

procarb
C U T T I N G T O O L S



progroove

Parting and Grooving Catalogue

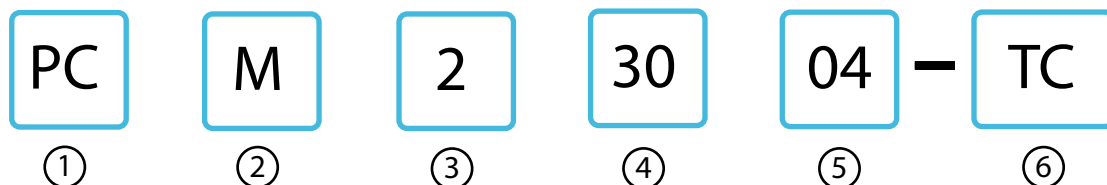
Parting and grooving

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Code key of grooving inserts



① Insert Type	
Code	Type
PD	Parting insert
PC	Grooving insert
PR	Profile insert

② Tolerance class	
Code	standand
M	M-class tolerance
K	K-class tolerance
E	E-class tolerance

③ cutting edge count	
Code	Number of cutting edges
1	Single Edge
2	Double Edge
3	Triple Edge

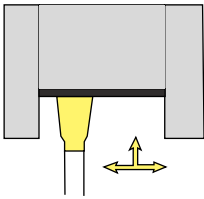
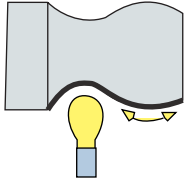
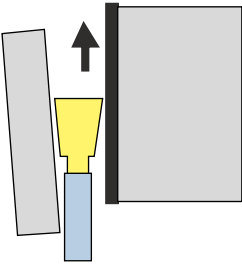
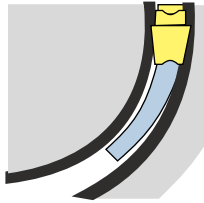
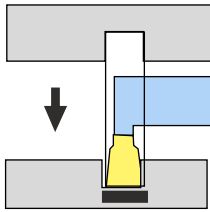
④ Cutting edge width	
Code	Insert width
25	2.50
30	3.00
40	4.00
50	5.00
60	6.00
124	12.40

⑤ Corner radius	
Code	corner radius (mm)
00	0.00
02	0.20
03	0.30
04	0.40
08	0.80

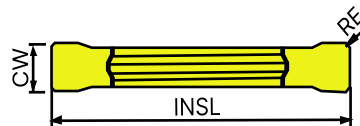
⑥ Chip breaker	
Default	Flat
TC	CT-Type
TG	GT-Type
MR	RM-Type

Code key of grooving inserts

Overview of Parting and Grooving Tools

Operation	Application	Applicable holder	Applicable inserts	Features
External grooving		PCGE	PDM2 PCG2 PRM2 PCM2	- The multi-purpose cutting tools is compatible with different inserts such as grooving profile and parting insert - The insert can produce either pressing groove or grinding groove ,which meet different machining requirements - The maximum groove depth is 20mm with a profiling insert , it can be used to machines a variety of materials
				
Parting		PCGE	PDM2 PCG2	- With our parting inserts,it can be used to cut process various materials - maximum parting diameter 60mm
Face grooving		PCGE	PDM2 PCG2 PCM2	- The multi-purpose cutting tool is compatible with different inserts such as grooving profiling and parting inserts - Groove depth : 10-20mm
Internal grooving and turing		PCGI	PCM2 PCG2 PRM2	- The multi-purpose cutting tool is compatible with different inserts such as grooving profiling and parting inserts - Minimum Inscribed circle diameter for machining 25mm - maximum groove depth 6 mm

Parting and Grooving Insert



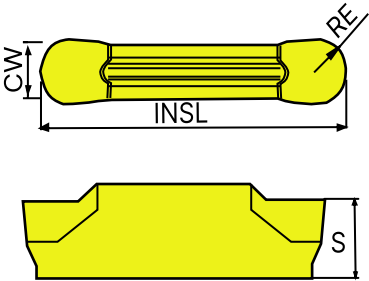
Operation	Insert	Type	Dimension (mm)				CVD		PVD		Cement
			INSL	CW	S	RE	PC5115	PC9225	PC6225	PC10	
Parting and grooving		PDM21502-TG	16.0	1.5($\pm_{0}^{+0.03}$)	3.50	0.2(± 0.02)	○	○	●		○
		PDM22002-TG	16.0	2.0($\pm_{0}^{+0.03}$)	3.55	0.2(± 0.02)	○	○	●		○
		PDM22502-TG	18.5	2.5($\pm_{0}^{+0.05}$)	3.90	0.2(± 0.02)	○	○	○		○
		PDM23002-TG	21.0	3.0($\pm_{0}^{+0.05}$)	4.86	0.2(± 0.02)	○	○	●		○
		PDM24002-TG	21.0	4.0($\pm_{0}^{+0.05}$)	4.86	0.2(± 0.02)	○	○	●		○
		PDM25003-TG	26.0	5.0($\pm_{0}^{+0.05}$)	5.80	0.3(± 0.02)	○	○	○		○
		PDM26003-TG	26.0	6.0($\pm_{0}^{+0.05}$)	5.90	0.3(± 0.02)	○	○	○		○
Grooving		PCG22002	16.0	2.0(± 0.02)	3.55	0.2(± 0.02)			●		
		PCG23004	21.0	3.0(± 0.025)	4.86	0.4(± 0.02)			●		
		PCG24004	21.0	4.0(± 0.025)	4.86	0.4(± 0.02)			●		
		PCG25008	26.0	5.0(± 0.025)	5.80	0.8(± 0.02)			○		
Grooving and plunge turning		PCM21502-TC	16.0	1.5($\pm_{0}^{+0.03}$)	3.50	0.2(± 0.02)		○	●		○
		PCM22002-TC	16.0	2.0($\pm_{0}^{+0.03}$)	3.55	0.2(± 0.02)		○	●		○
		PCM22502-TC	18.5	2.5($\pm_{0}^{+0.05}$)	3.90	0.2(± 0.02)		○	○		○
		PCM23004-TC	21.0	3.0($\pm_{0}^{+0.05}$)	4.86	0.4(± 0.02)		○	●		○
		PCM24004-TC	21.0	4.0($\pm_{0}^{+0.05}$)	4.86	0.4(± 0.02)		○	●		○
		PCM25008-TC	26.0	5.0($\pm_{0}^{+0.05}$)	5.80	0.8(± 0.02)		○	○		○

● Stock item ○ Non-stock item

Cutting Parameters								
Material Group			Vc (m/min)					
ISO	MG	Sub-Group	PC5115	PC9225	PC6225	PC1000	PC10	Feed (mm/rev)
			Min- Max	Min- Max	Min- Max	Min- Max		
P	P1-P3	Low carbon steel		130-160-280	100-150-250	240-260-300	-	0.1-0.3-0.5
	P4-P7	Medium-Alloyed Steel	-	100-150-145	110-130-150	200-220-280	-	0.1-0.3-0.5
	P8-P12	High-Alloyted Steel	-	70-130-250	70-100-150	180-200-280-	-	0.1-0.3-0.5
M	M1-M3	Ferritic &Martensitic steel	-		70-105-180	110-140-180	-	0.1-0.3-0.5
	M4-M5	Austenitic Stainless Steel	-	-	105-125-165	110-160-180	-	0.1-0.3-0.5
K	K1-K4	Grey Cast Iron	130-200-260	-	130-200-260	250-300-350	-	0.1-0.3-0.5
	K5K7	Ductile Iron	100-130-160	-	100-130-160	300-350-380	-	0.1-0.3-0.5
N	N1-N11	Non-Ferrous Metals		-			250-300-350	0.1-0.3-0.5
S	S1-S3	Titanium Alloys	-	-	40-50-60	-		0.1-0.3-0.5
	S11-S13	Heat-Resistant Alloy	-		50-70-90	-	-	0.1-0.3-0.5
H	H5-H21	Hard Materials	-	-		-	-	0.1-0.3-0.5

Parting and grooving

Profile Grooving Insert

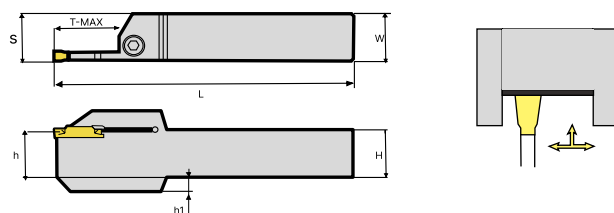


Operation	Insert	Type	Dimension (mm)				CVD	PVD	Cement		
			INSL	CW	S	RE	PC5115	PC9225		PC6225	PC10
Profiling		PRM22010-MR	16.0	2.0(± 0.05)	3.5	1.0(± 0.05)	○	●	●		
		PRM23015-MR	21.0	3.0(± 0.05)	4.8	1.5(± 0.05)	○	●	●		
		PRM24020-MR	21.0	4.0(± 0.05)	4.8	2.0(± 0.05)	○	●	●		
		PRM25025-MR	26.0	5.0(± 0.05)	5.8	2.5(± 0.05)	○	●	●		
		PRM26030-MR	26.0	6.0(± 0.05)	5.9	3.0(± 0.05)	○	●	●		
Aluminum hub groove insert											
		PRM26030-MR	30.0	8.0(± 0.025)	8.365	4.0(± 0.05)				●	

● Stock item ○ Non-stock item

Cutting Parameters								
Material Group			Vc (m/min)					
ISO	MG	Sub-Group	PC5115 Min- Max	PC9225 Min- Max	PC6225 Min- Max	PC1000 Min- Max	PC10	Feed (mm/rev)
P	P1-P3	Low carbon steel	-	130-160-280	100-150-250	240-260-300	-	0.1-0.3-0.5
	P4-P7	Medium-Alloyed Steel	-	100-150-145	110-130-150	200-220-280	-	0.1-0.3-0.5
	P8-P12	High-Alloyed Steel	-	70-130-250	70-100-150	180-200-280	-	0.1-0.3-0.5
M	M1-M3	Ferritic & Martensitic steel	-	-	70-105-180	110-140-180	-	0.1-0.3-0.5
	M4-M5	Austenitic Stainless Steel	-	-	105-125-165	110-160-180	-	0.1-0.3-0.5
K	K1-K4	Grey Cast Iron	130-200-260	-	130-200-260	250-300-350	-	0.1-0.3-0.5
	K5-K7	Ductile Iron	100-130-160	-	100-130-160	300-350-380	-	0.1-0.3-0.5
N	N1-N11	Non-Ferrous Metals	-	-	-	-	250-300-350	0.1-0.3-0.5
S	S1-S3	Titanium Alloys	-	-	40-50-60	-	-	0.1-0.3-0.5
	S11-S13	Heat-Resistant Alloy	-	-	50-70-90	-	-	0.1-0.3-0.5
H	H5-H21	Hard Materials	-	-	-	-	-	0.1-0.3-0.5

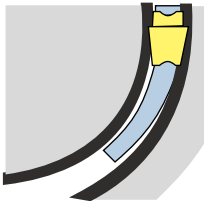
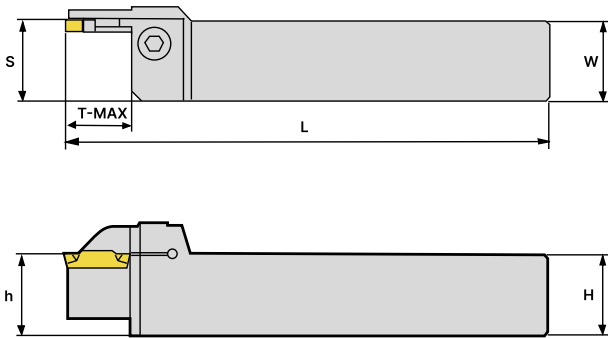
External Grooving and Parting Tool Holder



Holder		Dimension (mm)							Insert screw	Wrench	Applicable inserts
		Inventory	H=h	W	L	S	H1	T-MAX			
PCGER/L	1616-1.5-10	○	16	16	100	16.2	/	10	IS0512	K40	PDM215..
	2020-1.5-10	○	20	20	125	20.2	/	10			
	2525-1.5-10	●	25	25	150	25.2	/	10			
	1212-2-10	○	12	12	100	12.2	/	10	IS0512	K40	PDM220.. PCG220.. PCM220..
	1616-2-10	○	16	16	100	16.2	/	10			
	2020-2-10	●	20	20	125	20.2	/	10			
	2525-2-10	●	25	25	150	25.2	/	10			
	1616-2-10	○	16	16	100	16.2	/	10			
	2020-2-15	○	20	20	125	20.2	/	15			
	2525-2-15	●	25	25	150	25.2	/	15			
	1615-2.5-15	○	16	16	100	16.3	/	15	IS0512	K40	PCM25..
	2020-2.5-15	○	20	20	125	20.3	/	15			
	2525-2.5-15	○	25	25	150	25.3	/	15			
	1616-3-10	○	16	16	100	16.4	/	10	IS0512	K40	PDM230.. PCG230.. PCM230..
	2020-3-10	○	20	20	125	20.4	/	10			
	2525-3-10	●	25	25	150	25.4	/	10			
	1616-3-15	○	16	16	100	16.4	/	15			
	2020-3-15	○	20	20	125	20.4	/	15			
	2525-3-15	●	25	25	150	25.4	/	15			
	1616-3-20	○	16	16	100	16.4	/	20	IS0616	K50	PDM240.. PCG240.. PCM240..
	2020-3-20	○	20	20	125	20.4	/	20			
	2525-3-20	○	25	25	150	25.4	/	10			
	2020-4-10	●	20	20	125	20.4	/	10			
	2525-4-10	●	25	25	150	25.4	/	10			
	3232-4-10	○	32	32	150	32.4	/	10			
	2020-4-15	○	20	20	125	20.4	/	15	IS0616	K50	PDM250.. PCG250.. PCM250..
	2525-4-15	●	25	25	150	25.4	/	15			
	2020-4-20	○	20	20	125	20.4	/	20			
	2525-4-20	○	25	25	150	25.4	/	20			
	3232-4-20	○	32	32	170	32.4	/	20			
	2020-5-15	○	20	20	150	20.5	/	15			
	2020-5-25	○	20	20	150	20.5	/	25	IS0616	K50	PDM260.. PCG260.. PCM260..
	2525-5-15	●	25	25	150	25.5	/	15			
	2525-5-25	○	25	25	150	25.5	/	25			
	3232-5-15	○	32	32	170	32.5	/	15			
	3232-5-25	○	32	32	170	32.5	/	25			
	2525-6-15	●	25	25	150	25.6	/	15	IS0616	K50	PDM260.. PCG260.. PCM260..
	2525-6-25	○	25	25	150	25.6	/	25			
	3232-6-15	○	32	32	170	32.6	/	15			
	3232-6-25	○	32	32	170	32.6	/	25			

● Stock item ○ Non-stock item

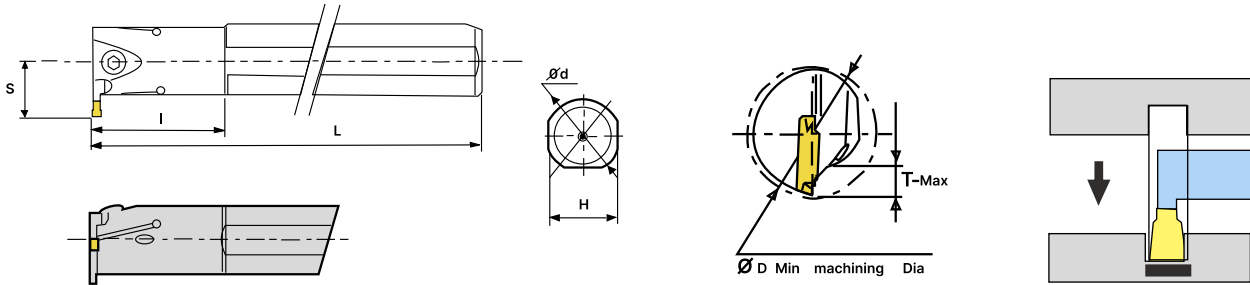
Face Grooving Tool Holder



Holder		Dimension (mm)						ØD		Insert screw	Wrench	Applicable inserts
		Inventory	H=h	W	L	S	T-MAX	Min	Max			
PCFER/L	325-34/50-10	○	25	25	150	25.5	10	34	50	IS0512	K40	PDM230.. PCG230.. PCM230..
	325-44/70-15	○	25	25	150	25.5	15	44	70			
	325-64/100-15	○	25	25	150	25.5	15	64	100			
	425-40/60-10	○	25	25	150	25.6	10	40	60	IS0616	K50	PDM240.. PCG240.. PCM240..
	425-44/70-15	○	25	25	150	25.6	15	44	70			
	425-84/92-15	○	25	25	150	25.6	15	84	92			
	425-60/200-15	○	25	25	150	25.6	15	60	120			
	425-112/200-15	○	25	25	150	25.6	15	112	200			

● Stock item ○ Non-stock item

Internal Grooving Holder

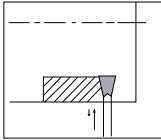
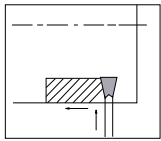
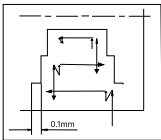


Holder		Dimension (mm)								Insert screw	Wrench	Applicable inserts
		Inventory	ØD	Ød	L	I	T-MAX	H	S			
PCGIR/L	2016-1.5	○	20	16	125	35	3.5	15	11.3	IS0410	K30	PDM215..
	2520-1.5	○	25	20	150	45	3.5	18	13.1	IS0512	K40	
	2520-1.5	○	29	25	200	45	3.5	23	16.2	IS0410	K30	
	2520-1.5	○	20	16	125	35	4.5	15	12.4	IS0512	K40	PDM220.. PCG220.. PCM220..
	2520-1.5	○	25	20	150	45	4.5	18	14.0	IS0410	K30	
	2520-1.5	○	29	25	200	45	4.5	23	17.2	IS0512	K40	
	2520-1.5	○	20	16	125	35	4.5	15	12.5	IS0410	K30	PDM225..
	2520-1.5	○	25	20	150	45	4.5	18	15.1	IS0512	K40	
	2520-1.5	○	29	25	200	45	4.5	23	18.2	IS0512	K40	
	2520-1.5	○	25	20	150	45	5	18	15.6	IS0512	K40	PDM230.. PCG230.. PCM230..
	2520-1.5	○	31	25	200	45	6	23	18.9			
	2520-1.5	○	37	32	250	65	6	30	21.5			
	2520-1.5	○	35	20	150	45	6	18	15.6	IS0512	K40	PDM240.. PCG240.. PCM240..
	2520-1.5	○	31	25	200	45	6	23	18.9			
	2520-1.5	○	37	32	250	65	6	30	21.5			
	3125-5	○	31	25	200	45	8	23	19.4	IS0616	K50	PDM250.. PCG250.. PCM250.. PDM260.. PRM260..
	3732-5	○	37	32	250	65	8	30	21.5			
	3125-6	○	31	25	200	45	8	23	19.4			
	3732-6	○	37	32	250	65	8	30	21.5			

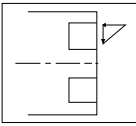
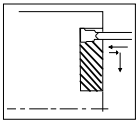
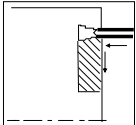
● Stock item ○ Non-stock item

Parting and grooving

Technical Information for external parting And grooving

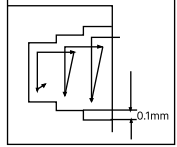
S.NO	Machining Technic	Precautions	Operation
1	Grooving first and then transverse turning	When roughing (groove depth > 0.5mm), please do not adopt trasverse feed machining immediatly after grooving . Instead ,return the insert about 0.1 mm before starting transverse feed machining.	
		When finishing (groove depth <0.5mm), the corner is subjected to small force, and transverse feed machining can be carried out immediately after grooving.	
2	Groove width expanding machining	Please stagger them into step shape for machining	
	Finishing	(1) when machinig towards the center side without using a center fixing , please lower the feeding speed. (2) A cutting depth more than 0.5mm on one side can effectively improve chip disposal	

Technical Informaion For Face Grooving

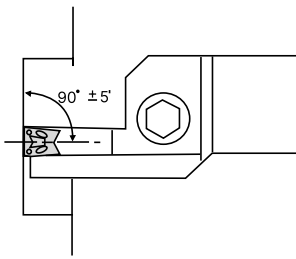
S/N	Machining subjects	Precautions	Diagram
1	Precautrions for holder selection	(1)Choose the model that fits the groove width of the cut material. (2)Check the groove depth. (3) It is recommended to mount the holder facing downwards(reversed).	
		Perform transverse feed machining from the outer section to the inner and face with good chip discharge	
2	Face turning	when roughing (groove depth > 0.5mm), please do not feed transversely immediately after grooving. Instead, return the insert about 0.1mm before starting transverse feed machining	
		When finishing (groove depth <0.5mm), the corner is subjected to smal force, and transverse feed machining can be carried out immediately after grooving.(No need to stop the Insert)	

Technical Information for external parting And grooving

Technical Information for Face Grooving

S.NO	Machining Technic	Precautions	Operation
3	End face groove expansion machining	During rough machining , please stagger them into step shape for machining	
		Finish machining :When the cutting depth is set to 0.5mm or above on one side, the chip disposal performs well.	

Trouble Shooting of Parting and Grooving

Condition	Countermeasures
There is white turbidity at the bottom of the face	(1) Increase the cutting speed only in the finish machining. (2) When method 1 does not work , please readjust the parallelism of the insert and the corner Correction method: Adjust the holder to within + 5 tolerance of the perpendicularity between the cut-in angle and the material to be cut. 
When grooving , the tool gets entangled with chips.	(1) Install the cutter bar facing downwards (reversed). please spray the coolant from the rear side of the insert to the corner. (2) When expanding the groove , please process it shallowly and extensively as a whole. (deep recess machining cannot be done at the same time)
The insert collapses during the transverse feed machining.	Please replace the outside-inside machining by the inside-outside machining.
The recesses cannot be accessed vertically.	Please correct the parallelism of the corner reduce the feeding speed

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