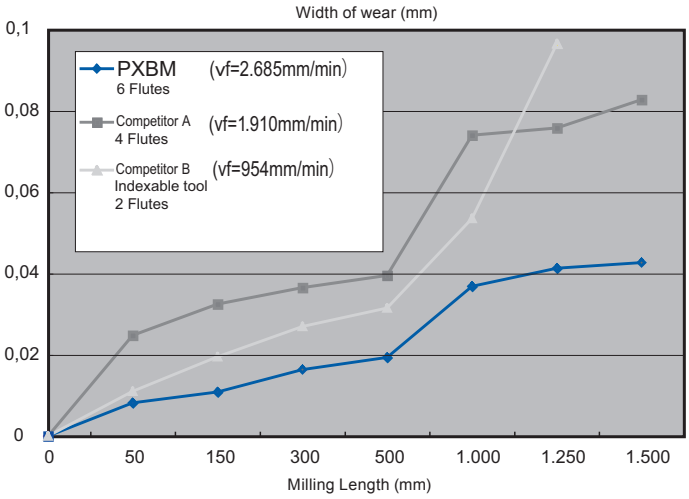
PXVC achieved better accuracy and finished surface in same machining efficiency versus the competition.

PROCESSING DATA

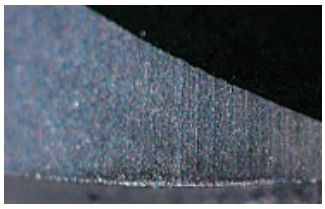
PXBM Machining at slope face in NAK80 (comparison with the same feed rate)

Tool	Head: PXBM160C16-06R080 Holder: PXMZ-C16SS16-S100
Size	Ø16
Work Material	NAK80(40HRC)
Cutting Speed	200m/min(3.980min^{-1})
Feed Per Tooth	0,12mm/t
Milling Method	Pick Milling
Depth of Cut	ap=0,32mm Pf=0,8mm
Coolant	Air Blow
Machine	BT50 Horizontal Machining Center

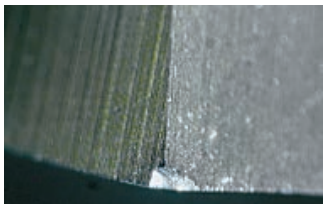
Materialized by more cutting edges for better productivity, longer tool life with superb durability.



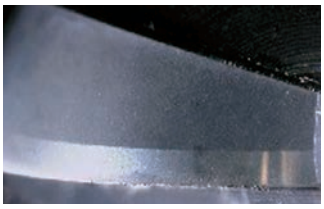
PXBM (1,500m)



Competitor A (1,500m)



Competitor B Indexable tool (1,250m)

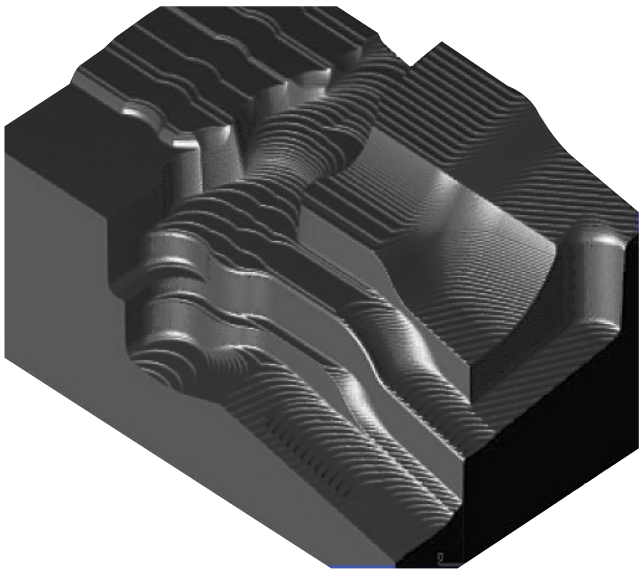


PXRE The multiple edge design helps increase efficiency by 1,8 times in die mold roughing *processes*

Tool	Head: PXRE200C20-06R030 Holder: PXMZ-C20SS20-S120	Competitor High Feed Radius Cutter
Size	Ø20×R3 6 Flutes	Ø20×R3 2 Flutes
Grades	XP6305	Coated Carbide Chip
Work Material	SKD61 (43HRC)	
Cutting Speed	230m/min(3.700min^{-1})	120m/min(1.900min^{-1})
Feed	6.700mm/min(0,3mm/t)	3.100mm/min(0,8mm/t)
Depth of Cut	0,4mm	0,5mm
Width of Cut	10mm	
Coolant	Air Blow	
Machine	Horizontal Machining Center	

With high feed radius cutters, a simulated R value is inputted in the program during rough milling, resulting in large amounts of uncut areas. In contrast, with the high precision Corner R form PXRE, there are fewer uncut areas, which reduce the load of the next process, thereby increasing tool life and the precision of cut.

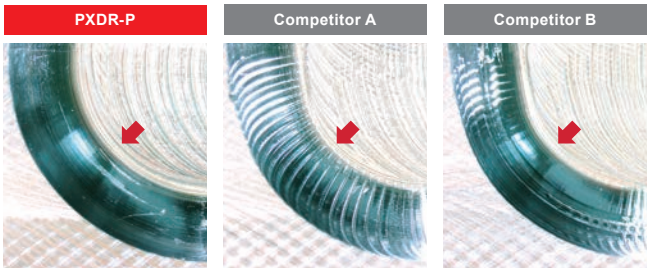
By replacing the high feed radius cutter with the PXRE, milling efficiency can be increased by 1,8 times



PROCESSING DATA

PXDR-P Stable machining was achieved in easily chatter L/D=7

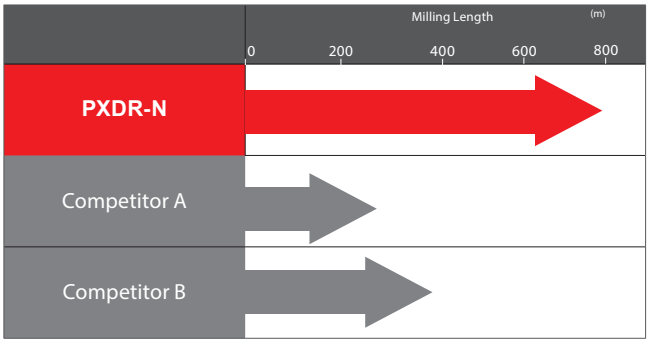
Tool	Head: PXDR160C16-03R030-P Holder: PXMZ-C16SS16-L135CS	Competitor 4 flutes
Size	Ø16×R3 3 Flutes	
Work Material	NAK80 40HRC	
Cutting Speed	30m/min(597min^{-1})	
Feed	537mm/min(0.30mm/t)	537mm/min(0.22mm/t)
Milling Method	L-shaped machining	
Depth of Cut	ap=0.4mm(0.025Dc) ae=8mm(0.5Dc)	
Width of Cut	112mm(L/D=7)	
Coolant	Air Blow	
Machine	Vertical Machining Center (BT40)	



PXDR-P achieved fair finished surface with less chattering at the corner of work versus the competition.

PXDR-N Long tool life was achieved machining in L/D=7, which chatters easily.

Tool	Head: PXDR160C16-03R030-N Holder: PXMZ-C16SS16-L135CS	Competitor 4 flutes
Size	Ø16×R3 3 Flutes	
Work Material	SKD61 (40HRC)	
Cutting Speed	120m/min(2,387min^{-1})	
Feed	2.149mm/min(0.30mm/t)	2.149mm/min(0.22mm/t)
Milling Method	Fau Milling	
Depth of Cut	ap=0.4mm(0.025Dc) ae=8mm(0.5Dc)	
Width of Cut	112mm(L/D=7)	
Coolant	Air Blow	
Machine	Vertical Machining Center (BT40)	



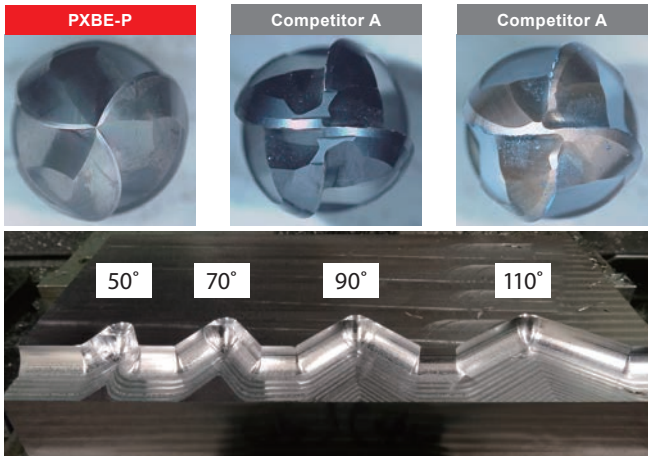
PXDR-P was capable to achieve twice the durability versus the competition.

PROCESSING DATA

Milling | Indexables

PXBE-P The 3 flutes PXBE-P was more capable versus 4 flute in machining work with complicated shape

Tool	Head: PXBE160C16-03R080-P Holder: PXMZ-C16SS16-L130CS	Competitor 4 Flutes
Size	Ø16×R8 3 Flutes	
Work Material	SKD61 (40HRC)	
Cutting Speed	75m/min(1.492min^{-1})	
Feed	224mm/min(0,05mm/t)	298mm/min(0,05mm/t)
Depth of Cut	ap=0,8mm(0.05Dc) ae=2,4mm(0.15Dc)	
Width of Cut	78mm(L/D=4,9)	
Coolant	Air Blow	
Machine	Vertical Machining Center (BT40)	



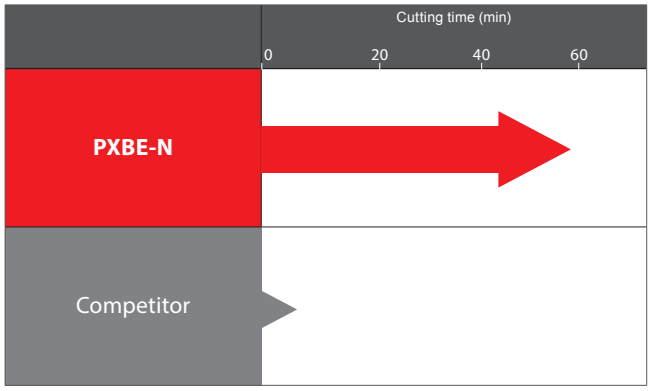
PXBE-N Tooling cost reduced by switching from solid tools in die casting machining

Tool	Head : PXBE160C16-03R080-N Holder : PXMZ-C16SS16-L130CS	Competitor's solid carbide tool
Size	Ø16×R8 3 flutes	Ø16×R8 4 flutes
Work	Press Dies	
Work Material	SKD11 (60HRC)	
Cutting Speed	90m/min(1,800min^{-1})	
Feed	810mm/min(0.15mm/t)	810mm/min(0.11mm/t)
Milling Method	Pick Milling	
Depth of Cut	ap=0.32mm ae=0.8mm	
Coolant	Water Soluble	
Machine	Vertical Machining Center (BT50)	
Milling Length	330 m	

PXM achieved the same machining efficiency and the cutting length of 330m as the solid end mill.

PXBE-N Machining efficiency improved by switching from indexable tools in welding parts machining

Tool	Head: PXBE160C16-03R080-N Holder: PXMZ-C16SS16-L130CS	Competitor's solid carbide tool
Size	Ø20×R10 3 flutes	Ø20×R10 2 flutes
Work	Die-casting Die	
Work Material	SKD61 (520HRC) Weld overlay	
Cutting Speed	75m/min(1.200min^{-1})	
Feed	420mm/min(0.12mm/t)	420mm/min(0.17mm/t)
Milling Method	Pick Milling	
Depth of Cut	ap=10mm ae=1mm	
Coolant	Air Blow	
Machine	Horizontal Machining Center (BT50)	



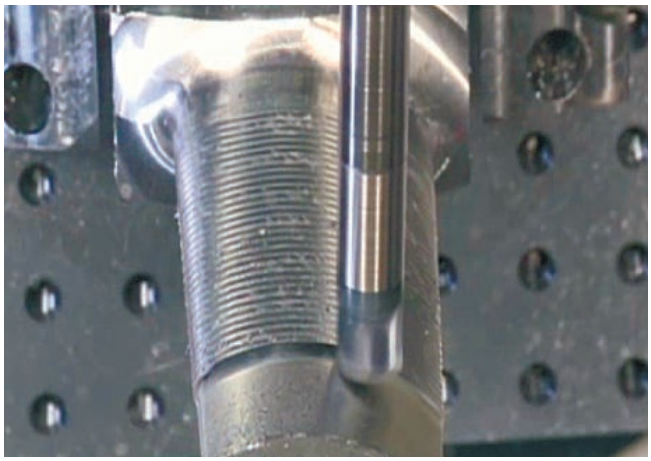
Twelve times durability was achieved than the competitor indexable tool. Machining efficiency was highly improved, which was partly due to the shortened tool-change time.

PROCESSING DATA

Milling | Indexables

PXSM The multiple edge design helps double efficiency in the milling of blades

Tool	Head: PXSM160C16-06R005 Holder: PXMZ-C16SS16-L130CS	Competitor Radius Cutter
Size	Ø16×R0,5 6 Flutes	Ø16×R2,5 2 Flutes
Grades	XP3225	Coated Carbide Chip
Work Material	13Cr Equivalent	
Cutting Speed	125m/min(2.500min^{-1})	
Feed	690mm/min(0,046mm/t)	350mm/min(0,07mm/t)
Depth of Cut	ap=1mm ae=0,25mm	
Coolant	Air Blow	
Machine	5-Axis Vertical Machining Center	



In finishing operations with settings that are difficult to modify, switching to the Phoenix Radius Cutter can double milling efficiency

Tightening procedure

1. Cleaning

Remove dirt and chips from the connecting thread and shank.

2. Initial Tightening

Tighten by hand

3. Final Tightening

Tighten with a spanner wrench

4. Confirmation

Confirm that there is no gap

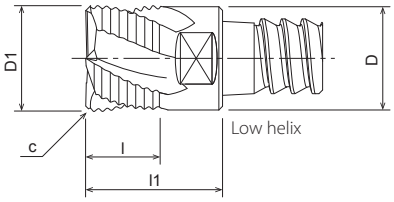
Cautions during use

· Only use the spanner wrenches that are designed specifically for the PXM (P. 13). Please do not use alternative spanner wrenches sold on the market as a replacement.
· Please tighten until the head and the shank holder faces meet. Confirm that there is no gap.
· Degreasing the connecting thread may result in over tightening or a possible separation of the faces. Please do not degrease.
· Please make sure that the spanner wrench is inserted properly and turn it slowly during use.

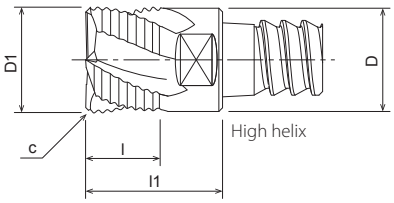
PXNL / PXNH HEADS

Milling | Indexables

Type 1



Type 2



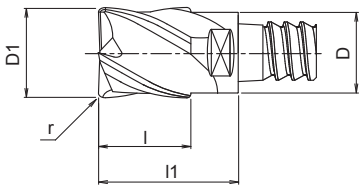
- Variable helix solid carbide head
- Roughing shape in 45 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

p.14 p.18

EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Type	Grade	P		M		K		N		S		H		Price
											dry		dry		GG	GGG	dry		dry		dry		
7830401	PXNL120C12-04C005	4	12	0,5	8,4	14,4	11,7	19/21	1	XP3225													
7830402	PXNL160C16-04C006	4	16	0,6	11,2	18,7	15,7	19/21	1	XP3225													
7830403	PXNL200C20-04C006	4	20	0,6	14	21,5	19,6	19/21	1	XP3225													
7830404	PXNL250C25-04C006	4	25	0,6	17,5	27,5	24	19/21	1	XP3225													
7830451	PXNH120C12-04C005	4	12	0,5	8,4	14,4	11,7	40/42	2	XP3225													
7830452	PXNH160C16-04C006	4	16	0,6	11,2	18,7	15,7	40/42	2	XP3225													
7830453	PXNH200C20-04C006	4	20	0,6	14	21,5	19,6	40/42	2	XP3225													
7830454	PXNH250C25-04C006	4	25	0,6	17,5	27,5	24	40/42	2	XP3225													

PXVC HEADS

Milling | Indexables



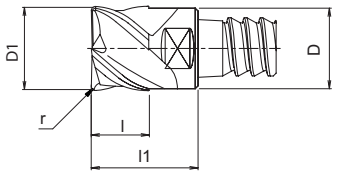
- High variable helix solid carbide head
- Up to 7xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

p.14 p.19-20

EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Grade	P		M		K		N		S		H		Price
										dry		dry		GG	GGG	dry		dry		dry		
7835004	PXVC120C12-04R000	4	12	0	12	18	11,7	45/48	XP3225													
7835005	PXVC120C12-04R005	4	12	0,5	12	18	11,7	45/48	XP3225													
7835006	PXVC120C12-04R010	4	12	1	12	18	11,7	45/48	XP3225													
7835007	PXVC120C12-04R020	4	12	2	12	18	11,7	45/48	XP3225													
7835008	PXVC120C12-04R030	4	12	3	12	18	11,7	45/48	XP3225													
7835009	PXVC140C12-04R000	4	14	0	14	20	11,7	45/48	XP3225													
7835010	PXVC140C12-04R005	4	14	0,5	14	20	11,7	45/48	XP3225													
7835011	PXVC140C12-04R010	4	14	1	14	20	11,7	45/48	XP3225													
7835012	PXVC140C12-04R020	4	14	2	14	20	11,7	45/48	XP3225													
7835013	PXVC140C12-04R030	4	14	3	14	20	11,7	45/48	XP3225													
7835014	PXVC160C16-04R000	4	16	0	16	23,5	15,7	45/48	XP3225													
7835015	PXVC160C16-04R005	4	16	0,5	16	23,5	15,7	45/48	XP3225													
7835016	PXVC160C16-04R010	4	16	1	16	23,5	15,7	45/48	XP3225													
7835017	PXVC160C16-04R015	4	16	1,5	16	23,5	15,7	45/48	XP3225													
7835018	PXVC160C16-04R020	4	16	2	16	23,5	15,7	45/48	XP3225													
7835019	PXVC160C16-04R030	4	16	3	16	23,5	15,7	45/48	XP3225													
7835020	PXVC180C16-04R000	4	18	0	18	25,5	15,7	45/48	XP3225													
7835021	PXVC180C16-04R005	4	18	0,5	18	25,5	15,7	45/48	XP3225													
7835022	PXVC180C16-04R010	4	18	1	18	25,5	15,7	45/48	XP3225													
7835023	PXVC180C16-04R020	4	18	2	18	25,5	15,7	45/48	XP3225													
7835024	PXVC180C16-04R030	4	18	3	18	25,5	15,7	45/48	XP3225													
7835025	PXVC200C20-04R000	4	20	0	20	27,5	19,6	45/48	XP3225													
7835026	PXVC200C20-04R005	4	20	0,5	20	27,5	19,6	45/48	XP3225													
7835027	PXVC200C20-04R010	4	20	1	20	27,5	19,6	45/48	XP3225													
7835028	PXVC200C20-04R020	4	20	2	20	27,5	19,6	45/48	XP3225													
7835029	PXVC200C20-04R030	4	20	3	20	27,5	19,6	45/48	XP3225													
7835030	PXVC220C20-04R000	4	22	0	22	29,5	19,6	45/48	XP3225													
7835038	PXVC220C20-04R005	4	22	0,5	22	29,5	19,6	45/48	XP3225													
7835031	PXVC220C20-04R010	4	22	1	22	29,5	19,6	45/48	XP3225													
7835032	PXVC220C20-04R020	4	22	2	22	29,5	19,6	45/48	XP3225													
7835033	PXVC220C20-04R030	4	22	3	22	29,5	19,6	45/48	XP3225													
7835034	PXVC250C25-04R000	4	25	0	25	35	24	45/48	XP3225													
7835035	PXVC250C25-04R010	4	25	1	25	35	24	45/48	XP3225													
7835036	PXVC250C25-04R020	4	25	2	25	35	24	45/48	XP3225													
7835037	PXVC250C25-04R030	4	25	3	25	35	24	45/48	XP3225													

PXSE HEADS

Milling | Indexables



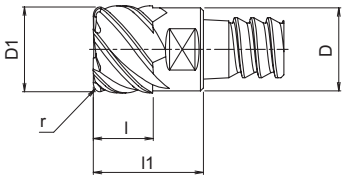
- Variable helix solid carbide head
- Up to 5xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

p.14 p.21

EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Grade	P		M		K		N		S		H		Price
										dry		dry		GG	GGG	dry		dry		dry		
7830004	PXSE120C12-04R000	4	12	0	8,4	14,4	11,7	38	XP3225													
7830005	PXSE120C12-04R005	4	12	0,5	8,4	14,4	11,7	38	XP3225													
7830006	PXSE120C12-04R010	4	12	1	8,4	14,4	11,7	38	XP3225													
7830007	PXSE120C12-04R020	4	12	2	8,4	14,4	11,7	38	XP3225													
7830008	PXSE120C12-04R030	4	12	3	8,4	14,4	11,7	38	XP3225													
7830009	PXSE160C16-04R000	4	16	0	11,2	18,7	15,7	38	XP3225													
7830010	PXSE160C16-04R005	4	16	0,5	11,2	18,7	15,7	38	XP3225													
7830011	PXSE160C16-04R010	4	16	1	11,2	18,7	15,7	38	XP3225													
7830012	PXSE160C16-04R015	4	16	1,5	11,2	18,7	15,7	38	XP3225													
7830013	PXSE160C16-04R020	4	16	2	11,2	18,7	15,7	38	XP3225													
7830014	PXSE160C16-04R030	4	16	3	11,2	18,7	15,7	38	XP3225													
7830015	PXSE200C20-04R000	4	20	0	14	21,5	19,6	38	XP3225													
7830016	PXSE200C20-04R005	4	20	0,5	14	21,5	19,6	38	XP3225													
7830017	PXSE200C20-04R010	4	20	1	14	21,5	19,6	38	XP3225													
7830018	PXSE200C20-04R020	4	20	2	14	21,5	19,6	38	XP3225													
7830019	PXSE200C20-04R030	4	20	3	14	21,5	19,6	38	XP3225													
7830020	PXSE250C25-04R000	4	25	0	17,5	27,5	24	38	XP3225													
7830021	PXSE250C25-04R010	4	25	1	17,5	27,5	24	38	XP3225													
7830022	PXSE250C25-04R020	4	25	2	17,5	27,5	24	38	XP3225													
7830023	PXSE250C25-04R030	4	25	3	17,5	27,5	24	38	XP3225													

PXSM HEADS

Milling | Indexables



- Multi flute variable helix solid carbide head
- Up to 5xD application in 55 HRC work materials
- For PXMZ straight shank holder
- 12 - 25 mm

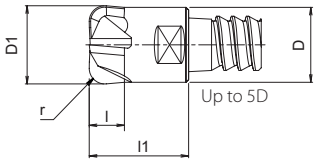
p.14 p.21

EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Grade	P		M		K		N		S		H		Price
										dry		dry		GG	GGG	dry		dry		dry		
7830104	PXSM120C12-06R000	6	12	0	8,4	14,4	11,7	38	XP3225													
7830105	PXSM120C12-06R005	6	12	0,5	8,4	14,4	11,7	38	XP3225													
7830106	PXSM120C12-06R010	6	12	1	8,4	14,4	11,7	38	XP3225													
7830107	PXSM120C12-06R020	6	12	2	8,4	14,4	11,7	38	XP3225													
7830108	PXSM120C12-06R030	6	12	3	8,4	14,4	11,7	38	XP3225													
7830109	PXSM160C16-06R000	6	16	0	11,2	18,7	15,7	38	XP3225													
7830110	PXSM160C16-06R005	6	16	0,5	11,2	18,7	15,7	38	XP3225													
7830111	PXSM160C16-06R010	6	16	1	11,2	18,7	15,7	38	XP3225													
7830112	PXSM160C16-06R015	6	16	1,5	11,2	18,7	15,7	38	XP3225													
7830113	PXSM160C16-06R020	6	16	2	11,2	18,7	15,7	38	XP3225													
7830114	PXSM160C16-06R030	6	16	3	11,2	18,7	15,7	38	XP3225													
7830115	PXSM160C16-08R000	8	16	0	11,2	18,7	15,7	42	XP3225													
7830116	PXSM160C16-08R005	8	16	0,5	11,2	18,7	15,7	42	XP3225													
7830117	PXSM160C16-08R010	8	16	1	11,2	18,7	15,7	42	XP3225													
7830118	PXSM160C16-08R015	8	16	1,5	11,2	18,7	15,7	42	XP3225													
7830119	PXSM160C16-08R020	8	16	2	11,2	18,7	15,7	42	XP3225													
7830120	PXSM160C16-08R030	8	16	3	11,2	18,7	15,7	42	XP3225													
7830121	PXSM200C20-10R000	10	20	0	14	21,5	19,6	42	XP3225													
7830122	PXSM200C20-10R005	10	20	0,5	14	21,5	19,6	42	XP3225													
7830123	PXSM200C20-10R010	10	20	1	14	21,5	19,6	42	XP3225													
7830124	PXSM200C20-10R020	10	20	2	14	21,5	19,6	42	XP3225													
7830125	PXSM200C20-10R030	10	20	3	14	21,5	19,6	42	XP3225													
7830126	PXSM250C25-10R000	10	25	0	17,5	27,5	24	42	XP3225													
7830127	PXSM250C25-10R010	10	25	1	17,5	27,5	24	42	XP3225													
7830128	PXSM250C25-10R020	10	25	2	17,5	27,5	24	42	XP3225													
7830129	PXSM250C25-10R030	10	25	3	17,5	27,5	24	42	XP3225													

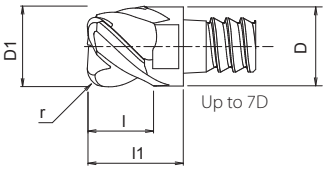
PXRE / PXDR HEADS

Milling | Indexables

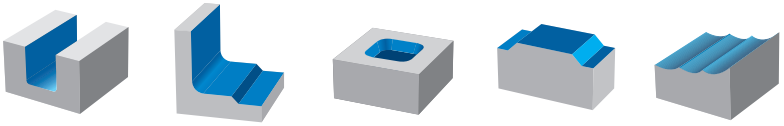
Type 1



Type 2



- Corner radius with straight flutes solid carbide head
- Up to 5xD application in 60 HRC work materials
- For PXMZ straight shank holder
- 12 - 20 mm



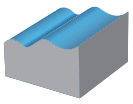
p.14 p22

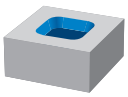
EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Type	Grade	P		M		K		N		S		H		Price
											dry		dry		GG	GGG	dry		dry		dry		
7830201	PXRE120C12-04R020	4	12	2	5	14,4	11,7	-	1	XP6305													
7830202	PXRE160C16-06R030	6	16	3	7	18,7	15,7	-	1	XP6305													
7830203	PXRE200C20-06R030	6	20	3	10	21,5	19,6	-	1	XP6305													
7830371	PXDR120C12-03R015-N	3	12	1,5	8,4	14,4	11,7	45	2	XP6305													
7830372	PXDR120C12-03R020-N	3	12	2	8,4	14,4	11,7	45	2	XP6305													
7830373	PXDR160C16-03R020-N	3	16	2	11,2	18,7	15,7	45	2	XP6305													
7830374	PXDR160C16-03R030-N	3	16	3	11,2	18,7	15,7	45	2	XP6305													
7830375	PXDR200C20-03R020-N	3	20	2	14	21,5	19,6	45	2	XP6305													
7830376	PXDR200C20-03R030-N	3	20	3	14	21,5	19,6	45	2	XP6305													
7830351	PXDR120C12-03R015-P	3	12	1,5	8,4	14,4	11,7	45	2	XP3225													
7830352	PXDR120C12-03R020-P	3	12	2	8,4	14,4	11,7	45	2	XP3225													
7830353	PXDR160C16-03R020-P	3	16	2	11,2	18,7	15,7	45	2	XP3225													
7830354	PXDR160C16-03R030-P	3	16	3	11,2	18,7	15,7	45	2	XP3225													
7830355	PXDR200C20-03R020-P	3	20	2	14	21,5	19,6	45	2	XP3225													
7830356	PXDR200C20-03R030-P	3	20	3	14	21,5	19,6	45	2	XP3225													

PXBE / PXBM HEADS

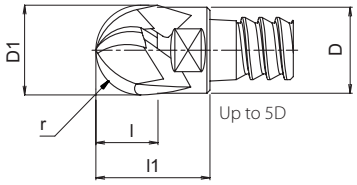
Milling | Indexables

- Multi flute variable helix solid carbide head
- Up to 5xD application in 60 HRC work materials
- For PXMZ straight shank holder
- 12 - 20 mm

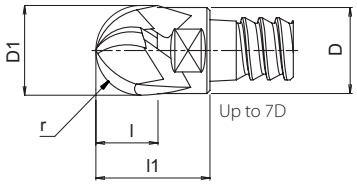




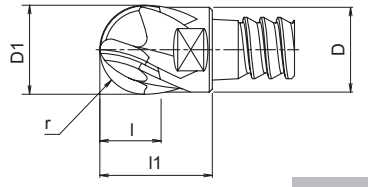
Type 1



Type 2



Type 3



p.14 p.23

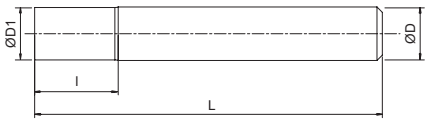
EDP	Designation	Z	D1	R	l	l1	D	Helix angle	Type	Grade	P		M		K		N		S		H		Price
											dry		dry		GG	GGG	dry		dry		dry		
7830271	PXBE120C12-03R060-P	3	12	6	8,4	14,4	11,7	45	1	XP3320													
7830272	PXBE160C16-03R080-P	3	16	8	11,2	18,7	15,7	45	1	XP3320													
7830273	PXBE200C20-03R100-P	3	20	10	14	21,5	19,6	45	1	XP3320													
7830251	PXBE120C12-03R060-N	3	12	6	8,4	14,4	11,7	45	2	XP3320													
7830252	PXBE160C16-03R080-N	3	16	8	11,2	18,7	15,7	45	2	XP3320													
7830253	PXBE200C20-03R100-N	3	20	10	14	21,5	19,6	45	2	XP3320													
7830301	PXBM120C12-04R060	4	12	6	8,4	14,4	11,7	45	3	XP3320													
7830302	PXBM160C16-06R080	6	16	8	11,2	18,7	15,7	45	3	XP3320													
7830303	PXBM200C20-06R100	6	20	10	14	21,5	19,6	45	3	XP3320													

PXMZ

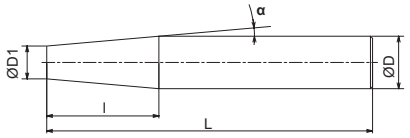
Milling | Indexables

- Exchangeable carbide/steel body for PXM

Type 1



Type 2



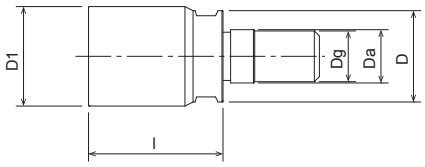
EDP	Designation	Head Ø	D1	D	α	L	l	Head + l (except PXVC)	Head + l PXVC	Head + l PXVC D1>D	Type	Material	Price
48174008	PXMZ-C12SS12-S075CS	12 - 14	11,7	12	0°	75	24	38,4	42	44	1	Carbide	
48174009	PXMZ-C12SS12-L100CS	12 - 14	11,7	12	0°	100	45,9	60,3	63,9	65,9	1	Carbide	
48174010	PXMZ-C12SS12-L115CS	12 - 14	11,7	12	0°	115	64,2	78,6	82,2	84,2	1	Carbide	
48174011	PXMZ-C12TP16-LL135CS	12 - 14	11,7	16	1,3°	135	83,8	98,2	101,8	103,8	2	Carbide	
48174012	PXMZ-C16SS16-S090CS	16 - 18	15,7	16	0°	90	39,2	57,9	62,7	64,7	1	Carbide	
48174013	PXMZ-C16SS16-L130CS	16 - 18	15,7	16	0°	130	61,2	79,9	84,7	86,7	1	Carbide	
48174014	PXMZ-C16SS16-L135CS	16 - 18	15,7	16	0°	135	84,2	102,9	107,7	109,7	1	Carbide	
48174015	PXMZ-C16TP20-LL165CS	16 - 18	15,7	20	1,1°	165	115	136,5	138,5	140,5	2	Carbide	
48174016	PXMZ-C20SS20-S090CS	20 - 22	19,6	20	0°	90	39,1	60,6	66,6	68,6	1	Carbide	
48174017	PXMZ-C20SS20-L150CS	20 - 22	19,6	20	0°	150	78,4	99,9	105,9	107,9	1	Carbide	
48174018	PXMZ-C20SS20-L180CS	20 - 22	19,6	20	0°	180	109,1	130,6	136,6	138,6	1	Carbide	
48174019	PXMZ-C20TP25-LL200CS	20 - 22	19,6	25	1,1°	200	140	161,5	167,5	169,5	2	Carbide	
48174020	PXMZ-C25SS25-L200CS	25	24	25	0°	200	96,6	124,1	131,6	-	1	Carbide	
48174001	PXMZ-C12SS12-S100	12 - 14	11,7	12	0°	100	18	32,4	36	38	1	Steel	
48174002	PXMZ-C12TP20-S145	12 - 14	11,7	20	5°	145	47,4	61,8	65,4	67,4	2	Steel	
48174003	PXMZ-C16SS16-S100	16 - 18	15,7	16	0°	100	23	41,7	46,5	48,5	1	Steel	
48174004	PXMZ-C16TP25-S155	16 - 18	15,7	25	5°	155	53,1	71,8	76,6	78,6	2	Steel	
48174005	PXMZ-C20SS20-S120	20 - 22	19,6	20	0°	120	28	49,5	55,5	57,5	1	Steel	
48174006	PXMZ-C20TP32-S170	20 - 22	19,6	32	5°	170	70,8	92,3	98,3	100,3	2	Steel	
48174007	PXMZ-C25SS25-S140	25	24	25	0°	140	34,5	62	69,5	-	1	Steel	

Accessories

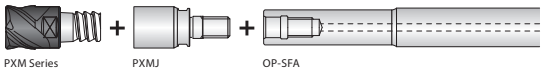
Applicable head Ø	Tightening torque recommended (Nm)	Spanner	
Ø 12 ~ 14	12	7801890	PXMP8-10
Ø 16 ~ 18	30	7801891	PXMP13-16
Ø 20 ~ 22	50	7801891	PXMP13-16
Ø 25	60	7801892	PXMP21

PXMJ

Milling | Indexables



- Exchangeable screw fit body for PXM



EDP	Designation	Head Ø	D1	Da	Dg	l	D	Price
7801893	PXMJ-C12SF06	12 - 14	11,7	6,5	6	18	11	
7801894	PXMJ-C16SF08	16 - 18	15,7	8,5	8	21,8	14,5	
7801895	PXMJ-C20SF10	20 - 22	19,6	10,5	10	26,5	18	
7801896	PXMJ-C25SF12	25	24	12,5	12	34	23	

Accessories

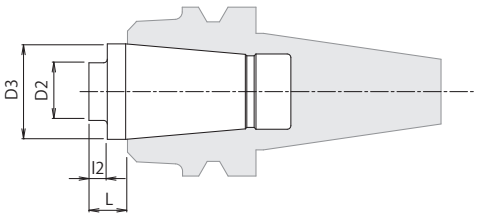
Applicable head Ø	Tightening torque recommended (Nm)	Spanner	
Ø 12 ~ 14	12	7801890	PXMP8-10
Ø 16 ~ 18	30	7801891	PXMP13-16
Ø 20 ~ 22	50	7801891	PXMP13-16
Ø 25	60	7801892	PXMP21

PXMC COLLET

Milling | Collets

Type 1

Type 2

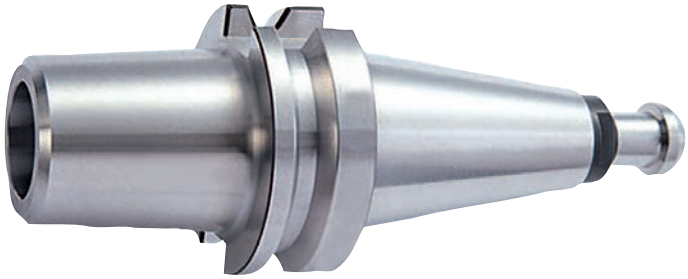


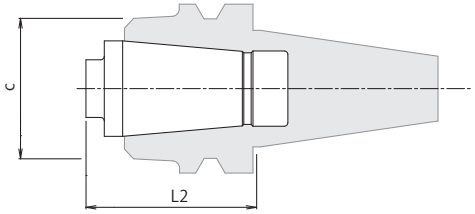
- PXMC collet for PHOENIX PXM series.
- Applicable exchangeable heads: PXNH, PXNL, PXSE, PXSM, PXDR, PXRE, PXBE, PXBM
- With coolant hole
- Reducing overhang length allows high rigidity

EDP	Designation	Proper Head Ø	D2	D3	L	l2	l	Head + l2 (except PXVC)	Head + l2 PXVC Ø12,16,20,25	Head + l2 PXVC Ø14,18,22	Type	Price
7834001	PXMC-C1205	12 -14	11.7	26	10.5	5	24	19,4	23	25	1	
7834002	PXMC-C1605	16 - 18	15.7	26	10.5	5	45,9	23,7	28.5	30.5	1	
7834003	PXMC-C2005	22 - 22	19.6	26	10.5	5	64,2	26,5	32.5	34.5	1	
7834004	PXMC-C2505	25	24.0	26	10.5	5	83,8	32,5	40	-	1	
7834011	PXMC-C1230	12 -14	11.7	26	35.5	30	39,2	44,4	48	50	2	
7834012	PXMC-C1630	16 -18	15.7	26	35.5	30	61,2	48,7	53.5	55.5	2	
7834013	PXMC-C2030	20 - 22	19.6	26	35.5	30	84,2	51,5	57.5	59.5	2	
7834014	PXMC-C2530	25	24.0	26	35.5	30	115	57,5	65	-	2	

HY-PRO HOLDER

Milling | Holders





- HY-PRO holder for PXMC

EDP	Designation	C	L2		Price
			Extra short	Short	
8910000	BT30-SLK12-35 P30T-1(MAS1)	38	45,5	70,5	
8910001	BT30-SLK12-35 P30T-2(MAS2)	38	45,5	70,5	
8910002	BT40-SLK12-45	38	55,5	80,5	
8910003	BT40-SLK12-75	38	85,5	110,5	
8910005	A63-SLK12-75	38	85,5	110,5	
8910006	A63-SLK12-135	38	145,5	170,5	

CUTTING CONDITIONS

PXNL / PXNH

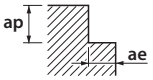
Side milling L/D≤3,5

	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)
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



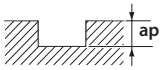
PXNL / PXNH

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)
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 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	
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)
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
Max cutting depth	ap: 0,5 D	ae: 0,2 D			ap: 0,5 D	ae: 0,1 D	ap: 0,5 D	ae: 0,05 D

PXVC

Side milling 5<L/D≤6

	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	
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)
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
Max cutting depth	ap: 0,5 D	ae: 0,2 D			ap: 0,5 D	ae: 0,1 D	ap: 0,5 D	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 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	
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)
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
Max cutting depth	ap: 0,5 D	ae: 0,2 D			ap: 0,5 D	ae: 0,1 D	ap: 0,5 D	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 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	
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)
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
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 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	
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)
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
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 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	
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)
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
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)
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)
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)
12	4.750	1.750	3.950	1.150	3.150	950	2.650	800	1.550	350
16-6F	3.550	1.310	2.950	860	2.350	710	1.950	600	1.150	260
16-8F	3.550	1.750	2.950	1.150	2.350	950	1.950	800	1.150	350
20	2.850	1.750	2.350	1.150	1.900	950	1.550	800	950	350
25	2.280	1.400	1.880	920	1.520	760	1.240	640	760	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		

CUTTING CONDITIONS

PXRE

Corner radius type **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		Hardened steel Prehardened steel SKD · NAK80 · HPM50 (38~45 HRC)		Hardened steel 45~55 HRC		Hardened steel 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)
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: 0,1 x R; ae: 0,3 D								ap: 0,1 x R; ae: 0,3 D	

PXDR-P

Corner radius type **L/D≤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 SUS304S · SKD ~45 HRC		Hardened steel 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)
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: 0,05 D; ae: 0,25 D						ap: 0,03 D; ae: 0,25 D	

PXDR-N

Corner radius type **L/D≤5**

	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	
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)
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: 0,03 D; ae: 0,25 D						ap: 0,02 D; ae: 0,2 D	

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)
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)
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)
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

shaping your dreams

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