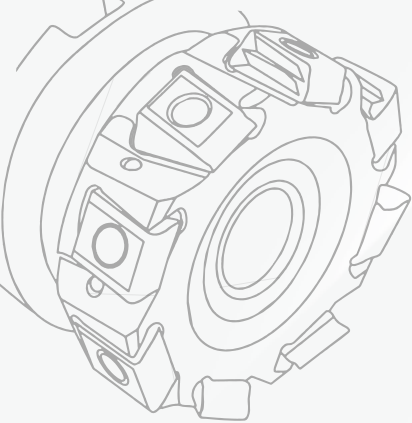
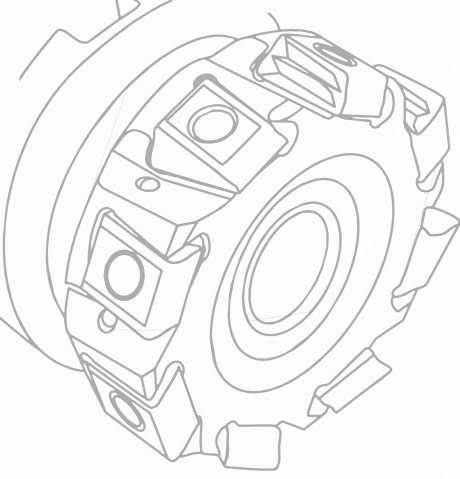




PRODUCT CATALOGUE

2025

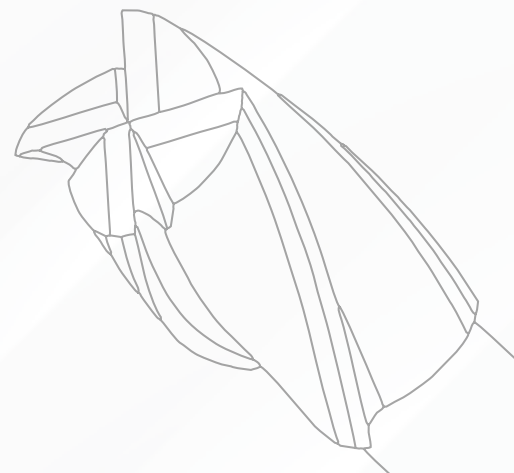




About ROMECC

Romec Tools is the fusion of 20 year experience and knowledge of the cutting tool industry. our aim to deliver high performance cutting tool solution which meet our customer demand and reduce his machining cost.

Romec Tools have wide rage of product in Turning, Milling, Drilling, Grooving, Threading, CBN, PCD, and also provide tailor made Tools and cutter. We are committed to provide high Quality product with regular smooth supply. We Catering our product in different type of manufacturing industries such as Automotive, Agriculture, Bar peeling, Chemical process, Die & Mould, Textiles, Transmission, Surgical and other.



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General Turning

ISO Turning Insert Identification

001

Available Geometry

003

Turning Grade

009

Negative Insert

012

Positive Insert

031

ISO Turning Insert Identification

Symbol	Shape	Corner Angle	Figure
H	Hexagon	120°	
O	Octagon	135°	
P	Pentagon	108°	
S	Square	90°	
T	Triangle	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
M		86°	
V		35°	
W	Trigon	80°	
L	Rectangle	90°	
A	Parallelogram	85°	
B		82°	
K		55°	
R	Round	-	

1. Shape Symbol

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others

2. Relief Angle Symbol



Symbol	Tolerance (mm)			Tolerance (inch)		
	Corner Height (m)	Thickness (s)	I.C. Size (d)	Corner Height (m)	Thickness (s)	I.C. Size (d)
A	±0.005	±0.025	±0.025	±0.0002	±0.001	±0.001
F	±0.005	±0.025	±0.013	±0.0002	±0.001	±0.0005
C	±0.013	±0.025	±0.025	±0.0005	±0.001	±0.001
H	±0.013	±0.025	±0.013	±0.0005	±0.001	±0.0005
E	±0.025	±0.025	±0.025	±0.001	±0.001	±0.001
G	±0.025	±0.13	±0.025	±0.001	±0.005	±0.001
J	±0.005	±0.025	±0.05 - ±0.13	±0.0002	±0.001	±0.002 - ±0.005
K	±0.013	±0.025	±0.05 - ±0.13	±0.0005	±0.001	±0.002 - ±0.005
L	±0.025	±0.025	±0.05 - ±0.13	±0.001	±0.001	±0.002 - ±0.005
M	±0.08 - ±0.18	±0.13	±0.05 - ±0.13	±0.003 - ±0.007	±0.005	±0.002 - ±0.005
N	±0.08 - ±0.18	±0.025	±0.05 - ±0.13	±0.003 - ±0.007	±0.001	±0.002 - ±0.005
U	±0.013 - ±0.38	±0.13	±0.08 - ±0.25	±0.005 - ±0.015	±0.005	±0.003 - ±0.01

3. Tolerance Symbol

①

②

③

④

⑤

T
N
M
G
22

T
N
M
G
22

①

②

③

④

⑤

4. Chipbreaker / Hole Symbol				
Symbol	Hole	Hole Shape	Chipbreaker	Shape
N	Without	-	Without	
R			Single sided	
F			Double sided	
A	With	With Hole	Without	
M			Single sided	
G			Double sided	
W		With Hole & one countersink 40° - 60°	Without	
T			Single sided	
Q		With Hole & two countersink 40° - 60°	Without	
U			Double sided	
B		With Hole & one countersink 70° - 90°	Without	
H			Double sided	
C		With Hole & one countersink 70° - 90°	Without	
J			Double sided	
X	-	-	-	-

5. Cutting Edge Length Symbol (ISO) (mm)																
Symbol		Symbol		Symbol		Symbol		Symbol		Symbol		Symbol		Symbol		I.C. Size (mm)
03	3.97	03	4.0			06	6.9	4	4.8							3.97
04	4.76	04	4.8			08	8.2	5	5.8							4.76
05	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
	05	5.56	05	5.6	03	3.8	09	9.6	6	6.8						5.56
06	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
	06	6.35	06	6.5	04	4.3	11	11	7	7.8	11	11.2				6.35
	07	7.94	08	8.1	05	5.4	13	13.8	9	9.7						7.94
08	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	19.7	9.525
10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
12	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1			12.7
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4					15.875
16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16
19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3					19.05
20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
	22	22.225	22	22.6			38	38.5	27	27.1						22.225
25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25
25	25.4	25	25.4	25	25.8			44	44	31	31					25.4
31	31.75	31	31.75	32	32.2			55	55	38	38.8					31.75
31	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32

ISO Turning Insert Identification

Insert Shape : H, O, P, S, T, C, E, M, W, R

I.C. Size (mm)	Tolerance of I.C. Size (Ød) (mm)		Tolerance of Corner Height (mm)		I.C. Size (inch)	Tolerance of I.C. Size (Ød) (mm)		Tolerance of Corner Height (mm)	
	J, K, L, M, N	U	M, N	U		Class J, K, L, M, N	Class U	Class J, K, L, M, N	Class U
6.35	±0.05	±0.08	±0.08	±0.13	0.250	±0.002	±0.003	±0.003	±0.005
9.525					0.375				
12.7	±0.08	±0.13	±0.13	±0.2	0.500	±0.003	±0.005	±0.005	±0.008
15.875					0.625				
19.05	±0.1	±0.18	±0.15	±0.27	0.750	±0.004	±0.007	±0.006	±0.011
25.4					1.000				
31.75	±0.13	±0.25	±0.18	±0.38	1.250	±0.005	±0.010	±0.007	±0.015
32					1.260				

Insert Shape : D					
Inscribed Circle Size		Tolerance of I.C. Size		Tolerance of Corner Height	
mm	in	mm	in	mm	in
6.35	0.250	±0.05	±0.002	±0.11	±0.004
9.525	0.375	±0.05	±0.002	±0.11	±0.004
12.7	0.500	±0.08	±0.003	±0.15	±0.006
15.875	0.625	±0.10	±0.004	±0.18	±0.007
19.05	0.750	±0.10	±0.004	±0.18	±0.007

Insert Shape : V					
Inscribed Circle Size		Tolerance of I.C. Size		Tolerance of Corner Height	
mm	in	mm	in	mm	in
6.35	0.250	±0.05	±0.002	±0.15	±0.006
9.525	0.375	±0.05	±0.002	±0.15	±0.006
12.7	0.500	±0.08	±0.003	±0.20	±0.008
15.875	0.625	±0.10	±0.004	±0.27	±0.011
19.05	0.750	±0.10	±0.004	±0.27	±0.011

Symbol	Thickness (mm)
01	1.59
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52
6. Thickness Symbol	

⑥

⑦

⑧

04
04

—
—

08
08

—
—

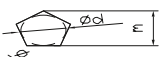
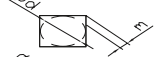
GK
GK

⑥

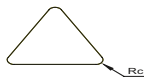
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⑧

Inscribed Circle Size (mm)
Insert thickness (s)
Corner Height (m)

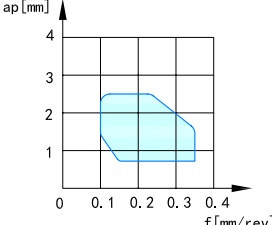
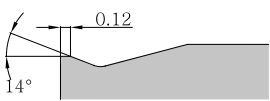
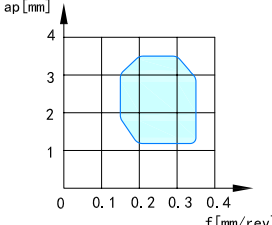
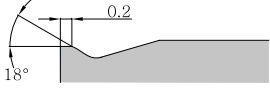
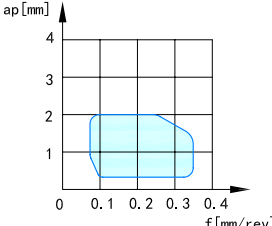
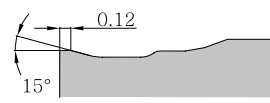
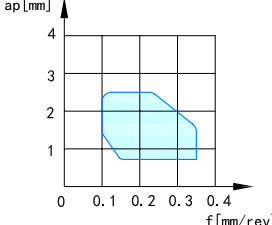
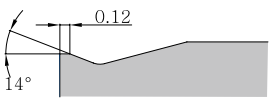
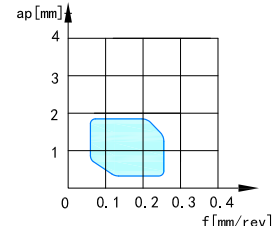
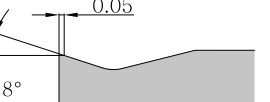
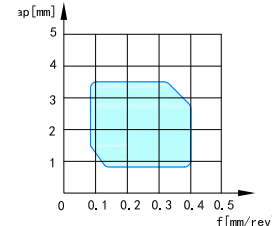
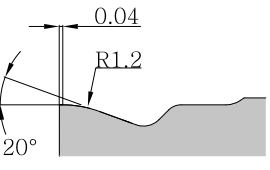



7. Corner Re Symbol	
	
Symbol	Corner Re (mm)
00	0.03
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
28	2.8
32	3.2

8. Chipbreaker Symbol
Indicates the cutting properties & chipbreakers

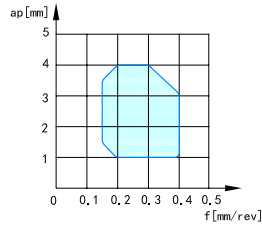
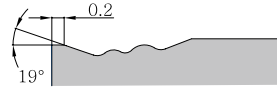
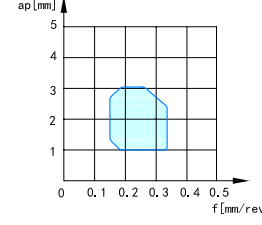
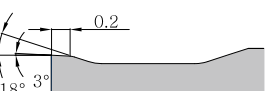
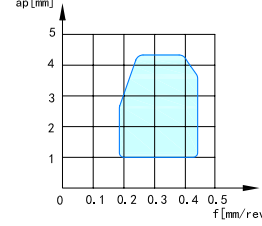
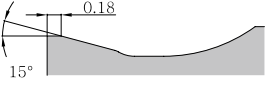
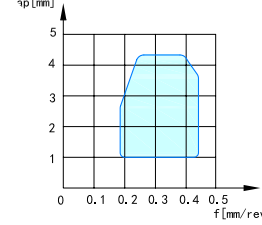
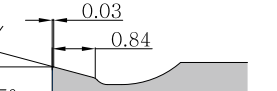
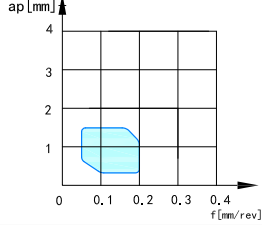
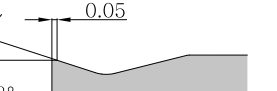
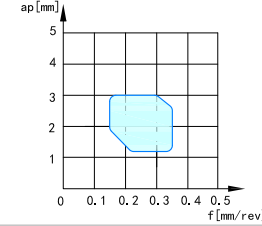
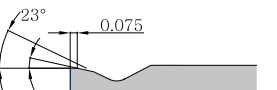
Turning Geometry

NEGATIVE

Geometry	Features	Application Range	Cross Section Geometry
PS	- PS for finishing of general steel and alloy steel. - Sharp tool nose and strong cutting edge. - Good chip control under small cutting depth.		
PM	- PM for semi-finishing of general steel and alloy steel. - Strong flat cutting edge with good strength.		
PL	- PL for finishing of stainless steel steel(mild steel) . - Sharp edge reduces cutting force, enables high quality surface. - Low feed,small cutting depth.		
PF	- PF for finishing of general steel and alloy steel. - Curved edge,sharp cutting edge,good chip control and fine surface finish due to curved edge.		
DM	- DM for stainless steel and Heat Resistance Super Alloy HRSA - Sharp edge due to results in low cutting forces particularly for thin wall structures and extended shafts.		
MM	- MM for semi-finishing of stainless steel and high temperature alloy - Variable rake angle and cutting edge width to ensure its sharpness and strength - Heart-shaped chip breaker with good chip breaking.		

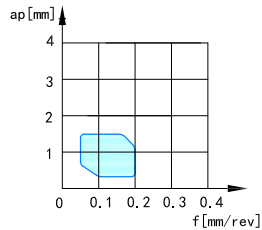
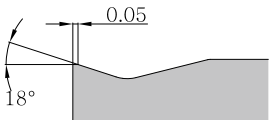
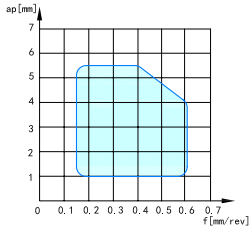
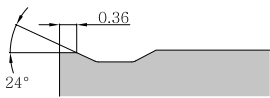
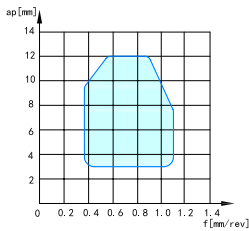
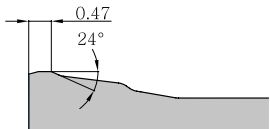
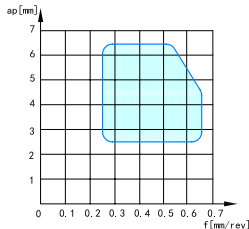
Turning Geometry

NEGATIVE

Geometry	Features	Application Range	Cross Section Geometry
PMN	- PMN for semi-finishing of general steel and alloy steel. - Gradient and waved hump wide applicable geometry range.		
SN	- SN for semi-finishing of general steel and alloy steel. - Big rake angle lower cutting force - Variable groove depth design, with super chip removal.		
FS	- FS for semi-finishing of general steel and alloy steel. - Throughout groove and wide chip groove make cutting available in unstable working conditions. - Long chip groove allows high depth of cuts.		
VF	- VF for semi-finishing and roughing of Steel and stainless steel - No edge width and open chip breaker contribute to its sharp cutting edge and low cutting force. - Large chip breaker contribute to its big cutting depth and width.		
MJ	- MJ for Stainless Steel from finishing to semi-finishing. - Big cutting edge width and rake angle to promote its strength of nose. - Curve edge design to control chip removal direction well		
MB	- MB for medium cutting of stainless steel and mild steel. - Sharp cutting edge.		

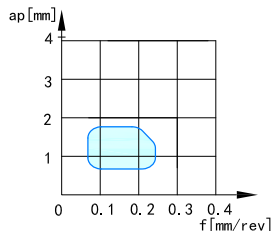
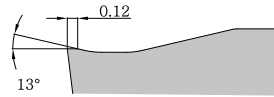
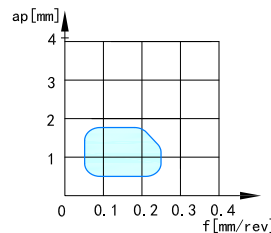
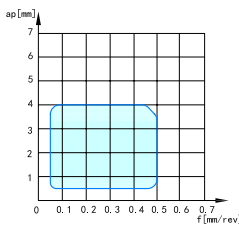
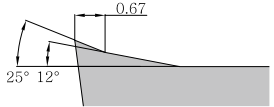
Turning Geometry

NEGATIVE

Geometry	Features	Application Range	Cross Section Geometry
MF	- MF for finishing of stainless steel - Low feed, small cutting depth.		
GK	- GK for cast iron heavy cutting. - Strong cutting edge, big chip pocket, good at big cutting depth and width.		
HY	- HY for heavy cutting action of carbon steel, cast steel and alloy steel. - Variable land and progressive chip breaker space, generating lower cutting force. - Straight edge line with reinforcement balances strength and cutting action.		
Flat	- Flat-top for cast iron used. - Stable placement. - Strong edge design for intermittent cutting conditions.		

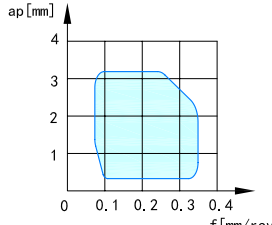
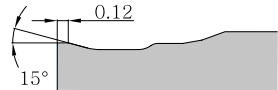
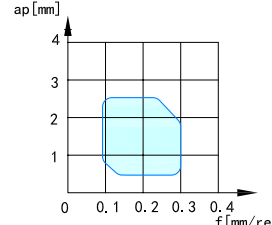
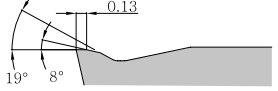
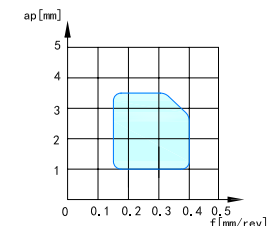
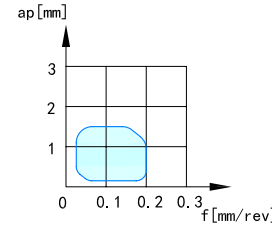
Turning Geometry

POSITIVE

Geometry	Features	Application Range	Cross Section Geometry
HF	- HF for light cutting of general steel, alloy steel and cast iron - Dual rake angle and big cutting edge width design to promote its strength - Overall pattern design, table and reliable installation		
HM	- HM for light cutting of general steel, alloy steel and stainless steel. - Sharp cutting edge, enables high surface quality.		
AL	- AL for aluminum alloy cutting. - Sharp tool nose due to large rake angle.		

Turning Geometry

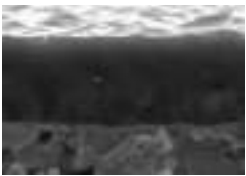
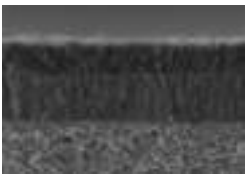
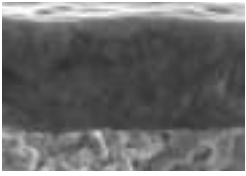
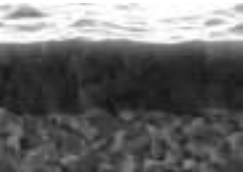
POSITIVE

Geometry	Features	Application Range	Cross Section Geometry
PM	- PM for Semi-finishing and roughing of general steel, alloy steel and cast iron. - Variable land design, combine sharpness with fracture resistance.		
GM	- GM for light cutting of general steel, alloy steel, stainless steel and cast iron. - Strong tool nose due to flat cutting edge - Sharp cutting edge due to double rake angle.		
SN	- SN for Semi-finishing and roughing of general steel, alloy steel and cast iron. - Variable land design, combine sharpness with fracture resistance.		
HQ	- HQ for light cutting of general steel, alloy steel and stainless steel. - Sharp cutting edge, enables high surface quality.		

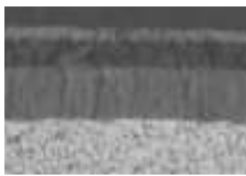
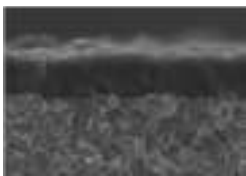
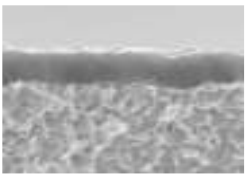
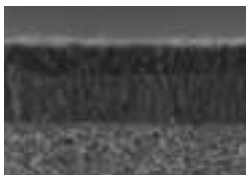
Application of Turning Garde

Workpiece Material	ISO	Coated		Uncoated	Cermet
		CVD	PVD		
P Steel	01	P3250			H20TI
	10	P3150	P1025		H10TI
	20	P1000	P1035		
	30	P4225			
	40				
	50				
M Stainless Steel	01		M1225		
	10				
	20		M8200		
	30		M1040		
	40		M4000		
	50		M5000		
K Cast Iron	01	K3110			
	10	K3115			
	20	K3120			
	30	K3215			
	40				
	50				
N Nonferrous Metal	01				
	10				
	20			K001	
	30				K20
	40				
	50				
S HRSA	01				
	10		M4000		
	20		M5000		
	30				
	40				
	50				
H Hardened Material	01				
	10				
	20				
	30				

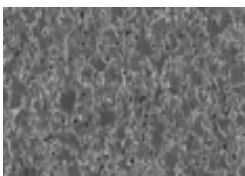
Turning Grade

Grade	ISO Group	Application	Coating Structure	Advantages	Coating type
P3250	P10-P35	Semi finishing		• Superfine Al₂O₃ and MT-TiCN coating on gradient carbide substrate provide excellent wear resistance. • Suitable for Semi finishing of steel & alloy steel under stable condition.	CVD
P3150	P15-P40	General application		• Perfect combination with nano columnar MT-TiCN and Al₂O₃, TiN coating. • Special edge treatment technology. • Suitable for continuous to light interrupted cutting of steel & alloy steel.	CVD
P1000	P15-P40	Roughing		• CVD-coated grade based on Duratomic™ coating. Grade for high performance and productivity in steel material under stable conditions and for Turning Ti (C, N) – Al₂O₃	CVD
P4115	P05-P35	Semi finishing, roughing		• New thinner Al₂O₃ and Nano MT-TiCN coating, toughness gradient carbide substrate, with good wear resistance, superior adhesion resistance and longer tool life. • Application: Suitable for machining of steel & alloy steel. finishing Conditions.	CVD
K3110	K05-K20	Finishing, semi finishing		• MT-TiCN+Al₂O₃ coating with micro carbide substrate, has good wear resistance and rigidity, ensure stable processing, suitable on medium and high speed cast iron process in case of finishing to semi finishing	CVD
K3115	K10-K25	Finishing, semi finishing		• MT-TiCN and thick Al₂O₃ coated on Fine grain carbide substrate. excellent edge strength and ensure the stability of cutting. • Application: Suitable for continuous and light interrupted cutting action of nodular cast iron.	CVD
K3215	K10-K25	General application		• Upgraded AlCrN+TiN coating and micro carbide substrate, good wear resistance, suitable on steel processing of finishing to light roughing	CVD
K3120	K15-K30	Semi finishing, roughing		• TiAlN coating with micro carbide substrate, has good wear resistance and rigidity, suitable on medium to roughing of gray cast iron and nodular cast iron	CVD

Turning Grade

Grade	ISO Group	Application	Coating Structure	Advantages	Coating type
M1225	M10-M30 S10-S20	General application		• New TiAlN coating on submicron substrate with strong adhesion, superior wear resistance and good heat resistance. • Application: Suitable for Wide range of stainless steel and high-temperature alloy on stable conditions.	PVD
M1040	M10-M30 S10-S20	Semi finishing, roughing		• Optimized combination of TiAlN coating and micro-grain carbide substrate with high Co content provide superior adhesion resistance and toughness. • Application: Suitable for semi-finishing of stainless steels and threading of general materials.	PVD
M8200	M10-M30 S10-S20	Semi finishing, roughing		• MT-TiCN+AL2O3 coating with high strength carbide substrate, has good wear resistance, rigidity and heat stability, suitable for semi finishing to roughing of stainless and high temperature alloy	PVD
M5000	S10-S35 M15-M40	Semi finishing, roughing		• Good wear resistance and rigidity, suitable on semi finishing to roughing processing of Ti and high temperature alloy	PVD
P1025	P15-P40 M15-M35 S10-S20	Finishing, semi finishing		• Optimized combination of TiAlN coating and micro-grain carbide substrate with high Co content provide superior adhesion resistance and toughness. • Application: Suitable for semi-finishing of Steel, stainless steels and threading of general materials.	PVD
M4000	M15-M20 S15-S20	Finishing, semi finishing		• TiAlN coating with micro carbide substrate, has good wear resistance and rigidity, suitable on semi finishing to roughing processing of Ti and high temperature alloy	CVD
K001	N05-N20 K10-K25	General application		• Hard, wear resistant grade for Turning and milling in aluminium.	Un-Coated
K20	N05-N25	Semi finishing, roughing		• Tough micro-grain carbide grade for milling in superalloys and aluminium.	Un-Coated

Turning Grade

Grade	ISO Group	Application	Coating Structure	Advantages	Coating type
H10TI	P05-P10 M05-M10	Finishing		• Special Surface Leveling Technique • Good control on chip breaker, realize good surface quality and extend tool life.	Un-Coated Cermet
H20TI	P05-P10 M05-M10	Finishing		• Excellent PVD Coating • High lubricant coating to promote its wearresistance.	Coated Cermet

CN_ Negative 80°



Dimension (mm)			
Product code	IC	S	D1
CN_0903_	9.525	3.180	3.810
CN_1204_	12.700	4.760	5.160
CN_1606_	15.875	6.350	6.350
CN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
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	CNMG090308-PM	0.8				●	●																	
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	CNMG120408-PM	0.8				●	●																	
	CNMG120412-PM	1.2				●	●																	
	CNMG120416-PM	1.6				●	●																	
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	CNMG160608-PR	0.8					●																	
	CNMG160612-PR	1.2					●																	
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	CNMG120412-PMN	1.2					●																	
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	CNMG090308-BM	0.8					●																	
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	CNMG120408-BM	0.8					●																	
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	CNMG120412-GMR	1.2					●																	
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CN_ Negative 80°

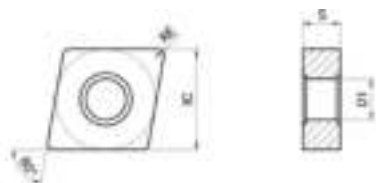


Dimension (mm)			
Product code	IC	S	D1
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CN_1204_	12.700	4.760	5.160
CN_1606_	15.875	6.350	6.350
CN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
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	CNMG120412-RG	1.2									●													
	CNMG160608-RG	0.8									●													
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	CNMM190612-RG	1.2							●	●														
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	CNMG120408-MB	0.8			●		●				●													
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	CNMG160612-MB	1.2			●		●				●													
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	CNMG090308-MF	0.8									●													
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● Available

CN_ Negative 80°



Dimension (mm)			
Product code	IC	S	D1
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CN_1204_	12.700	4.760	5.160
CN_1606_	15.875	6.350	6.350
CN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
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	CNMG120408-MM	0.8									●													
	CNMG120412-MM	1.2									●													
	CNMG160616-MM	1.6									●													
	CNMG160608-MM	0.8									●													
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	CNMG190616-SN	1.6	●																					
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	CNMG190608-DM	0.8									●		●											
	CNMG190612-DM	1.2									●		●											
	CNMG190616-DM	1.6									●		●											
	CNMA120404	0.4															●	●	●	●				
	CNMA120408	0.8															●	●	●	●				
	CNMA120412	1.2															●	●	●	●				
	CNMA120416	1.6															●	●	●	●				
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● Available

CN_

Negative 80°



Dimension (mm)			
Product code	IC	S	D1
CN_0903_	9.525	3.180	3.810
CN_1204_	12.700	4.760	5.160
CN_1606_	15.875	6.350	6.350
CN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
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	CNMG120408-GK	0.8															●	●	●	●				
	CNMG120412-GK	1.2															●	●	●	●				
	CNMG120416-GK	1.6															●	●	●	●				
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	CNMG160616-GK	1.6															●	●	●	●				
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● Available

DN_ Negative 55°



Dimension (mm)			
Product code	IC	S	D1
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DN_1504_	12.700	4.760	5.160
DN_1506_	12.700	6.350	5.160

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
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	DNMG110408-PM	0.8					●																	
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	DNMG150604-PM	0.4					●																	
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	DNMG110404-BM	0.4				●	●																	
	DNMG110408-BM	0.8				●	●																	
	DNMG110412-BM	1.2				●	●																	
	DNMG150404-BM	0.4				●	●																	
	DNMG150408-BM	0.8				●	●																	
	DNMG150412-BM	1.2				●	●																	
	DNMG150604-BM	0.4				●	●																	
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	DNMG110412-GMR	1.2				●	●																	
	DNMG150404-GMR	0.4				●	●																	
	DNMG150408-GMR	0.8				●	●																	
	DNMG150412-GMR	1.2				●	●																	
	DNMG110404-MF	0.4									●	●												
	DNMG110408-MF	0.8									●	●												
	DNMG150404-MF	0.4									●	●												
	DNMG150408-MF	0.8									●	●												
	DNMG150412-MF	1.2									●	●												
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● Available

DN_ Negative 55°



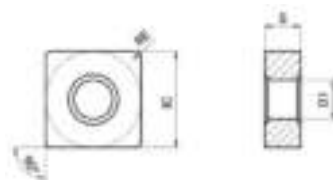
Dimension (mm)			
Product code	IC	S	D1
DN_1104_	9.525	4.760	3.810
DN_1504_	12.700	4.760	5.160
DN_1506_	12.700	6.350	5.160

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
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	DNMG110408-UK	0.8															●		●					
	DNMG150404-UK	0.4															●		●					
	DNMG150408-UK	0.8															●		●					
	DNMG150604R-VF	0.4			●											●								
	DNMG150608R-VF	0.8			●											●								
	DNMG150604L-VF	0.4			●											●								
	DNMG150608L-VF	0.8			●											●								

● Available

SN_

Negative 90°

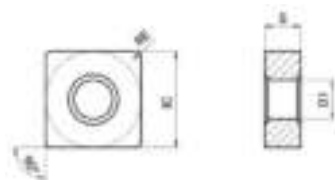


Dimension (mm)			
Product code	IC	S	D1
SN_1204_	12.700	4.760	5.160
SN_1506_	15.875	6.350	6.350
SN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	SNMG120404-PM	0.4				●	●																	
	SNMG120408-PM	0.8				●	●																	
	SNMG120412-PM	1.2				●	●																	
	SNMG150608-PM	0.8				●	●																	
	SNMG150604-PM	0.4				●	●																	
	SNMG150612-PM	1.2				●	●																	
	SNMG120404-GM	0.4					●	●	●															
	SNMG120408-GM	0.8					●	●	●															
	SNMG120412-GM	1.2					●	●	●															
	SNMG120416-GM	1.6					●	●	●															
	SNMG150608-GM	0.8					●	●	●															
	SNMG150612-GM	1.2					●	●	●															
	SNMG190608-GM	0.8					●	●	●															
	SNMG190612-GM	1.2					●	●	●															
	SNMG120404-RG	0.4					●	●	●		●													
	SNMG120408-RG	0.8					●	●	●		●													
	SNMG120412-RG	1.2					●	●	●		●													
	SNMG150608-RG	0.8					●	●	●		●													
	SNMG150612-RG	1.2					●	●	●		●													
	SNMG190608-RG	0.8					●	●	●		●													
	SNMG190612-RG	1.2					●	●	●		●													
	SNMG190616-RG	1.9					●	●	●		●													
	SNMG190624-RG	2.4					●	●	●		●													
	SNMG250616-RG	1.6					●	●	●		●													
	SNMG250716-RG	1.6					●	●	●		●													
	SNMG250724-RG	2.4					●	●	●		●													
	SNMG250924-RG	2.4					●	●	●		●													
	SNMG190616-RG	1.6					●	●	●		●													
	SNMG190624-RG	2.4					●	●	●		●													
	SNMG250724-RG	2.4					●	●	●		●													
	SNMG12408-MB	0.4									●	●												
	SNMG12412-MB	0.8									●	●												
	SNMG120404-MM	0.4									●													
	SNMG120408-MM	0.8									●													
	SNMG120412-MM	1.2									●													
	SNMG150608-MM	0.8									●													
	SNMG150612-MM	1.2									●													

● Available

SN_ Negative 90°

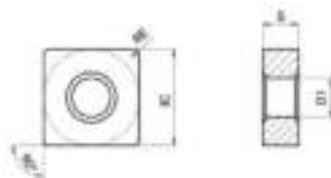


Dimension (mm)			
Product code	IC	S	D1
SN_1204_	12.700	4.760	5.160
SN_1506_	15.875	6.350	6.350
SN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	SNMG120404-UK	0.4															●		●					
	SNMG120408-UK	0.8															●		●					
	SNMG120412-UK	1.2															●		●					
	SNMG150608-UK	0.8															●		●					
	SNMG150612-UK	1.2															●		●					
	SNMG150616-UK	1.6															●		●					
	SNMM190612-HY	1.2	●				●																	
	SNMM190616-HY	1.6	●				●																	
	SNMM190624-HY	2.4	●				●																	
	SNMG120404L/R-M	0.4				●	●																	
	SNMG120408L/R-M	0.8				●	●																	
	SNMG120412L/R-M	1.2				●	●																	
	SNMG150608L/R-M	0.8				●	●																	

● Available

SN Negative 90°

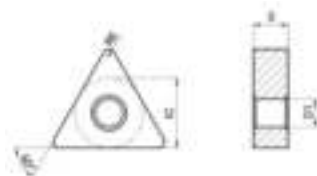


Dimension (mm)			
Product code	IC	S	D1
SN_1204_	12.700	4.760	5.160
SN_1506_	15.875	6.350	6.350
SN_1906_	19.050	6.350	7.940

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	SNMG120404-MR	0.4									●		●											
	SNMG120408-MR	0.8									●		●											
	SNMG120412-MR	1.2									●		●											
	SNMG09T304-MJ	0.4		●																				
	SNMG09T308-MJ	0.8		●																				
	SNMG120404-MJ	0.4		●																				
	SNMG120408-MJ	0.8		●																				
	SNMG120412-MJ	1.2		●																				
	SNMG120408-MS	0.8	●																					
	SNMG120412-MS	1.2	●																					
	SNMG120404-SN	0.4	●																					
	SNMG120408-SN	0.8	●																					
	SNMG120412-SN	1.2	●																					
	SNMG150612-SN	1.2	●																					
	SNMG190612-SN	1.2	●																					
	SNMG120404-DM	0.4									●		●											
	SNMG120408-DM	0.8									●		●											
	SNMG120412-DM	1.2									●		●											
	SNMG120408-DM	0.8									●		●											
	SNMG120412-DM	1.2									●		●											
	SNMG120416-DM	1.6									●		●											
	SNMA120404	0.4															●	●	●	●	●			
	SNMA120408	0.8															●	●	●	●	●			
	SNMA120412	1.2															●	●	●	●	●			
	SNMA120416	1.6															●	●	●	●	●			
	SNMA150612	1.2															●	●	●	●	●			
	SNMA150616	1.6															●	●	●	●	●			
	SNMA150924	2.4															●	●	●	●	●			
	SNMA190608	0.8															●	●	●	●	●			
	SNMA190612	1.2															●	●	●	●	●			
	SNMA190616	1.6															●	●	●	●	●			
	SNMA190624	2.4															●	●	●	●	●			
	SNMG120408-GK	0.8															●	●	●	●	●			
	SNMG120412-GK	1.2															●	●	●	●	●			
	SNMG150608-GK	0.8															●	●	●	●	●			
	SNMG150612-GK	1.2															●	●	●	●	●			
	SNMG150616-GK	1.6															●	●	●	●	●			

● Available

TN Negative 60°

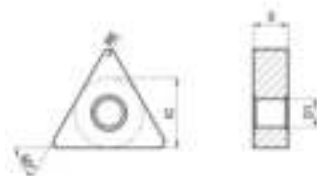


Dimension (mm)			
Product code	IC	S	D1
TN_1103_	6.35	3.180	2.26
TN_1604_	9.53	4.76	3.81
TN_2204_	12.7	4.76	5.16

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	TNMG160404-PM	0.4				●	●																	
	TNMG160408-PM	0.8				●	●																	
	TNMG160412-PM	1.2				●	●																	
	TNMG160416-PM	1.6				●	●																	
	TNMG220408-PM	0.8				●	●																	
	TNMG220412-PM	1.2				●	●																	
	TNMG220416-PM	1.6				●	●																	
	TNMG160404-TM	0.4		●			●		●															
	TNMG160408-TM	0.8		●			●		●															
	TNMG160412-TM	1.2		●			●		●															
	TNMG160404-PR	0.4				●	●																	
	TNMG160408-PR	0.8				●	●																	
	TNMG160412-PR	1.2				●	●																	
	TNMG220408-PR	0.8				●	●																	
	TNMG220412-PR	1.2				●	●																	
	TNMG220416-PR	1.6				●	●																	
	TNMG160404-PS	0.4				●	●																	
	TNMG160408-PS	0.8				●	●																	
	TNMG160412-PS	1.2				●	●																	
	TNMG160404-PMN	0.4				●	●																	
	TNMG160408-PMN	0.8				●	●																	
	TNMG160412-PMN	1.2				●	●																	
	TNMG160404-PF	0.4				●	●																	
	TNMG160408-PF	0.8				●	●																	
	TNMG160412-PF	1.2				●	●																	
	TNMG110304-BM	0.4				●	●				●													
	TNMG110308-BM	0.8				●	●				●													
	TNMG160404-BM	0.4				●	●				●													
	TNMG160408-BM	0.8				●	●				●													
	TNMG160412-BM	1.2				●	●				●													
	TNMG220412-BM	1.2				●	●				●													
	TNMG220416-BM	1.6				●	●				●													
	TNMG160404-GMR	0.4				●	●																	
	TNMG160408-GMR	0.8				●	●																	
	TNMG160412-GMR	1.2				●	●																	
	TNMG220408-GMR	0.8				●	●																	
	TNMG220416-GMR	1.2				●	●																	
						●	●																	

● Available

TN Negative 60°

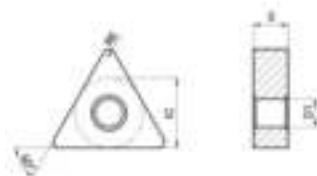


Dimension (mm)			
Product code	IC	S	D1
TN_1103_	6.35	3.180	2.26
TN_1604_	9.53	4.76	3.81
TN_2204_	12.7	4.76	5.16

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	TNMG160404-GM	0.4					●	●	●	●							●							
	TNMG160408-GM	0.8					●	●	●	●							●							
	TNMG160412-GM	1.2					●	●	●	●							●							
	TNMG160416-GM	1.6					●	●	●	●							●							
	TNMG220404-GM	0.4					●	●	●	●							●							
	TNMG220408-GM	0.8					●	●	●	●							●							
	TNMG220412-GM	1.2					●	●	●	●							●							
	TNMG220416-GM	1.6					●	●	●	●							●							
	TNMG160408-RG	0.8					●	●	●	●	●													
	TNMG160412-RG	1.2					●	●	●	●	●													
	TNMG160416-RG	1.6					●	●	●	●	●													
	TNMG220408-RG	0.8					●	●	●	●	●													
	TNMG220412-RG	1.2					●	●	●	●	●													
	TNMG220416-RG	1.6					●	●	●	●	●													
	TNMG270612-RG	1.2					●	●	●	●	●													
	TNMG270616-RG	1.6					●	●	●	●	●													
	TNMG330924-RG	2.4					●	●	●	●	●													
	TNMM220412-RG	1.2					●	●	●	●	●													
	TNMM220416-RG	1.6					●	●	●	●	●													
	TNMM270616-RG	1.6					●	●	●	●	●													
	TNMG160404-MB	0.4	●	●		●					●													
	TNMG160408-MB	0.8	●	●		●					●													
	TNMG160412-MB	1.2	●	●		●					●													
	TNMG220408-MB	0.8	●	●		●					●													
	TNMG220412-MB	1.2	●	●		●					●													
	TNMG160404-MF	0.4									●	●												
	TNMG160408-MF	0.8									●	●												
	TNMG160412-MF	1.2									●	●												
	TNMG160404-MR	0.4									●	●												
	TNMG160408-MR	0.8									●	●												
	TNMG160412-MR	1.2									●	●												
	TNMG160404-MM	0.4									●	●												
	TNMG160408-MM	0.8									●	●												
	TNMG160412-MM	1.2									●	●												
	TNMG160404-MA	0.4									●	●												
	TNMG160408-MA	0.8									●	●												
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● Available

TN_ Negative 60°

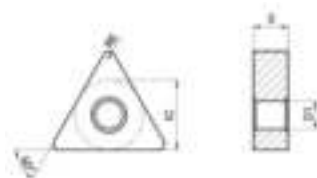


Dimension (mm)			
Product code	IC	S	D1
TN_1103_	6.35	3.180	2.26
TN_1604_	9.53	4.76	3.81
TN_2204_	12.7	4.76	5.16

			P								M					K					N		H	
Inserts	Product Code	RE	P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	TNMG160404-PL	0.4									●		●											
	TNMG160408-PL	0.8									●		●											
	TNMG160412-PL	1.2									●		●											
	TNMG110304-MJ	0.4			●																			
	TNMG110308-MJ	0.8			●																			
	TNMG160404-MJ	0.4			●																			
	TNMG160408-MJ	0.8			●																			
	TNMG160412-MJ	1.2			●																			
	TNMG220404-MJ	0.4			●																			
	TNMG220408-MJ	0.8			●																			
	TNMG220412-MJ	1.2			●																			
	TNMG160404-MS	0.4											●											
	TNMG160408-MS	0.8											●											
	TNMG160412-MS	1.2											●											
	TNMG160404-SN	0.4		●																				
	TNMG160408-SN	0.8		●																				
	TNMG160412-SN	1.2		●																				
	TNMG220404-SN	0.4		●																				
	TNMG220408-SN	0.8		●																				
	TNMG220416-SN	1.6		●																				
	TNMG160404-DM	0.4											●											
	TNMG160408-DM	0.8											●											
	TNMG160412-DM	1.2											●											
	TNMA160404	0.4															●	●	●	●				
	TNMA160408	0.8															●	●	●	●				
	TNMA160412	1.2															●	●	●	●				
	TNMA160416	1.6															●	●	●	●				
	TNMA220412	1.2															●	●	●	●				
	TNMA220416	1.6															●	●	●	●				
	TNMG160404-GK	0.4																			●			
	TNMG160408-GK	0.8																			●			
	TNMG160412-GK	1.2																			●			
	TNMG220404-GK	0.4																			●			
	TNMG220408-GK	0.8																			●			
	TNMG220412-GK	1.2																			●			
	TNMG220416-GK	1.6																			●			
	TNMG160404-UK	0.4																●	●	●	●			
	TNMG160408-UK	0.8																●	●	●	●			
	TNMG160412-UK	1.2																●	●	●	●			

● Available

TN_ Negative 60°



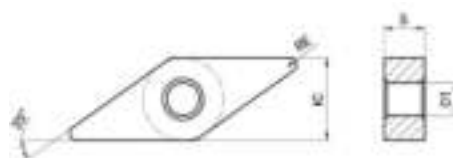
Dimension (mm)			
Product code	IC	S	D1
TN_1103_	6.35	3.180	2.26
TN_1604_	9.53	4.76	3.81
TN_2204_	12.7	4.76	5.16

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	TNMG160404R-FS	0.4														●								
	TNMG160408R-FS	0.8														●								
	TNMG160404L-FS	0.4														●								
	TNMG160408L-FS	0.8														●								
	TNMG160404R-VF	0.4														●								●
	TNMG160408R-VF	0.8														●								●
	TNMG160404L-VF	0.4														●								●
	TNMG160408L-VF	0.8														●								●

● Available

VN_ Negative 35°

Dimension (mm)			
Product code	IC	S	D1
VN_12T3_	7.150	3.970	4.400
VN_1604_	9.525	4.760	3.810

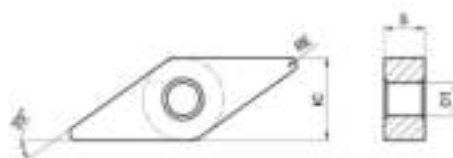


			P					M						K					N		H			
Inserts	Product Code	RE	P1000	P1025	P1035	P3150	P3250	P4025	P4115	M1000	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	VNMG160404-PM	0.4				●	●																	
	VNMG160408-PM	0.8				●	●																	
	VNMG160412-PM	1.2				●	●																	
	VNMG12T302-SA	0.2		●																				
	VNMG12T304-SA	0.4		●																				
	VNMG12T08-SA	0.8		●																				
	VNMG160404-SA	0.4		●																				
	VNMG160408-SA	0.8		●																				
	VNMG160404-BM	0.4				●	●					●												
	VNMG160408-BM	0.8				●	●					●												
	VNMG160412-BM	1.2				●	●					●												
	VNMG160404-GMR	0.4				●	●																	
	VNMG160408-GMR	0.8				●	●																	
	VNMG160412-GMR	1.2				●	●																	
	VNMG160404-GM	0.4		●																				
	VNMG160408-GM	0.8		●																				
	VNMG160412-GM	1.2		●																				
	VNMG12T304-NF	0.4					●	●																
	VNMG12T308-NF	0.8					●	●																
	VNMG12T304-MF	0.4								●														
	VNMG12T308-MF	0.8								●														

● Available

VN_ Negative 35°

Dimension (mm)			
Product code	IC	S	D1
VN_12T3_	7.150	3.970	4.400
VN_1604_	9.525	4.760	3.810



Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	VNMG160404-PL	0.4									●													
	VNMG160408-PL	0.8									●													
	VNMG160412-PL	1.2									●													
	VNMG160404-MJ	0.4	●																					
	VNMG160408-MJ	0.8	●																					
	VNMG160412-MJ	1.2	●																					
	VNMG160404-SN	0.4	●																					
	VNMG160408-SN	0.8	●																					
	VNMG160412-SN	1.2	●																					
	VNMG160404-UK	0.4															●	●						
	VNMG160408-UK	0.8															●	●						
	VNMG160412-UK	1.2															●	●						

● Available

WN_ Negative 80°



Dimension (mm)			
Product code	IC	S	D1
WN_06T3_	9.525	3.970	3.810
WN_0604_	9.525	4.760	3.810
WN_0804_	12.700	4.760	5.160

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	WNMG060404-PM	0.4				●	●																	
	WNMG060408-PM	0.8				●	●																	
	WNMG060412-PM	1.2				●	●																	
	WNMG080404-PM	0.4				●	●																	
	WNMG080408-PM	0.8				●	●																	
	WNMG080412-PM	1.2				●	●																	
	WNMG080416-PM	1.6				●	●																	
	WNMG060404-PR	0.4				●	●																	
	WNMG060408-PR	0.8				●	●																	
	WNMG060412-PR	1.2				●	●																	
	WNMG080404-PR	0.4				●	●																	
	WNMG080408-PR	0.8				●	●																	
	WNMG080412-PR	1.2				●	●																	
	WNMG080416-PR	1.6				●	●																	
	WNMG060404-PMN	0.4				●	●																	
	WNMG060408-PMN	0.8				●	●																	
	WNMG060412-PMN	1.2				●	●																	
	WNMG080404-PMN	0.4				●	●																	
	WNMG080408-PMN	0.8				●	●																	
	WNMG080412-PMN	1.2				●	●																	
	WNMG080416-PMN	1.6				●	●																	
	WNMG060404-GM	0.4	●		●	●				●							●		●					
	WNMG060408-GM	0.8	●		●	●				●							●		●					
	WNMG060412-GM	1.2	●		●	●				●							●		●					
	WNMG080404-GM	0.4	●		●	●				●							●		●					
	WNMG080408-GM	0.8	●		●	●				●							●		●					
	WNMG080412-GM	1.2	●		●	●				●							●		●					
	WNMG080416-GM	1.6	●		●	●				●							●		●					
	WNMG06T304-RG	0.4				●	●																	
	WNMG06T308-RG	0.8				●	●																	
	WNMG06T312-RG	1.2				●	●																	
	WNMG080408-RG	0.8				●	●																	
	WNMG080412-RG	1.2				●	●																	
	WNMG080416-RG	1.6				●	●																	
	WNMG060408-MB	0.8		●		●					●													
	WNMG060412-MB	1.2		●		●					●													
	WNMG080404-MB	0.4		●		●					●													
	WNMG080408-MB	0.8		●		●					●													
	WNMG080412-MB	1.2		●		●					●													

● Available

WN_

Negative 80°



Dimension (mm)			
Product code	IC	S	D1
WN_06T3_	9.525	3.970	3.810
WN_0604_	9.525	4.760	3.810
WN_0804_	12.700	4.760	5.160

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	WNMG060404-MR	0.4									●		●											
	WNMG060408-MR	0.8									●		●											
	WNMG080404-MR	0.4									●		●											
	WNMG080408-MR	0.8									●		●											
	WNMG080412-MR	1.2									●		●											
	WNMG060404-MM	0.4									●		●											
	WNMG060408-MM	0.8									●		●											
	WNMG080404-MM	0.4									●		●											
	WNMG080408-MM	0.8									●		●											
	WNMG080412-MM	1.2									●		●											
	WNMG060408-PL	0.8									●		●											
	WNMG060412-PL	1.2									●		●											
	WNMG080404-PL	0.4									●		●											
	WNMG080408-PL	0.8									●		●											
	WNMG080412-PL	1.2									●		●											
	WNMG060404-MJ	0.4		●																				
	WNMG060408-MJ	0.8		●																				
	WNMG060412-MJ	1.2		●																				
	WNMG080404-MJ	0.4		●																				
	WNMG080408-MJ	0.8		●																				
	WNMG080412-MJ	1.2		●																				
	WNMG060404-SN	0.4	●																					
	WNMG060408-SN	0.8	●																					
	WNMG060412-SN	1.2	●																					
	WNMG080404-SN	0.4	●																					
	WNMG080408-SN	0.8	●																					
	WNMG080412-SN	1.2	●																					
	WNMG080404-DM	0.4											●		●									
	WNMG080408-DM	0.8											●		●									
	WNMG080412-DM	1.2											●		●									
	WNMG080416-DM	1.6											●		●									
	WNMA060404	0.4															●	●	●	●	●			
	WNMA060408	0.8															●	●	●	●	●			
	WNMA060412	1.2															●	●	●	●	●			
	WNMA080404	0.4															●	●	●	●	●			
	WNMA080408	0.8															●	●	●	●	●			
	WNMA080412	1.2															●	●	●	●	●			
	WNMA080416	1.6															●	●	●	●	●			

● Available

WN_ Negative 80°



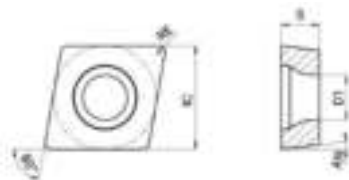
Dimension (mm)			
Product code	IC	S	D1
WN_06T3_	9.525	3.970	3.810
WN_0604_	9.525	4.760	3.810
WN_0804_	12.700	4.760	5.160

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	WNMG060404-GK	0.4															●	●	●	●	●			
	WNMG060408-GK	0.8															●	●	●	●	●			
	WNMG060412-GK	1.2															●	●	●	●	●			
	WNMG080404-GK	0.4															●	●	●	●	●			
	WNMG080408-GK	0.8															●	●	●	●	●			
	WNMG080412-GK	1.2															●	●	●	●	●			
	WNMG060404-UK	0.4															●	●	●	●	●			
	WNMG060408-UK	0.8															●	●	●	●	●			
	WNMG060412-UK	1.2															●	●	●	●	●			
	WNMG080404-UK	0.4															●	●	●	●	●			
	WNMG080408-UK	0.8															●	●	●	●	●			
	WNMG080412-UK	1.2															●	●	●	●	●			
	WNMG080404R/L-M	0.4				●	●																	
	WNMG080408R/L-M	0.8				●	●																	
	WNMG080412R/L-M	1.2				●	●																	

● Available

CC_

Positive 80°

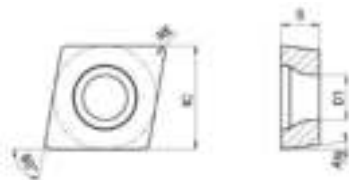


Dimension (mm)				
Product code	IC	S	D1	AN
CC_0602_	6.350	2.380	2.800	7°
CC_09T3_	9.525	3.970	4.400	7°
CC_1204_	12.700	4.760	5.500	7°

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	CCMT060204-PM	0.4	●				●																	
	CCMT060208-PM	0.8	●				●																	
	CCMT09T304-PM	0.4	●				●																	
	CCMT09T308-PM	0.8	●				●																	
	CCMT120404-PM	0.4	●				●																	
	CCMT120408-PM	0.8	●				●																	
	CCMT120412-PM	1.2	●				●																	
	CCMT060204-GM	0.4	●								●		●				●							
	CCMT060208-GM	0.8	●								●		●				●							
	CCMT09T304-GM	0.4	●								●		●				●							
	CCMT09T308-GM	0.8	●								●		●				●							
	CCMT120404-GM	0.4	●								●		●				●							
	CCMT120408-GM	0.8	●								●		●				●							
	CCMT120412-GM	1.2	●								●		●				●							
	CCMT060204-SN	0.4	●																					
	CCMT060208-SN	0.8	●																					
	CCMT09T304-SN	0.4	●																					
	CCMT09T308-SN	0.8	●																					
	CCMT120404-SN	0.4	●																					
	CCMT120408-SN	0.8	●																					
	CCMT120412-SN	1.2	●																					
	CCMT060204-HM	0.4						●			●						●	●						
	CCMT060208-HM	0.8						●			●						●	●						
	CCMT09T304-HM	0.4						●			●						●	●						
	CCMT09T308-HM	0.8						●			●						●	●						
	CCMT060202-HF	0.2									●						●	●						
	CCMT060204-HF	0.4									●						●	●						
	CCMT060208-HF	0.8									●						●	●						
	CCMT09T304-HF	0.4									●						●	●						
	CCMT09T308-HF	0.8									●						●	●						
	CCMT120404-HF	0.4									●						●	●						
	CCMT120408-HF	0.8									●						●	●						
	CCMT060204-HQ	0.4																						●
	CCMT060208-HQ	0.8																						●
	CCMT09T304-HQ	0.4																						●
	CCMT09T308-HQ	0.8																						●
	CCMT120404-HQ	0.4																						●
	CCMT120408-HQ	0.8																						●

● Available

CC_ Positive 80°



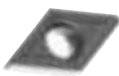
Dimension (mm)				
Product code	IC	S	D1	AN
CC_0602_	6.350	2.380	2.800	7°
CC_09T3_	9.525	3.970	4.400	7°
CC_1204_	12.700	4.760	5.500	7°

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	CCGX060202-AL	0.2																				●		
	CCGX060204-AL	0.4																				●		
	CCGX060208-AL	0.8																				●		
	CCGX09T302-AL	0.2																				●		
	CCGX09T304-AL	0.4																				●		
	CCGX09T308-AL	0.8																				●		
	CCGX120404-AL	0.4																				●		
	CCGX120408-AL	0.8																				●		

DC Positive 55°

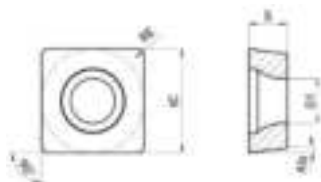


Dimension (mm)				
Product code	IC	S	D1	AN
DC_0702_	6.350	2.380	2.800	7°
DC_11T3_	9.525	3.970	4.400	7°

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	DCMT11T304-PM	0.4					●																	
	DCMT11T308-PM	0.8					●																	
	DCMT070204-GM	0.4									●						●							
	DCMT070208-GM	0.8									●						●							
	DCMT11T304-GM	0.4									●						●							
	DCMT11T308-GM	0.8									●						●							
	DCMT11T304-SN	0.4		●																				
	DCMT11T308-SN	0.8		●																				
	DCMT070204-HM	0.4							●		●						●							
	DCMT070208-HM	0.8							●		●						●							
	DCMT11T302-HM	0.2							●		●						●							
	DCMT11T304-HM	0.4							●		●						●							
	DCMT11T308-HM	0.8							●		●						●							
	DCMT11T312-HM	1.2							●		●						●							
	DCMT150404-HM	0.4							●		●						●							

● Available

SC_ Positive 90°



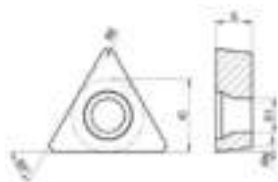
Dimension (mm)				
Product code	IC	S	D1	AN
SC_09T3_	9.525	3.970	4.400	7°
SC_1204_	12.700	4.760	5.500	7°
SC_3809_	38.100	9.525	9.800	7°

			P								M						K					N		H
Inserts	Product Code	RE	P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	SCMT09T304-HM	0.4				●	●																	
	SCMT09T308-HM	0.8				●	●																	
	SCMT120404-HM	0.4				●	●																	
	SCMT120408-HM	0.8				●	●																	
	SCMT120412-HM	1.2				●	●																	
	SCGX09T302-AC	0.2																				●		
	SCGX09T304-AC	0.4																				●		
	SCGX09T308-AC	0.8																				●		
	SCGX120404-AC	0.4																				●		
	SCGX120408-AC	0.8																				●		

● Available

TC_

Positive 60°



Dimension (mm)				
Product code	IC	S	D1	AN
TC_1102_	6.350	2.380	2.800	7°
TC_16T3_	9.525	3.970	4.400	7°

Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	TCMT110204-GM	0.4		●				●	●	●		●		●			●	●	●	●	●			
	TCMT110208-GM	0.8		●				●	●	●		●		●			●	●	●	●	●			
	TCMT16T304-GM	0.4		●				●	●	●		●		●			●	●	●	●	●			
	TCMT16T308-GM	0.8		●				●	●	●		●		●			●	●	●	●	●			
	TCMT220408-GM	0.8		●				●	●	●		●		●			●	●	●	●	●			
	TCMT220412-GM	1.2		●				●	●	●		●		●			●	●	●	●	●			
	TCMT110204-SN	0.4		●																				
	TCMT110208-SN	0.8		●																				
	TCMT16T304-SN	0.4		●																				
	TCMT16T308-SN	0.8		●																				
	TCMT220408-SN	0.8		●																				
	TCMT090204-HM	0.4						●	●	●	●	●					●	●	●	●	●			
	TCMT090208-HM	0.8						●	●	●	●	●					●	●	●	●	●			
	TCMT110204-HM	0.4						●	●	●	●	●					●	●	●	●	●			
	TCMT110208-HM	0.8						●	●	●	●	●					●	●	●	●	●			
	TCMT16T304-HM	0.4						●	●	●	●	●					●	●	●	●	●			
	TCMT16T308-HM	0.8						●	●	●	●	●					●	●	●	●	●			
	TCMT16T312-HM	1.2						●	●	●	●	●					●	●	●	●	●			
	TCMT220408-HM	0.8						●	●	●	●	●					●	●	●	●	●			
	TCMT090202-HF	0.2						●	●	●		●					●	●	●	●	●			
	TCMT090204-HF	0.4						●	●	●		●					●	●	●	●	●			
	TCMT110202-HF	0.2						●	●	●		●					●	●	●	●	●			
	TCMT110204-HF	0.4						●	●	●		●					●	●	●	●	●			
	TCMT16T304-HF	0.4						●	●	●		●					●	●	●	●	●			
	TCMT16T308-HF	0.8						●	●	●		●					●	●	●	●	●			

● Available

VC Positive 80°

Dimension (mm)				
Product code	IC	S	D1	AN
VB_1604_	9.520	4.760	4.400	5°



Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	VCMT110304-GM	0.4				●	●																	
	VCMT110308-GM	0.8				●	●																	
	VCMT160404-GM	0.4				●	●																	
	VCMT160408-GM	0.8				●	●																	
	VCMT160412-GM	1.2				●	●																	
	VCMT110304-GF	0.2												●										
	VCMT110308-GF	0.4												●										
	VCMT110308-GF	0.8												●										
	VCGX110304-AL	0.4																				●		
	VCGX110308-AL	0.8																				●		
	VCGX160402-AL	0.2																				●		
	VCGX160404-AL	0.4																				●		
	VCGX160408-AL	0.8																				●		
	VCGX160412-AL	1.2																				●		
	VCGX220520-AL	2.0																				●		
	VCGX220530-AL	3.0																				●		

● Available

VB

Positive 80°

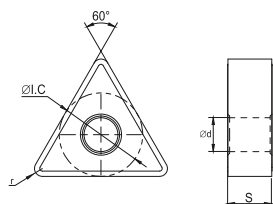
Dimension (mm)				
Product code	IC	S	D1	AN
VB_1604_	9.520	4.760	4.400	5°



Inserts	Product Code	RE	P								M						K					N		H
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	VBMT160404-PM	0.4					●																	
	VBMT160408-PM	0.8					●																	
	VBMT160412-PM	1.2					●																	
	VBMT160404-GM	0.4									●						●	●	●	●	●			
	VBMT160408-GM	0.8									●						●	●	●	●	●			
	VBMT160412-GM	1.2									●						●	●	●	●	●			
	VBMT160404-SN	0.4		●																				
	VBMT160408-SN	0.8		●																				
	VBMT160412-SN	1.2		●																				
	VBMT160404-HM	0.4							●								●	●	●	●	●			
	VBMT160408-HM	0.8							●								●	●	●	●	●			
	VBMT160412-HM	1.2							●								●	●	●	●	●			

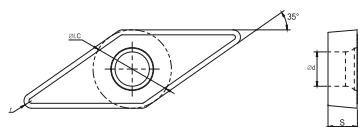
● Available

SMALL PARTS TN__



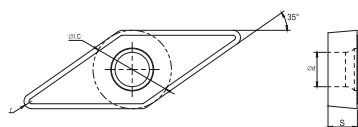
			P								M					K					N		H	
Inserts	Product Code	RE	P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	TNGG160401-FS	0.1									●	●												
	TNGG160402-FS	0.2									●	●												
	TNGG160404-FS	0.4									●	●												

SMALL PARTS VB__



			Dimension (mm)																					
			Product code		IC		S		D1		R													
			VB_11T3_		6.35		3.18		2.81		0.1-0.4													
Inserts	Product Code	RE	P								M					K			N	H				
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI
	VBGT11T301-FS	0.1									●	●												
	VBGT11T302-FS	0.2									●	●												
	VBGT11T304-FS	0.4									●	●												

SMALL PARTS VC__

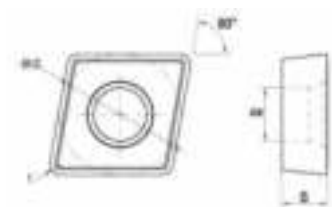


			Dimension (mm)																							
			Product code		IC		S		D1		R															
			VC_1103_		6.35		3.18		2.81		0.1-0.4															
Inserts	Product Code	RE	P								M					K			N	H						
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10TI		
	VCGT110301-FS	0.1										●	●													
	VCGT110302-FS	0.2										●	●													
	VCGT110304-FS	0.4										●	●													

● Available

SMALL PARTS

CC__



Dimension (mm)				
Product code	IC	S	D1	R
CC_09T3_	9.525	3.97	4.4	0.1
CC_09T3_	9.525	3.97	4.4	0.2
CC_09T3_	9.525	3.97	4.4	0.4

			P								M					K					N		H	
Inserts	Product Code	RE	P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	CCGT09T301R/L-UF	0.1									●	●												
	CCGT09T302R/L-UF	0.2									●	●												
	CCGT09T304R/L-UF	0.4									●	●												

SMALL PARTS

TC__

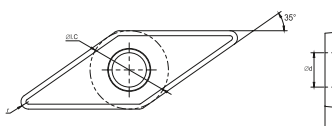


Dimension (mm)				
Product code	IC	S	D1	R
TC_1103_	6.35	3.18	2.8	0.1-0.2

																								
Inserts	Product Code	RE	P								M					K					N		H	
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220	K3310	K001	K20	H10Ti
	TCGT110301R/L-UF	0.1									●	●												
	TCGT110302R/L-UF	0.2									●	●												
												●	●											

SMALL PARTS

VC__



Dimension (mm)				
Product code	IC	S	D1	R
VC_1080_	6.35	3.18	2.81	0.1-0.4

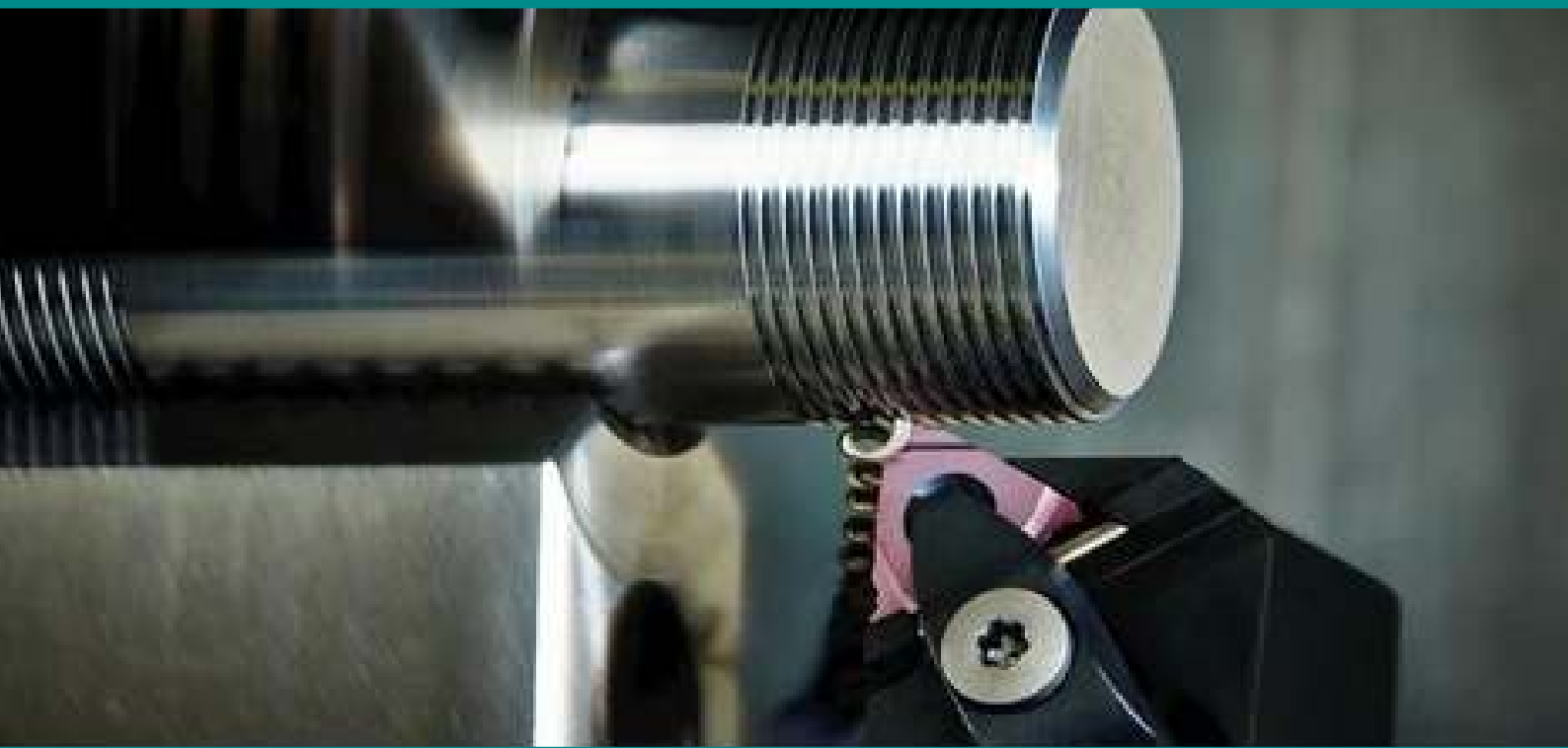
																									
Inserts	Product Code	RE	P						M						K				N		H				
			P1000	P1025	P1035	P3150	P3250	P4025	P4115	P4225	M1020	M1225	M4000	M5000	M6000	M8200	K3115	K3120	K3215	K3220		K3310	K001	K20	
	VCGT080201R/L-UF	0.1								●	●														
	VCGT080202R/L-UF	0.2								●	●														
	VCGT110301R/L-UF	0.1								●	●														
	VCGT110302R/L-UF	0.2								●	●														

● Available

Notes

[illegible]

Thread Turning Solution



Threading Insert Identification

16 E R 1.50 ISO - M1040

①

②

③

④

⑤

⑥

① Insert Size

Size	IC(mm)
08	5
11	6.35
16	9.525
22	12.7
27	15.875

③ Hand of Insert

R=Right hand
L=Left Hand
□=Left or right hand

⑤ Thread Standard

60=Partial Profile 60° Thread
55=Partial Profile 55° Thread
ISO=ISO Metric Thread
UN=American UN Thread
W=Whitworth Thread
NPT=NPT Thread
BSPT=British Standard Pipe Thread
RD=Round Thread
TR=Trapezoidal Thread
ACME=American ACME
STACME=American Stub ACME
ABUT=American buttless Thread
BBUT=British Buttress Thread
SAGE=Metric Buttress Thread
API=API Thread
BUT=API buttress thread casing
APIRD=API Round thread for piping and casing
MJ=Metric Aerospace Thread
UNJ=American Aerospace Thread

⑥ Additional Information

Insert Grade

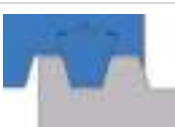
② Thread Style

E=External
I=Internal
□=E&I

④ Pitch

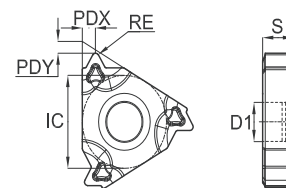
Full Profile		
mm	TPI	
0.35-5.0	72-5	
Partial Profile		
Size	mm	TPI
A	0.5-1.5	48-16
AG	0.5-3.0	48-8
G	1.75-3.0	14-8
N	3.5-5.0	7-5

Overview of Threading Inserts

Application	Thread Type	Thread Sketch	Thread Code	Pitch	Page
General Industry	Partial Profile 60° Thread		60°	0.5-5.0 (mm)	
	Partial Profile 55° Thread		55°	48-5 (TPI)	
	ISO Metric Thread		ISO	0.5-6.0 (mm)	
	American UN Thread		UN	24-8 (TPI)	
Thread for pipe fittings and couplings for gas, water and sewage	Whitworth Thread		W	19-8 (TPI)	
	NPT Thread		NPT	27-8 (TPI)	
Thread for pipe fittings and couplings for gas, steam and water lines	British Standard Pipe Thread		BSPT	28-11 (TPI)	
Thread for pipe couplings in food and Fire Fighting	Round D405 Thread		RD	8-4 (TPI)	
Mechanical Transmission	Trapezoidal Thread		TR	1.5-6.0 (mm)	
	American ACME Thread		ACME	12-4 (TPI)	
	American Stub ACME Thread		STACME	8-4 (TPI)	

Partial Profile 60°

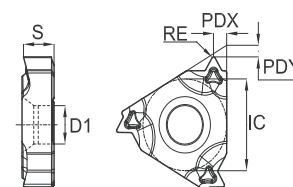
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ERA60	0.5-1.5	0.8	0.9	0.08	9.525	3.47	4	•	•	•
16 ERAG60	0.5-3.0	1.1	1.5	0.08	9.525	3.47	4	•	•	•
16 ERG60	1.75-3.0	1.2	1.7	0.25	9.525	3.47	4	•	•	•
22 ERN60	3.5-5.0	1.7	2.5	0.51	12.7	4.71	5	•	•	•

Partial Profile 60°

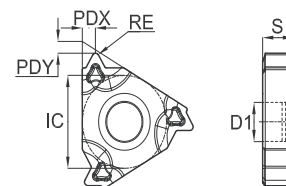
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
08 IRA60	0.5-1.5	0.7	0.6	0.7	0.08	5.00	2.25	•	•	•
11 IRA60	0.5-1.5	0.9	0.8	0.9	0.08	6.35	3.00	•	•	•
16 IRA60	0.5-1.5	0.9	0.8	0.9	0.08	9.525	3.47	•	•	•
16 IRAG60	0.5-3.0	1.5	1.1	1.5	0.08	9.525	3.47	•	•	•
16 IRG60	1.75-3.0	1.7	1.2	1.7	0.13	9.525	3.47	•	•	•
22 IRN60	3.5-5.0	2.5	1.7	2.5	0.25	12.7	4.71	•	•	•
22IRN60	3.5-5.0	2.5	1.8	2.5	0.36	12.7	4.71	•	•	•

Partial Profile 55°

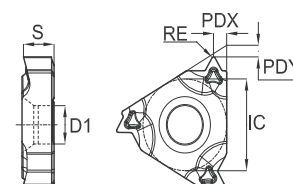
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ERA55	48-16	0.8	0.9	0.08	9.525	3.47	4	●	●	●
16 ERAG55	48-8	1.1	1.5	0.08	9.525	3.47	4	●	●	●
16 ERG55	14-8	1.2	1.7	0.21	9.525	3.47	4	●	●	●
22 ERN55	7-5	1.7	2.5	0.44	12.7	4.71	5	●	●	●

Partial Profile 55°

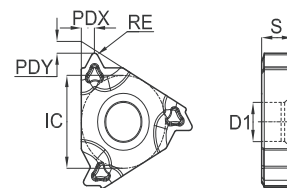
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IRA55	48-16	0.8	0.9	0.08	6.35	3.00	3.2	●	●	●
16 IRA55	48-16	0.8	0.9	0.08	9.525	3.47	4	●	●	●
16 IRAG55	48-8	1.1	1.5	0.08	9.525	3.47	4	●	●	●
16 IRG55	14-8	1.2	1.7	0.21	9.525	3.47	4	●	●	●
22 IRN55	7-5	1.7	2.5	0.44	12.7	4.71	5	●	●	●

Metric 60°

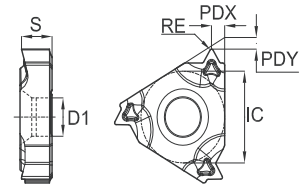
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER1.00ISO	1.00	0.8	0.7	0.14	9.525	3.47	4	•	•	•
16 ER1.25ISO	1.25	0.8	0.9	0.18	9.525	3.47	4	•	•	•
16 ER1.50ISO	1.50	0.8	1.0	0.22	9.525	3.47	4	•	•	•
16 ER1.75ISO	1.75	1.2	1.2	0.25	9.525	3.47	4	•	•	•
16 ER2.00ISO	2.00	1.2	1.3	0.29	9.525	3.47	4	•	•	•
16 ER2.50ISO	2.50	1.2	1.5	0.36	9.525	3.47	4	•	•	•
16 ER3.00ISO	3.00	1.2	1.5	0.43	9.525	3.47	4	•	•	•
22 ER3.50ISO	3.50	1.6	2.3	0.45	12.7	4.71	5	•	•	•
22 ER4.00ISO	4.00	1.6	2.3	0.52	12.7	4.71	5	•	•	•
22 ER4.50ISO	4.50	1.7	2.4	0.58	12.7	4.71	5	•	•	•
22 ER5.00ISO	5.00	1.7	2.5	0.63	12.7	4.71	5	•	•	•
22 ER5.50ISO	5.50	1.9	2.7	0.72	12.7	4.71	5	•	•	•
22 ER6.00ISO	6.00	1.9	2.7	0.78	12.7	4.71	5	•	•	•
16EL1.50ISO	1.50	0.8	1.0	0.22	9.525	3.47	4	•	•	•
16EL2.00ISO	2.00	1.2	1.3	0.29	9.525	3.47	4	•	•	•
16ER0.50ISO	0.50	0.6	0.5	0.1	9.525	3.47	4	•	•	•
16ER1.00ISO	1.00	0.7	0.6	0.11	9.525	3.47	4	•	•	•

Metric 60°

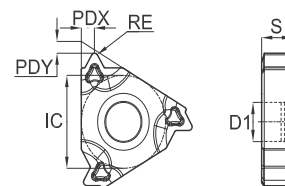
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IR1.00ISO	1.00	0.8	0.7	0.07	6.35	3.00	3.2	•	•	•
11 IR1.25ISO	1.25	0.8	0.9	0.09	6.35	3.00	3.2	•	•	•
11 IR1.50ISO	1.50	0.8	1.0	0.11	6.35	3.00	3.2	•	•	•
11 IR1.75ISO	1.75	0.9	1.1	0.13	6.35	3.00	3.2	•	•	•
11 IR2.00ISO	2.00	0.9	1.1	0.15	6.35	3.00	3.2	•	•	•
16 IR1.00ISO	1.00	0.8	0.7	0.07	9.525	3.47	4	•	•	•
16 IR1.25ISO	1.25	0.8	0.9	0.09	9.525	3.47	4	•	•	•
16 IR1.50ISO	1.50	0.8	1.0	0.11	9.525	3.47	4	•	•	•
16 IR1.75ISO	1.75	1.2	1.2	0.13	9.525	3.47	4	•	•	•
16 IR2.00ISO	2.00	1.2	1.3	0.15	9.525	3.47	4	•	•	•
16 IR2.50ISO	2.50	1.2	1.5	0.18	9.525	3.47	4	•	•	•
16 IR3.00ISO	3.00	1.2	1.5	0.22	9.525	3.47	4	•	•	•
22 IR3.50ISO	3.50	1.6	2.3	0.22	12.7	4.71	5	•	•	•
22 IR4.00ISO	4.00	1.6	2.3	0.25	12.7	4.71	5	•	•	•
22 IR4.50ISO	4.50	1.6	2.4	0.28	12.7	4.71	5	•	•	•
22 IR5.00ISO	5.00	1.6	2.3	0.32	12.7	4.71	5	•	•	•
22 IR5.50ISO	5.50	1.6	2.3	0.36	12.7	4.71	5	•	•	•
22 IR6.00ISO	6.00	1.6	2.4	0.39	12.7	4.71	5	•	•	•
11IR1.50ISO	1.50	0.8	1.0	0.109	6.35	3.00	3.2	•	•	•
16IL1.50ISO	1.50	0.8	1.0	0.11	9.525	3.47	4	•	•	•

UN 60°

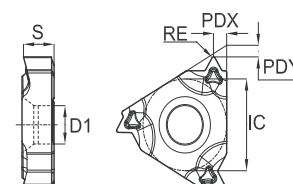
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER24UN	24	0.8	0.8	0.15	9.525	3.47	4	•	•	•
16 ER20UN	20	0.8	0.9	0.18	9.525	3.47	4	•	•	•
16 ER18UN	18	0.8	1.0	0.20	9.525	3.47	4	•	•	•
16 ER16UN	16	0.9	1.1	0.23	9.525	3.47	4	•	•	•
16 ER14UN	14	1.2	1.5	0.26	9.525	3.47	4	•	•	•
16 ER12UN	12	1.2	1.5	0.31	9.525	3.47	4	•	•	•
16 ER9UN	9	1.2	1.7	0.42	9.525	3.47	4	•	•	•
16 ER8UN	8	1.3	1.7	0.46	9.525	3.47	4	•	•	•
16ER10UN	10	1.2	1.6	0.41	9.525	3.47	4	•	•	•

UN 60°

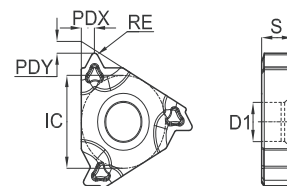
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IR20UN	20	0.8	0.9	0.09	6.35	3.00	3.2	•	•	•
11 IR18UN	18	0.8	1.0	0.10	6.35	3.00	3.2	•	•	•
16 IR24UN	24	0.8	0.8	0.08	9.525	3.47	4	•	•	•
16 IR20UN	20	0.8	0.9	0.09	9.525	3.47	4	•	•	•
16 IR18UN	18	0.8	1.0	0.10	9.525	3.47	4	•	•	•
16 IR16UN	16	0.9	1.1	0.12	9.525	3.47	4	•	•	•
16 IR14UN	14	1.2	1.5	0.13	9.525	3.47	4	•	•	•
16 IR12UN	12	1.2	1.5	0.16	9.525	3.47	4	•	•	•
16 IR8UN	8	1.3	1.7	0.23	9.525	3.47	4	•	•	•
16IR10UN	10	1.1	1.5	0.183	9.525	3.47	4	•	•	•

Whitworth 55°

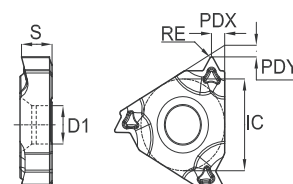
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER19W	19	0.8	1.0	0.17	9.525	3.47	4	•	•	•
16 ER18w	18	0.8	1.0	0.18	9.525	3.47	4	•	•	•
16 ER16W	16	0.9	1.1	0.20	9.525	3.47	4	•	•	•
16 ER14W	14	1.2	1.5	0.24	9.525	3.47	4	•	•	•
16 ER12W	12	1.2	1.5	0.28	9.525	3.47	4	•	•	•
16 ER11W	11	1.2	1.5	0.30	9.525	3.47	4	•	•	•
16 ER10W	10	1.1	1.5	0.34	9.525	3.47	4	•	•	•

Whitworth 55°

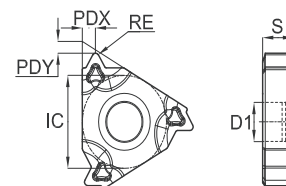
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IR19W	19	0.9	1.1	0.19	6.35	3.00	3.2	•	•	•
11 IR14W	14	0.9	1.1	0.27	6.35	3.00	3.2	•	•	•
16 IR19W	19	0.8	1.0	0.17	9.525	3.47	4	•	•	•
16 IR18W	18	0.8	1.0	0.18	9.525	3.47	4	•	•	•
16 IR16W	16	0.9	1.1	0.2	9.525	3.47	4	•	•	•
16 IR14W	14	1.2	1.5	0.24	9.525	3.47	4	•	•	•
16 IR12W	12	1.2	1.5	0.28	9.525	3.47	4	•	•	•
16 IR11W	11	1.2	1.5	0.30	9.525	3.47	4	•	•	•

NPT 60°

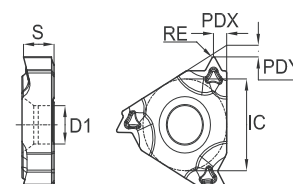
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER27NPT	27	0.7	0.8	0.13	9.525	3.47	4	●	●	●
16 ER18NPT	18	0.8	1.0	0.20	9.525	3.47	4	●	●	●
16 ER14NPT	14	1.2	1.5	0.22	9.525	3.47	4	●	●	●
16 ER11.5NPT	11.5	1.2	1.5	0.25	9.525	3.47	4	●	●	●
16 ER8NPT	8	1.3	1.8	0.30	9.525	3.47	4	●	●	●

NPT 60°

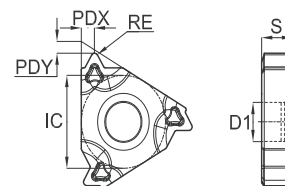
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IR18NPT	18	0.8	1.0	0.20	6.35	3.00	3.2	●	●	●
16 IR27NPT	27	0.7	0.8	0.13	9.525	3.47	4	●	●	●
16 IR18NPT	18	0.8	1.0	0.20	9.525	3.47	4	●	●	●
16 IR14NPT	14	1.2	1.5	0.22	9.525	3.47	4	●	●	●
16 IR11.5NPT	11.5	1.2	1.5	0.25	9.525	3.47	4	●	●	●

BSPT 55°

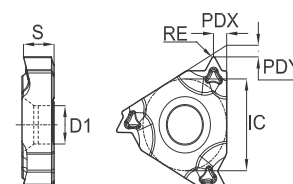
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER28BSPT	28	0.7	0.8	0.11	9.525	3.47	4	•	•	•
16 ER19BSPT	19	0.8	1.0	0.17	9.525	3.47	4	•	•	•
16 ER14BSPT	14	1.2	1.5	0.24	9.525	3.47	4	•	•	•
16 ER11BSPT	11	1.2	1.5	0.30	9.525	3.47	4	•	•	•

BSPT 55°

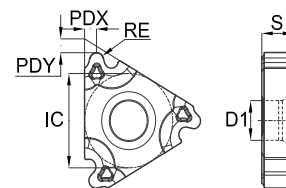
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
11 IR19BSPT	19	0.8	1.0	0.18	6.35	3.00	3.2	•	•	•
11 IR14BSPT	14	0.9	1.1	0.24	6.35	3.00	3.2	•	•	•
16 IR28BSPT	28	0.7	0.8	0.11	9.525	3.47	4	•	•	•
16 IR19BSPT	19	0.8	1.0	0.17	9.525	3.47	4	•	•	•
16 IR14BSPT	14	1.2	1.5	0.24	9.525	3.47	4	•	•	•
16 IR11BSPT	11	1.2	1.5	0.30	9.525	3.47	4	•	•	•
16IR11BSPT	11	1.2	1.5	0.32	9.525	3.47	4	•	•	•

RD

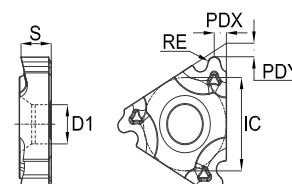
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 ER8RD-TC	8	1.4	1.3	0.75	9.525	3.47	4		•	•
16 ER6RD-TC	6	1.4	1.5	1.00	9.525	3.47	4		•	•

RD

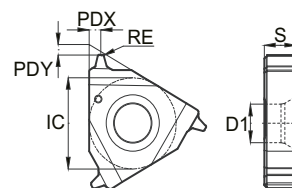
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16 IR8RD-TC	8	1.4	1.3	0.70	9.525	3.47	4		•	•
16 IR6RD-TC	6	1.4	1.5	0.936	9.525	3.47	4		•	•

TR

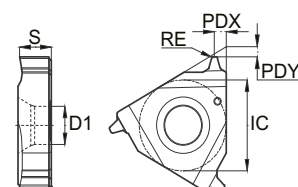
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16ER1.5TR	1.50	1.0	1.1	0.1	9.525	3.47	4	•	•	•
16ER2.0TR	2.00	1.1	1.3	0.18	9.525	3.47	4	•	•	•
16ER3.0TR	3.00	1.2	1.5	0.11	9.525	3.47	4	•	•	•
22ER4.0TR	4.00	1.7	1.9	0.25	12.7	4.71	5	•	•	•
22ER5.0TR	5.00	1.9	2.1	0.25	12.7	4.71	5	•	•	•
22ER6.0TR	6.00	1.9	2.1	0.25	12.7	4.71	5	•	•	•

TR

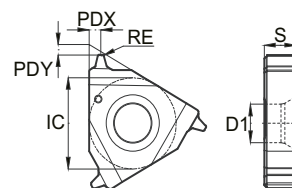
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16IR1.5TR	1.50	1.0	1.1	0.1	9.525	3.47	4	•	•	•
16IR2.0TR	2.00	1.0	1.3	0.18	9.525	3.47	4	•	•	•
16IR3.0TR	3.00	1.1	1.3	0.15	9.525	3.47	4	•	•	•
22IR4.0TR	4.00	1.6	1.9	0.25	12.7	4.71	5	•	•	•
22IR5.0TR	5.00	1.84	2.2	0.25	12.7	4.71	5	•	•	•
22IR6.0TR	6.00	1.9	2.2	0.25	12.7	4.71	5	•	•	•

ACME

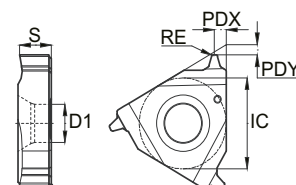
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16ER8ACME	8	1.3	1.5	0.15	9.525	3.47	4		•	•
16ER10ACME	10	1.1	1	0.1	9.525	3.47	4		•	•
16ER12ACME	12	1.1	1.3	0.12	9.525	3.47	4		•	•
22ER5ACME	5	2	2.2	0.12	12.7	4.71	5		•	•
22ER6ACME	6	1.65	1.75	0.08	12.7	4.71	5		•	•
27ER4ACME	4	2.4	2.7	0.15	15.875	6.15	6.16		•	•

ACME

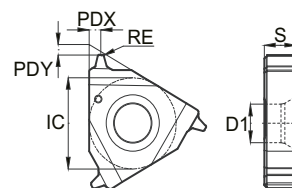
Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16IR6ACME	6	1.6	1.8	0.11	9.525	3.47	4		•	•
16IR12ACME	12	1.1	1.3	0.08	9.525	3.47	4		•	•
22IR5ACME	5	2	2.2	0.12	12.7	4.71	5		•	•
22IR6ACME	6	1.65	1.8	0.11	12.7	4.71	5		•	•
27IR4ACME	4	2.4	2.7	0.15	15.875	6.15	6.16		•	•

STACME

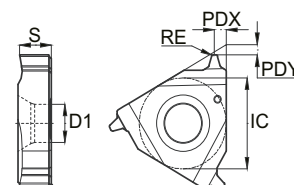
External



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16ER6STACME	6	1.5	1.5	0.11	9.525	3.47	4		•	•
16ER8STACME	8	1.4	1.4	0.1	9.525	3.47	4		•	•

STACME

Internal



Ordering Code	Pitch (TPI)	Dimension (mm)						P1020	M1040	M1225
		PDY	PDX	RE	IC	S	D1			
16IR6STACME	6	1.8	1.8	0.12	9.525	3.47	4		•	•
16IR8STACME	8	1.2	1.1	0.1	9.525	3.47	4		•	•
22IR4STACME	4	2.3	2.4	0.27	12.7	4.71	5		•	•
22IR6STACME	6	1.7	1.8	0.12	12.7	4.71	5		•	•

Cutting Passes and Radial Infeed Recommendation Table

► ISO Metric / External

Pitch (mm)	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
Total infeed (mm)	0.65	0.79	0.95	1.11	1.26	1.56	1.88	2.18	2.49	2.79	3.10	3.39	3.70
Total passes	5	6	6	8	8	10	12	12	14	14	14	16	16
No. of infeed	Radial infeed per pass (mm)												
1	0.16	0.17	0.20	0.17	0.20	0.20	0.20	0.24	0.24	0.27	0.29	0.27	0.30
2	0.15	0.15	0.19	0.17	0.19	0.19	0.19	0.23	0.22	0.25	0.28	0.26	0.29
3	0.14	0.14	0.18	0.16	0.18	0.18	0.19	0.22	0.22	0.24	0.27	0.26	0.29
4	0.12	0.13	0.16	0.15	0.17	0.17	0.18	0.21	0.21	0.23	0.26	0.25	0.28
5	0.08	0.12	0.14	0.14	0.16	0.17	0.17	0.21	0.21	0.23	0.25	0.25	0.27
6		0.08	0.08	0.13	0.15	0.16	0.17	0.20	0.20	0.22	0.25	0.24	0.26
7				0.11	0.13	0.15	0.16	0.18	0.19	0.21	0.24	0.23	0.26
8				0.08	0.08	0.14	0.15	0.17	0.18	0.20	0.23	0.23	0.25
9						0.12	0.14	0.16	0.17	0.19	0.22	0.22	0.24
10						0.08	0.13	0.15	0.16	0.18	0.20	0.21	0.23
11							0.12	0.13	0.15	0.17	0.19	0.20	0.22
12							0.08	0.08	0.14	0.16	0.17	0.19	0.20
13									0.12	0.14	0.15	0.18	0.19
14									0.18	0.10	0.10	0.16	0.17
15												0.14	0.15
16												0.10	0.10

► ISO Metric / Internal

Pitch (mm)	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
Total infeed (mm)	0.63	0.77	0.92	1.05	1.20	1.48	1.78	2.03	2.31	2.61	2.88	3.19	3.44
Total passes	5	6	6	8	8	10	12	12	13	14	14	16	16
No. of infeed	Radial infeed per pass (mm)												
1	0.15	0.16	0.20	0.16	0.19	0.19	0.19	0.22	0.21	0.23	0.26	0.25	0.28
2	0.14	0.15	0.18	0.15	0.18	0.18	0.18	0.21	0.21	0.23	0.26	0.25	0.27
3	0.13	0.14	0.17	0.15	0.17	0.17	0.18	0.20	0.20	0.22	0.25	0.24	0.26
4	0.12	0.13	0.15	0.14	0.16	0.17	0.17	0.20	0.19	0.22	0.24	0.24	0.26
5	0.08	0.11	0.13	0.13	0.15	0.16	0.16	0.19	0.19	0.21	0.24	0.23	0.26
6		0.08	0.08	0.12	0.14	0.15	0.16	0.18	0.18	0.20	0.23	0.22	0.24
7				0.11	0.12	0.14	0.15	0.17	0.18	0.20	0.22	0.22	0.24
8				0.08	0.08	0.13	0.14	0.16	0.17	0.19	0.21	0.22	0.23
9						0.12	0.14	0.15	0.16	0.18	0.20	0.20	0.22
10						0.08	0.12	0.14	0.15	0.17	0.19	0.20	0.21
11							0.11	0.12	0.14	0.16	0.18	0.19	0.20
12							0.08	0.08	0.13	0.15	0.16	0.18	0.19
13									0.12	0.14	0.15	0.17	0.18
14									0.08	0.10	0.10	0.16	0.16
15												0.14	0.15
16												0.10	0.10

Cutting Passes and Radial Infeed Recommendation Table

► UN / External

Pitch (TPI)	24	20	18	16	14	12	10	8
Total infeed (mm)	0.70	0.84	0.92	1.04	1.17	1.35	1.62	2.02
Total passes	5	6	6	7	8	8	10	12
No. of infeed	Radial infeed per pass (mm)							
1	0.18	0.18	0.20	0.19	0.18	0.22	0.21	0.22
2	0.16	0.17	0.18	0.18	0.18	0.21	0.20	0.21
3	0.15	0.15	0.17	0.17	0.17	0.20	0.19	0.20
4	0.13	0.14	0.15	0.16	0.16	0.19	0.18	0.20
5	0.08	0.12	0.13	0.14	0.15	0.17	0.17	0.19
6		0.08	0.08	0.12	0.14	0.15	0.16	0.18
7				0.08	0.12	0.13	0.15	0.17
8					0.08	0.08	0.14	0.16
9							0.12	0.15
10							0.08	0.14
11								0.12
12								0.08

► UN / Internal

Pitch (TPI)	24	20	18	16	14	12	10	8
Total infeed (mm)	0.66	0.78	0.86	0.96	1.07	1.25	1.48	2.03
Total passes	5	6	6	7	8	8	10	12
No. of infeed	Radial infeed per pass (mm)							
1	0.16	0.16	0.18	0.17	0.16	0.20	0.19	0.22
2	0.15	0.16	0.17	0.16	0.16	0.19	0.18	0.21
3	0.14	0.14	0.16	0.15	0.15	0.18	0.17	0.20
4	0.12	0.13	0.14	0.14	0.14	0.17	0.17	0.20
5	0.08	0.12	0.13	0.13	0.14	0.16	0.16	0.19
6		0.08	0.08	0.12	0.13	0.14	0.15	0.18
7				0.08	0.11	0.13	0.14	0.17
8					0.08	0.08	0.13	0.16
9							0.12	0.15
10							0.08	0.14
11								0.12
12								0.08

Cutting Passes and Radial Infeed Recommendation Table

► Whitworth / External& Internal

Pitch (TPI)	19	18	16	14	12	11	10	8
Total infeed (mm)	0.90	0.97	1.08	1.20	1.42	1.51	1.70	2.10
Total passes	6	7	8	8	8	9	10	12
No. of infeed	Radial infeed per pass (mm)							
1	0.19	0.17	0.17	0.19	0.23	0.22	0.22	0.23
2	0.18	0.16	0.16	0.18	0.22	0.21	0.21	0.22
3	0.17	0.16	0.15	0.17	0.21	0.20	0.20	0.21
4	0.15	0.15	0.15	0.16	0.19	0.19	0.19	0.21
5	0.13	0.13	0.14	0.15	0.18	0.18	0.18	0.20
6	0.08	0.12	0.13	0.14	0.16	0.16	0.17	0.19
7		0.08	0.11	0.12	0.14	0.15	0.16	0.18
8			0.08	0.08	0.08	0.13	0.15	0.17
9						0.08	0.13	0.16
10							0.08	0.14
11								0.12
12								0.08

► NPT / External& Internal

Pitch (TPI)	27	18	14	11.5	8
Total infeed (mm)	0.76	1.11	1.42	1.73	2.48
Total passes	6	8	10	12	15
No. of infeed	Radial infeed per pass (mm)				
1	0.15	0.17	0.18	0.18	0.21
2	0.15	0.17	0.17	0.17	0.21
3	0.14	0.16	0.16	0.17	0.20
4	0.13	0.15	0.16	0.16	0.20
5	0.11	0.14	0.15	0.16	0.19
6	0.08	0.13	0.14	0.15	0.18
7		0.11	0.14	0.15	0.18
8		0.08	0.13	0.14	0.17
9			0.11	0.13	0.17
10			0.08	0.12	0.16
11				0.11	0.15
12				0.08	0.14
13					0.13
14					0.11
15					0.08

Cutting Passes and Radial Infeed Recommendation Table

► BSPT / External & Internal

Pitch (TPI)	28	19	14	11
Total infeed (mm)	0.62	0.90	1.20	1.51
Total passes	5	6	8	9
No. of infeed	Radial infeed per pass (mm)			
1	0.15	0.19	0.19	0.22
2	0.14	0.18	0.18	0.21
3	0.13	0.17	0.17	0.20
4	0.12	0.15	0.16	0.19
5	0.08	0.13	0.15	0.18
6		0.08	0.14	0.16
7			0.12	0.15
8			0.08	0.13
9				0.08

► Round / External

Pitch (TPI)	10	8	6	4
Total infeed (mm)	1.30	1.63	2.17	2.95
Total passes	8	10	12	14
No. of infeed	Radial infeed per pass (mm)			
1	0.21	0.21	0.24	0.30
2	0.20	0.20	0.23	0.29
3	0.19	0.19	0.22	0.28
4	0.18	0.19	0.21	0.27
5	0.16	0.18	0.20	0.26
6	0.15	0.17	0.19	0.25
7	0.13	0.15	0.18	0.24
8	0.08	0.14	0.17	0.23
9		0.12	0.16	0.22
10		0.08	0.15	0.21
11			0.13	0.19
12			0.08	0.18
13				0.15
14				0.10

Cutting Passes and Radial Infeed Recommendation Table

► Round/ Internal

Pitch (TPI)	10	8	6	4
Total infeed (mm)	1.34	1.64	2.18	2.98
Total passes	8	10	12	14
No. of infeed	Radial infeed per pass (mm)			
1	0.22	0.21	0.24	0.30
2	0.21	0.20	0.23	0.29
3	0.20	0.20	0.22	0.29
4	0.18	0.19	0.21	0.28
5	0.17	0.18	0.21	0.27
6	0.15	0.17	0.20	0.26
7	0.13	0.16	0.19	0.25
8	0.08	0.14	0.17	0.24
9		0.12	0.16	0.23
10		0.08	0.15	0.21
11			0.13	0.20
12			0.08	0.18
13				0.16
14				0.10

Cutting Passes and Radial Infeed Recommendation Table

► TR/ External& Internal

Pitch (mm)	1.5	2	3	1.75	2.00	2.50	3.00	3.50
Total infeed (mm)	1.02	1.36	1.27	1.11	1.26	1.56	1.88	2.18
Total passes	6	8	12	13	14	16	16	19
No. of infeed	Radial infeed per pass (mm)							
1	0.22	0.22	0.20	0.24	0.27	0.29	0.34	0.32
2	0.21	0.21	0.19	0.23	0.27	0.29	0.33	0.31
3	0.19	0.20	0.18	0.22	0.26	0.28	0.32	0.31
4	0.17	0.19	0.18	0.22	0.25	0.27	0.32	0.30
5	0.14	0.17	0.17	0.21	0.24	0.27	0.31	0.29
6	0.08	0.16	0.17	0.20	0.23	0.26	0.30	0.29
7		0.13	0.16	0.19	0.22	0.25	0.29	0.28
8		0.08	0.15	0.18	0.21	0.24	0.28	0.27
9			0.14	0.17	0.20	0.23	0.26	0.26
10			0.13	0.16	0.19	0.22	0.25	0.25
11			0.11	0.14	0.17	0.21	0.24	0.25
12			0.08	0.13	0.16	0.20	0.22	0.24
13				0.08	0.13	0.19	0.21	0.23
14					0.08	0.17	0.19	0.22
15						0.15	0.16	0.20
16						0.10	0.10	0.19
17								0.17
18								0.15
19								0.10

Cutting Passes and Radial Infeed Recommendation Table

► ACME / External

Pitch (TPI)	16	14	12	10	8	6	5	4	3
Total infeed (mm)	0.99	1.10	1.26	1.60	1.91	2.46	2.87	3.51	4.57
Total passes	6	7	8	10	12	13	14	16	19
No. of infeed	Radial infeed per pass (mm)								
1	0.22	0.20	0.20	0.20	0.20	0.24	0.26	0.28	0.31
2	0.20	0.19	0.19	0.20	0.20	0.23	0.25	0.28	0.31
3	0.19	0.18	0.18	0.19	0.19	0.23	0.25	0.27	0.30
4	0.17	0.17	0.17	0.18	0.18	0.22	0.24	0.26	0.30
5	0.14	0.15	0.16	0.17	0.18	0.21	0.23	0.26	0.29
6	0.08	0.13	0.15	0.16	0.17	0.20	0.23	0.25	0.28
7		0.08	0.13	0.15	0.16	0.20	0.22	0.24	0.28
8			0.08	0.14	0.15	0.19	0.21	0.23	0.27
9				0.12	0.14	0.18	0.20	0.22	0.26
10				0.08	0.13	0.17	0.19	0.22	0.25
11					0.12	0.16	0.18	0.21	0.24
12					0.08	0.14	0.16	0.19	0.23
13						0.10	0.14	0.18	0.22
14							0.10	0.17	0.21
15								0.15	0.20
16								0.10	0.19
17									0.17
18									0.15
19									0.1

Cutting Passes and Radial Infeed Recommendation Table

► ACME / Internal

Pitch (TPI)	16	14	12	10	8	6	5	4	3
Total infeed (mm)	1.02	1.14	1.30	1.64	1.95	2.48	2.90	3.54	4.56
Total passes	6	7	8	10	12	13	14	16	19
No. of infeed	Radial infeed per pass (mm)								
1	0.22	0.21	0.21	0.21	0.21	0.24	0.26	0.29	0.31
2	0.21	0.20	0.20	0.20	0.20	0.23	0.26	0.28	0.31
3	0.19	0.19	0.19	0.20	0.20	0.23	0.25	0.27	0.30
4	0.17	0.17	0.18	0.19	0.19	0.22	0.24	0.27	0.29
5	0.14	0.16	0.16	0.18	0.18	0.21	0.24	0.26	0.29
6	0.08	0.13	0.15	0.17	0.17	0.21	0.23	0.25	0.28
7		0.08	0.13	0.16	0.17	0.20	0.22	0.24	0.27
8			0.08	0.14	0.16	0.19	0.21	0.23	0.27
9				0.12	0.15	0.18	0.20	0.23	0.26
10				0.08	0.13	0.17	0.19	0.22	0.25
11					0.12	0.16	0.18	0.21	0.24
12					0.08	0.14	0.16	0.20	0.23
13						0.10	0.15	0.18	0.22
14							0.10	0.17	0.21
15								0.15	0.20
16								0.10	0.19
17									0.17
18									0.15
19									0.1

► STACME / External& Internal

Pitch (TPI)	16	14	12	19	8	6	5	4	3
Total infeed (mm)	0.70	0.77	0.87	1.13	1.33	1.64	1.90	2.27	2.90
Total passes	5	5	6	7	8	9	10	11	15
No. of infeed	Radial infeed per pass (mm)								
1	0.18	0.20	0.18	0.21	0.22	0.24	0.25	0.24	0.25
2	0.16	0.18	0.17	0.20	0.21	0.23	0.24	0.24	0.24
3	0.15	0.17	0.16	0.19	0.19	0.22	0.23	0.23	0.24
4	0.13	0.14	0.15	0.17	0.18	0.21	0.22	0.22	0.23
5	0.08	0.08	0.13	0.15	0.17	0.19	0.21	0.21	0.22
6			0.08	0.13	0.15	0.18	0.19	0.20	0.22
7				0.08	0.13	0.16	0.18	0.19	0.21
8					0.08	0.14	0.16	0.18	0.20
9						0.08	0.14	0.17	0.19
10							0.09	0.16	0.18
11								0.14	0.17
12								0.09	0.16
13									0.15
14									0.13
15									0.09

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Grooving & Parting Solution



Grooving Insert Identification

QC	M	B	40	04	N	-	GM
①	②	③	④	⑤	⑥		⑦

① Insert Family

1. QC
2. QF
3. QP

② Tolerance

1. M
2. G

③ Sitting Type

1. B
2. X

④ Insert Width

- 10=1mm
- 20=2mm
- 25=2.5mm
- 30=3mm
- 40=4mm
- 50=5mm
- 60=6mm
- 80=8mm

⑤ Corner Radius

- 02=0.2mm
- 03=0.3mm
- 04=0.4mm
- 08=0.8mm

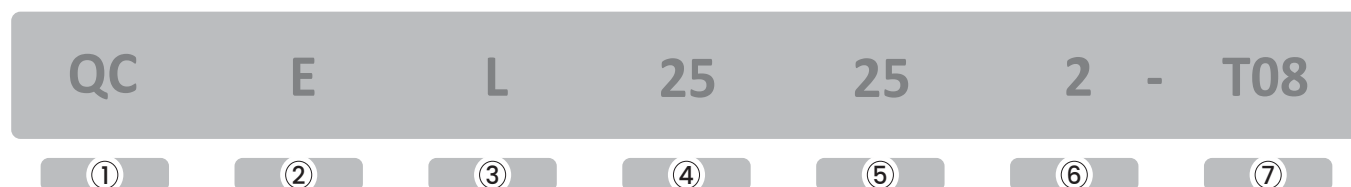
⑥ Type of Hand

- L=Left Hand
- R=Right Hand
- N=Nutral

⑦ Geomatic

1. GM
2. GF

External Grooving Holder Identification



① Insert Family

- 1. QC
- 2. QF
- 3. QP

② Type

- E= External
- F= Face Grooving

③ Type Of Hand

- L=Left Hand
- R=Right Hand

④ Shank Height

- 16=16mm
- 20=20mm
- 25=25mm
- 32=32mm
- 40=40mm

⑤ Shank Width

- 16=16mm
- 20=20mm
- 25=25mm
- 32=32mm
- 40=40mm

⑥ Insert Size

- 2=2mm
- 3=3mm
- 4=4mm
- 5=5mm
- 6=6mm
- 8=8mm

⑦ T-Max

- 08=8mm
- 10=10mm
- 14=14mm
- 18=18mm
- 23=23mm

Internal Grooving Holder Identification

S25	QC	I	L	2	T08
①	②	③	④	⑤	⑥
① Holder Dia 16=16mm 20=20mm 25=25mm 32=32mm 40=40mm	② Type of Insert 1. QC 2. QF 3. QP	③ Type of Holder I= Internal E= External	④ Type of Hand L= Left hand r= Right hand		
	⑤ Insert Size 2= 2mm 2.5= 2.5mm 3= 3mm 4= 4mm		⑥ T-Max 08=8mm 10=10mm 14=14mm 18=18mm 23=23mm		

Internal Grooving Holder Identification

QC	F	L	25	25	S	035-070	4	T08
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Insert Family	② Type	③ Type Of Hand	④ Shank Height	⑤ Shank Width
1. QC 2. QF 3. QP	E= External F= Face Grooving	L=Left Hand R=Right Hand	16=16mm 20=20mm 25=25mm 32=32mm 40=40mm	16=16mm 20=20mm 25=25mm 32=32mm 40=40mm

⑥ Type	⑦ Dia Range	⑧ Insert Size	⑨ T-Max
S= Horizontal type L= Vertical Type	035-070 = Dmin-35mm Dmax-70mm	2= 2mm 2.5= 2.5mm 3= 3mm 4= 4mm	08=8mm 10=10mm 14=14mm 18=18mm 23=23mm

QCMB_ _

2 edge Grooving insert

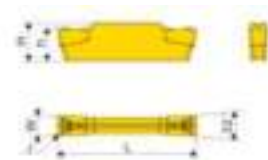


Image	Insert Code	Dimension					P			M			K			N	
		W	L	r	h	H	P1015	P1025	P1035	M1220	M1225	M1230	K3110	K3115	K3120	K10	K20
	QCMB 2002N GM	2	16	0.2	3.5	3.98		•			•			•			
	QCMB 3004N GM	3	21	0.4	4.8	5.63		•			•			•		•	
	QCMB 4004N GM	4	21	0.4	4.8	5.88		•			•			•		•	
	QCMB 5008N GM	5	26	0.8	5.85	7.05		•			•			•			
	QCMB 5004N GM	5	26	0.4	5.85	7.05		•			•			•			
	QCMB 6008N GM	6	26	0.8	5.85	7.26								•			

QFMB_ _

2 edge Grooving insert

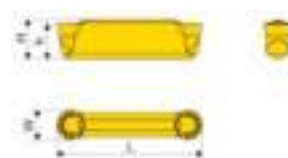


Image	Insert Code	Dimension					P			M			K			N	
		W	L	r	h	H	P1015	P1025	P1035	M1220	M1225	M1230	K3110	K3115	K3120	K10	K20
	QFMB 3004NK GM	3.12	20.05	0.4	4.16	4.84		•						•		•	
	QFMB 3000NK GM	3.12	20.05		4.16	4.84		•		•				•		•	
	QFMB 4008NK GM	4.14	20.10	0.8	4.9	5.75		•						•		•	
	QFMB 4000NK GM	4.14	20.10		4.9	5.75		•						•		•	
	QFMB 5008NK GM	5.05	25.15	0.8	5.95	6.75		•						•		•	
	QFMB 5000NK GM	5.05	25.15		5.95	6.75		•						•		•	
	QFMB 6008NK GM	6.00	30.20	0.8	5.66	6.95								•			
	QFMB 6000NK GM	6.00	30.20		5.66	6.95								•			

QPMB_ _

2 Edge Grooving Insert

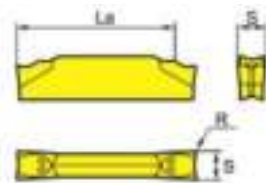


Image	Insert Code	Dimension			P			M			K			N	
		W	L	r	P1015	P1025	P1035	M1220	M1225	M1230	K3110	K3115	K3120	K10	K20
	QPMB 2502N MT	2.5	17	0.2					•						
	QPMB 3003N MT	3	17	0.3					•			•			•
	QPMB 4004N MT	4	22	0.4					•			•			•
	QPMB 5004N MT	5	22	0.4					•			•			
	QPMB 6008N MT	6	22	0.8					•			•			

QCMB_ _

External Grooving Holder



Code	Dimension					Screw	Wrench
	W	T-Max	S	B	L		
QCEL/R2020 2T08	2	8	20	20	125	GSM5-20	LK04070
QCEL/R2020 2T14	2	14	20	20	125	GSM5-20	LK04070
QCEL/R2525 2T08	2	8	25	25	150	GSM5-25	LK04070
QCEL/R2525 2T14	2	14	25	25	150	GSM5-25	LK04070
QCEL/R2020 2.5T14	2.5	14	20	20	125	GSM5-20	LK04070
QCEL/R2525 2.5T08	2.5	8	25	25	150	GSM5-25	LK04070
QCEL/R2525 2.5T14	2.5	14	25	25	150	GSM5-25	LK04070
QCEL/R2020 3T10	3	10	20	20	125	GSM6-20	LK05080
QCEL/R2020 3T18	3	18	20	20	125	GSM6-20	LK05080
QCEL/R2525 3T10	3	10	25	25	150	GSM6-25	LK05080
QCEL/R2525 3T18	3	18	25	25	150	GSM6-25	LK05080
QCEL/R2020 4T10	4	10	20	20	125	GSM6-20	LK05080
QCEL/R2020 4T18	4	18	20	20	125	GSM6-20	LK05080
QCEL/R2525 4T10	4	10	25	25	150	GSM6-25	LK05080
QCEL/R2525 4T18	4	18	25	25	150	GSM6-25	LK05080
QCEL/R3232 4T23	4	23	32	32	170	GSM6-25	LK05080
QCEL/R2020 5T10	5	10	20	20	125	GSM6-20	LK05080
QCEL/R2020 5T18	5	18	20	20	125	GSM6-20	LK05080
QCEL/R2525 5T10	5	10	25	25	125	GSM8-25	LK06090
QCEL/R2525 5T23	5	23	25	25	125	GSM8-25	LK06090
QCEL/R3232 5T23	5	23	32	32	170	GSM8-30	LK06090
QCEL/R2020 6T15	6	15	20	20	125	GSM8-20	LK06090
QCEL/R2020 6T23	6	23	20	20	125	GSM8-20	LK06090
QCEL/R2525 6T15	6	15	25	25	150	GSM8-25	LK06090
QCEL/R2525 6T23	6	23	25	25	150	GSM8-25	LK06090
QCEL/R3232 6T23	6	23	32	32	170	GSM8-30	LK06090

QFMB_ _

External Grooving Holder



Code	Dimension					Screw	Wrench
	W	T-Max	S	B	L		
QFEL/R2020 2T08	2	8	20	20	125	GSM5-20	LK04070
QFEL/R2020 2T14	2	14	20	20	125	GSM5-20	LK04070
QFEL/R2525 2T08	2	8	25	25	150	GSM5-25	LK04070
QFEL/R2525 2T14	2	14	25	25	150	GSM5-25	LK04070
QFEL/R2020 2.5T14	2.5	14	20	20	125	GSM5-20	LK04070
QFEL/R2525 2.5T08	2.5	8	25	25	150	GSM5-25	LK04070
QFEL/R2525 2.5T14	2.5	14	25	25	150	GSM5-25	LK04070
QFEL/R2020 3T10	3	10	20	20	125	GSM6-20	LK05080
QFEL/R2020 3T18	3	18	20	20	125	GSM6-20	LK05080
QFEL/R2525 3T10	3	10	25	25	150	GSM6-25	LK05080
QFEL/R2525 3T18	3	18	25	25	150	GSM6-25	LK05080
QFEL/R2020 4T10	4	10	20	20	125	GSM6-20	LK05080
QFEL/R2020 4T18	4	18	20	20	125	GSM6-20	LK05080
QFEL/R2525 4T10	4	10	25	25	150	GSM6-25	LK05080
QFEL/R2525 4T18	4	18	25	25	150	GSM6-25	LK05080
QFEL/R3232 4T23	4	23	32	32	170	GSM6-25	LK05080
QFEL/R2020 5T10	5	10	20	20	125	GSM6-20	LK05080
QFEL/R2020 5T18	5	18	20	20	125	GSM6-20	LK05080
QFEL/R2525 5T10	5	10	25	25	125	GSM8-25	LK06090
QFEL/R2525 5T23	5	23	25	25	125	GSM8-25	LK06090
QFEL/R3232 5T23	5	23	32	32	170	GSM8-30	LK06090
QFEL/R2020 6T15	6	15	20	20	125	GSM8-20	LK06090
QFEL/R2020 6T23	6	23	20	20	125	GSM8-20	LK06090
QFEL/R2525 6T15	6	15	25	25	150	GSM8-25	LK06090
QFEL/R2525 6T23	6	23	25	25	150	GSM8-25	LK06090
QFEL/R3232 6T23	6	23	32	32	170	GSM8-30	LK06090

QPMB_ _

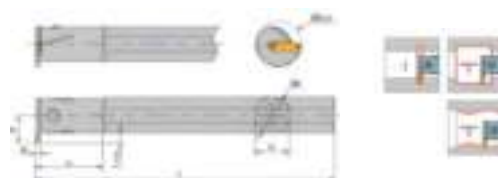
External Grooving Holder



Code	Dimension					Screw	Wrench
	W	T-Max	S	B	L		
QPEL/R2020 2T08	2	8	20	20	125	GSM5-20	LK04070
QPEL/R2020 2T14	2	14	20	20	125	GSM5-20	LK04070
QPEL/R2525 2T08	2	8	25	25	150	GSM5-25	LK04070
QPEL/R2525 2T14	2	14	25	25	150	GSM5-25	LK04070
QPEL/R2020 2.5T14	2.5	14	20	20	125	GSM5-20	LK04070
QPEL/R2525 2.5T08	2.5	8	25	25	150	GSM5-25	LK04070
QPEL/R2525 2.5T14	2.5	14	25	25	150	GSM5-25	LK04070
QPEL/R2020 3T10	3	10	20	20	125	GSM6-20	LK05080
QPEL/R2020 3T18	3	18	20	20	125	GSM6-20	LK05080
QPEL/R2525 3T10	3	10	25	25	150	GSM6-25	LK05080
QPEL/R2525 3T18	3	18	25	25	150	GSM6-25	LK05080
QPEL/R2020 4T10	4	10	20	20	125	GSM6-20	LK05080
QPEL/R2020 4T18	4	18	20	20	125	GSM6-20	LK05080
QPEL/R2525 4T10	4	10	25	25	150	GSM6-25	LK05080
QPEL/R2525 4T18	4	18	25	25	150	GSM6-25	LK05080
QPEL/R3232 4T23	4	23	32	32	170	GSM6-25	LK05080
QPEL/R2020 5T10	5	10	20	20	125	GSM6-20	LK05080
QPEL/R2020 5T18	5	18	20	20	125	GSM6-20	LK05080
QPEL/R2525 5T10	5	10	25	25	125	GSM8-25	LK06090
QPEL/R2525 5T23	5	23	25	25	125	GSM8-25	LK06090
QPEL/R3232 5T23	5	23	32	32	170	GSM8-30	LK06090
QPEL/R2020 6T15	6	15	20	20	125	GSM8-20	LK06090
QPEL/R2020 6T23	6	23	20	20	125	GSM8-20	LK06090
QPEL/R2525 6T15	6	15	25	25	150	GSM8-25	LK06090
QPEL/R2525 6T23	6	23	25	25	150	GSM8-25	LK06090
QPEL/R3232 6T23	6	23	32	32	170	GSM8-30	LK06090

QCMB_ _

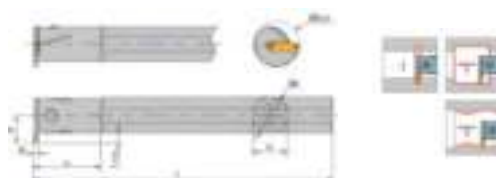
Internal Grooving Holder



Code	Dimansion							Screw	Wrench
	W	T-Max	Dmin	d	L1	L	H		
S16 QCIL/R 2T04	2	4	20	16	35	125	15	GSM4-12	LK03063
S20 QCIL/R 2T05	2	5	25	20	45	150	18	GSM4-15	LK03063
S25 QCIL/R 2T06	2	6	31	25	45	200	23	GSM5-15	LK04070
S32 QCIL/R 2T06	2	6	38	32	65	250	30	GSM5-20	LK04070
S20 QCIL/R 2.5T05	2.5	4	25	20	45	150	18	GSM4-15	LK03063
S25 QCIL/R 2.5T06	2.5	6	31	25	45	200	23	GSM5-15	LK04070
S32 QCIL/R 2.5T06	2.5	6	38	32	65	250	30	GSM5-20	LK04070
S20 QCIL/R 3T06	3	6	26	20	45	150	18	GSM5-15	LK04070
S25 QCIL/R 3T08	3	8	33	25	45	200	23	GSM5-15	LK04070
S32 QCIL/R 3T10	3	10	42	32	65	250	30	GSM6-20	LK05080
S40 QCIL/R 3T10	3	10	50	40	70	300	37	GSM6-25	LK05080
S20 QCIL/R 4T06	4	6	26	20	45	150	18	GSM5-15	LK04070
S25 QCIL/R 4T06	4	6	31	25	45	200	23	GSM5-15	LK04070
S32 QCIL/R 4T08	4	8	40	32	65	250	30	GSM6-20	LK05080
S40 QCIL/R 4T10	4	10	50	40	70	300	37	GSM6-25	LK05080
S25 QCIL/R 5T08	5	8	33	25	45	200	23	GSM6-15	LK05080
S32 QCIL/R 5T10	5	10	42	32	65	250	30	GSM8-20	LK06090
S40 QCIL/R 5T12	5	12	52	40	70	300	37	GSM8-25	LK06090

QFMB_ _

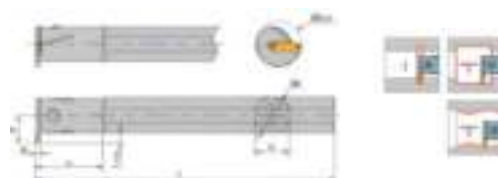
Internal Grooving Holder



Code	Dimansion							Screw	Wrench
	W	T-Max	Dmin	d	L1	L	H		
S20 QFIL/R 3T06	3	6	26	20	45	150	18	GSM5-15	LK04070
S25 QFIL/R 3T08	3	8	33	25	45	200	23	GSM5-15	LK04070
S32 QFIL/R 3T10	3	10	42	32	65	250	30	GSM6-20	LK05080
S40 QFIL/R 3T10	3	10	50	40	70	300	37	GSM6-25	LK05080
S20 QFIL/R 4T06	4	6	26	20	45	150	18	GSM5-15	LK04070
S25 QFIL/R 4T06	4	6	31	25	45	200	23	GSM5-15	LK04070
S32 QFIL/R 4T08	4	8	40	32	65	250	30	GSM6-20	LK05080
S40 QFIL/R 4T10	4	10	50	40	70	300	37	GSM6-25	LK05080
S25 QFIL/R 5T08	5	8	33	25	45	200	23	GSM6-15	LK05080
S32 QFIL/R 5T10	5	10	42	32	65	250	30	GSM8-20	LK06090
S40 QFIL/R 5T12	5	12	52	40	70	300	37	GSM8-25	LK06090

QPMB_ _

Internal Grooving Holder



Code	Dimansion							Screw	Wrench
	W	T-Max	Dmin	d	L1	L	H		
S16 QPIL/R 2T04	2	4	20	16	35	125	15	GSM4-12	LK03063
S20 QPIL/R 2T05	2	5	25	20	45	150	18	GSM4-15	LK03063
S25 QPIL/R 2T06	2	6	31	25	45	200	23	GSM5-15	LK04070
S32 QPIL/R 2T06	2	6	38	32	65	250	30	GSM5-20	LK04070
S20 QPIL/R 2.5T04	2.5	4	25	20	45	150	18	GSM4-15	LK03063
S25 QPIL/R 2.5T06	2.5	6	31	25	45	200	23	GSM5-15	LK04070
S32 QPIL/R 2.5T06	2.5	6	38	32	65	250	30	GSM5-20	LK04070
S20 QPIL/R 3T06	3	6	26	20	45	150	18	GSM5-15	LK04070
S25 QPIL/R 3T08	3	8	33	25	45	200	23	GSM5-15	LK04070
S32 QPIL/R 3T10	3	10	42	32	65	250	30	GSM6-20	LK05080
S40 QPIL/R 3T10	3	10	50	40	70	300	37	GSM6-25	LK05080
S20 QPIL/R 4T06	4	6	26	20	45	150	18	GSM5-15	LK04070
S25 QPIL/R 4T06	4	6	31	25	45	200	23	GSM5-15	LK04070
S32 QPIL/R 4T08	4	8	40	32	65	250	30	GSM6-20	LK05080
S40 QPIL/R 4T10	4	10	50	40	70	300	37	GSM6-25	LK05080
S25 QPIL/R 5T08	5	8	33	25	45	200	23	GSM6-15	LK05080
S32 QPIL/R 5T10	5	10	42	32	65	250	30	GSM8-20	LK06090
S40 QPIL/R 5T12	5	12	52	40	70	300	37	GSM8-25	LK06090

QCMB_ _

S - Type Face Grooving Holder

LEFT HAND



RIGHT HAND

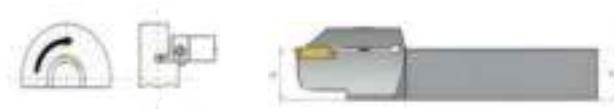


Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmex		
QCFL/R2525 S 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QCFL/R2525 S 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QCFL/R2525 S 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QCFL/R2525 S 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QCFL/R2525 S 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QCFL/R2525 S 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QCFL/R2525 S 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QCFL/R2525 S 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QCFL/R3232 S 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QCFL/R2525 S 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QCFL/R2525 S 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QCFL/R3232 S 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

QFMB_ _

S - Type Face Grooving Holder

LEFT HAND



RIGHT HAND

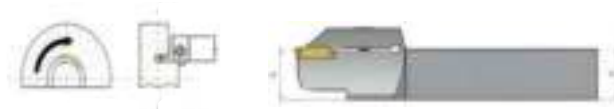


Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmex		
QFFL/R2525 S 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QFFL/R2525 S 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QFFL/R2525 S 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QFFL/R2525 S 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QFFL/R2525 S 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QFFL/R2525 S 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QFFL/R2525 S 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QFFL/R2525 S 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QFFL/R3232 S 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QFFL/R2525 S 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QFFL/R2525 S 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QFFL/R3232 S 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

QPMB_ _

S - Type Face Grooving Holder

LEFT HAND



RIGHT HAND



Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmex		
QPFL/R2525 S 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QPFL/R2525 S 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QPFL/R2525 S 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QPFL/R2525 S 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QPFL/R2525 S 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QPFL/R2525 S 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QPFL/R2525 S 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QPFL/R2525 S 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QPFL/R3232 S 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QPFL/R2525 S 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QPFL/R2525 S 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QPFL/R3232 S 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

QCMB_ _

L - Type Face Grooving Holder

LEFT HAND



RIGHT HAND



Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmix		
QCFL/R2525 L 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QCFL/R2525 L 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QCFL/R2525 L 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QCFL/R2525 L 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QCFL/R2525 L 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QCFL/R2525 L 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QCFL/R2525 L 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QCFL/R2525 L 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QCFL/R3232 L 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QCFL/R2525 L 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QCFL/R2525 L 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QCFL/R3232 L 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

QFMB_ _

L - Type Face Grooving Holder

LEFT HAND



RIGHT HAND



Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmix		
QFFL/R2525 L 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QFFL/R2525 L 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QFFL/R2525 L 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QFFL/R2525 L 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QFFL/R2525 L 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QFFL/R2525 L 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QFFL/R2525 L 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QFFL/R2525 L 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QFFL/R3232 L 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QFFL/R2525 L 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QFFL/R2525 L 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QFFL/R3232 L 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

QPMB_ _

L - Type Face Grooving Holder

LEFT HAND



RIGHT HAND



Code	Dimension							Screw	Wrench
	W	T-Max	H	B	L	Dmin	Dmix		
QPFL/R2525 L 025-060 2T08	2	8	25	25	150	25	60	GSM5-25	LK04070
QPFL/R2525 L 060-150 2T08	2	8	25	25	150	60	150	GSM5-25	LK04070
QPFL/R2525 L 026-060 3T10	3	10	25	25	150	26	60	GSM6-25	LK05080
QPFL/R2525 L 060-150 3T10	3	10	25	25	150	60	150	GSM6-25	LK05080
QPFL/R2525 L 035-070 4T15	4	15	25	25	150	35	70	GSM6-25	LK05080
QPFL/R2525 L 070-180 4T15	4	15	25	25	150	70	180	GSM6-25	LK05080
QPFL/R2525 L 040-080 5T20	5	20	25	25	150	40	80	GSM8-25	LK06090
QPFL/R2525 L 070-180 5T20	5	20	25	25	150	70	180	GSM8-25	LK06090
QPFL/R3232 L 070-180 5T23	5	23	32	32	175	70	180	GSM8-25	LK06090
QPFL/R2525 L 050-110 6T25	6	25	25	25	150	50	110	GSM8-25	LK06090
QPFL/R2525 L 110-200 6T25	6	25	25	25	150	110	200	GSM8-25	LK06090
QPFL/R3232 L 110-200 6T25	6	25	32	32	175	110	200	GSM8-25	LK06090

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Indexable Milling



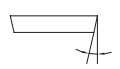
Indexable Milling Insert Identification

Symbol	Shape	Corner Angle	Figure
H	Hexagon	120°	
O	Octagon	135°	
P	Pentagon	108°	
S	Square	90°	
T	Triangle	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
M		86°	
V	Trigon	35°	
W		80°	
L	Rectangle	90°	
A	Parallelogram	85°	
B		82°	
K		55°	
R	Round	-	

1. Shape Symbol

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others

2. Relief Angle Symbol



Symbol	Tolerance (mm)			Tolerance (inch)		
	Corner Height (m)	Thickness (s)	I.C. Size (d)	Corner Height (m)	Thickness (s)	I.C. Size (d)
A	±0.005	±0.025	±0.025	±0.0002	±0.001	±0.001
F	±0.005	±0.025	±0.013	±0.0002	±0.001	±0.0005
C	±0.013	±0.025	±0.025	±0.0005	±0.001	±0.001
H	±0.013	±0.025	±0.013	±0.0005	±0.001	±0.0005
E	±0.025	±0.025	±0.025	±0.001	±0.001	±0.001
G	±0.025	±0.13	±0.025	±0.001	±0.005	±0.001
J	±0.005	±0.025	±0.05 - ±0.13	±0.0002	±0.001	±0.002 - ±0.005
K	±0.013	±0.025	±0.05 - ±0.13	±0.0005	±0.001	±0.002 - ±0.005
L	±0.025	±0.025	±0.05 - ±0.13	±0.001	±0.001	±0.002 - ±0.005
M	±0.008 - ±0.18	±0.13	±0.05 - ±0.13	±0.003 - ±0.007	±0.005	±0.002 - ±0.005
N	±0.008 - ±0.18	±0.025	±0.05 - ±0.13	±0.003 - ±0.007	±0.001	±0.002 - ±0.005
U	±0.013 - ±0.38	±0.13	±0.08 - ±0.25	±0.005 - ±0.015	±0.005	±0.003 - ±0.01

3. Tolerance Symbol

①	②	③	④	⑤
S	N	M	X	12
R	D	K	T	12

①	②	③	④	⑤
---	---	---	---	---

4. Chipbreaker / Hole Symbol				
Symbol	Hole	Hole Shape	Chipbreaker	Shape
N	Without	-	Without	
R			Single sided	
F			Double sided	
A	With	With Hole	Without	
M			Single sided	
G			Double sided	
W		With Hole & one countersink 40° - 60°	Without	
T			Single sided	
Q			Without	
U		With Hole & two countersink 40° - 60°	Double sided	
B			Without	
H		With Hole & one countersink 70° - 90°	Single sided	
C			Without	
J		With Hole & one countersink 70° - 90°	Double sided	
X			-	-

5. Cutting Edge Length Symbol (ISO) (mm)															
P		S		C		W		T		D		K		I.C. Size (mm)	
Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length		
		03	3.97	03	4.0			06	6.9	4	4.8				3.97
		04	4.76	04	4.8			08	8.2	5	5.8				4.76
05	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5
		05	5.56	05	5.6	03	3.8	09	9.6	6	6.8				5.56
06	6	-	-	-	-	-	-	-	-	-	-	-	-	-	6
		06	6.35	06	6.5	04	4.3	11	11	7	7.8	11	11.2		6.35
		07	7.94	08	8.1	05	5.4	13	13.8	9	9.7				7.94
08	8	-	-	-	-	-	-	-	-	-	-	-	-	-	8
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	9.525
10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	10
12	12	-	-	-	-	-	-	-	-	-	-	-	-	-	12
12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1		12.7
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4				15.875
16	16	-	-	-	-	-	-	-	-	-	-	-	-	-	16
19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3				19.05
20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	20
		22	22.225	22	22.6			38	38.5	27	27.1				22.225
25	25	-	-	-	-	-	-	-	-	-	-	-	-	-	25
25	25.4	25	25.4	25	25.8			44	44	31	31				25.4
31	31.75	31	31.75	32	32.2			55	55	38	38.8				31.75
31	32	-	-	-	-	-	-	-	-	-	-	-	-	-	32

Indexable Milling Insert Identification

Insert Shape : H, O, P, S, T, C, E, M, W, R									
I.C. Size (mm)	Tolerance of I.C. Size (d) (mm)		Tolerance of Corner Height (m) (mm)		I.C. Size (inch)	Tolerance of I.C. Size (d) (mm)		Tolerance of Corner Height (m) (mm)	
	Class J, K, L, M, N	Class U	Class J, K, L, M, N	Class U		Class J, K, L, M, N	Class U	Class J, K, L, M, N	Class U
6.35	±0.05	±0.08	±0.08	±0.13	0.250	±0.002	±0.003	±0.003	±0.005
9.525					0.375				
12.7	±0.08	±0.13	±0.13	±0.2	0.500	±0.003	±0.005	±0.005	±0.008
15.875					0.625				
19.05	±0.1	±0.18	±0.15	±0.27	0.750	±0.004	±0.007	±0.006	±0.011
25.4	±0.13	±0.25	±0.18	±0.38	1.000	±0.005	±0.010	±0.007	±0.015
31.75					1.250				
32	±0.15	±0.25	±0.2	±0.38	1.260	±0.006	±0.010	±0.008	±0.015

Insert Shape : D						Insert Shape : V						Symbol	Thickness (mm)
Inscribed Circle Size		Tolerance of I.C. Size		Tolerance of Corner Height		Inscribed Circle Size		Tolerance of I.C. Size		Tolerance of Corner Height			
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in		
6.35	0.250	±0.05	±0.002	±0.11	±0.004	6.35	0.250	±0.05	±0.002	±0.15	±0.006	01	1.59
9.525	0.375	±0.05	±0.002	±0.11	±0.004	9.525	0.375	±0.05	±0.002	±0.15	±0.006	T1	1.98
12.7	0.500	±0.08	±0.003	±0.15	±0.006	12.7	0.500	±0.08	±0.003	±0.20	±0.008	02	2.38
15.875	0.625	±0.10	±0.004	±0.18	±0.007	15.875	0.625	±0.10	±0.004	±0.27	±0.011	T2	2.78
19.05	0.750	±0.10	±0.004	±0.18	±0.007	19.05	0.750	±0.10	±0.004	±0.27	±0.011	03	3.18
												T3	3.97
												04	4.76
												05	5.56
												06	6.35
												07	7.94
												09	9.52
												6. Thickness Symbol	

⑥

⑦

⑧

⑨

⑩

06

AN

E

N

-

GM

04

MO

T

-

-

MM

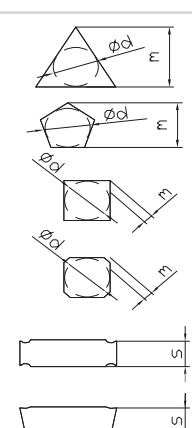
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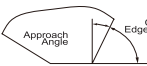
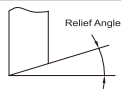
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⑧

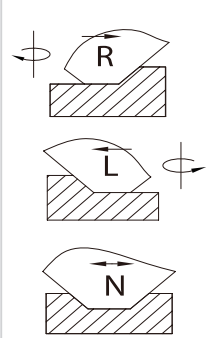
⑨

⑩

D. Theoretical diameter of inscribed circle
s. insert thickness
m. see Fig.


7. Wiper Angle or Nose Radius						
1			2			
						
Symbol	Approach Angle	Cutting Edge Angle	Symbol	Relief Angle of Wiper	Symbol	Corner Re (mm)
A	45°	45°	D	15°	00	0.03
D	30°	60°	E	20°	02	0.2
E	15°	75°	F	25°	04	0.4
F	5°	85°	G	30°	08	0.8
P	0°	90°	P	11°	12	1.2
Z	Other		Z	Other	16	1.6
Wiper					20	2.0
					24	2.4
					28	2.8
WA	Linear				A	2.8
WB	Largearc-shaped				B	3.2
WC	Convexarc shaped				C	Nose Radius for insert
WZ	Others				 00 Inch Size M0 Metric Size	

8. Major Cutting Edge		
Symbol	Description	Shape
F	Sharp Edge	
E	R-Honed	
T	Chamfer	
S	Chamfer & R-Honed	
10. Chipbreaker Symbol		
Symbol	Machining Condition	
PL	Light Cutting for Steel	
PM	Medium Cutting for steel	
PR	Rough Cutting for Steel	
KM	Medium Cutting for Cast Iron	
KR	Rough Cutting for Cast Iron	
MM	Medium Cutting for Stainless Steel	
:: Detailed Reference :: Designation System for milling Chipbreaker		

9. Direction	
Symbol	Hand
R	Right
L	Left
N	Neutral
	

Arbor Type Cutter Identification

RFM	45	063	Z05	A22	R	SNMX1205
-----	----	-----	-----	-----	---	----------



① Cutter Family

RFM= Face Mill
RSM= Sholder Mill
RHF= High Feed Mill
RPM= Profile Mill

② Approach Angle

45= 45°
66= 66°
70= 70°
15= 15°

③ Cutter Dia

063= 63mm
080= 80mm
125=125mm

④ No of Insert

Z05= 5 nos
Z02= 2 nos
Z11= 11 nos

⑤ Coupling Size

A22= 22mm
A27= 27mm
A32= 32mm

⑥ Cutting Direction

R= Right Hand
L= Left Hand

⑦ Type Of Insert

SNMX1205
UDMP1306

Cylindrical Type Cutter Identification

RSM 025 Z02 A25 R WN0504 L180

①

②

③

④

⑤

⑥

⑦

① Cutter Family

RFM= Face Mill
RSM= Sholder Mill
RHF= High Feed Mill
RPM= Profile Mill

② Cutter Dia

016= 16mm
025= 25mm
032= 32mm

③ No of Insert

Z05= 5 nos
Z02= 2 nos
Z11= 11 nos

④ Shank Dia

A16= 16mm
A25= 25mm
A32= 32mm

⑤ Cutting Direction

R= Right Hand
L= Left Hand

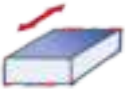
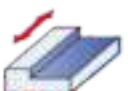
⑥ Type Of Insert

AXKT1003
UDMP0603

⑦ Cutter Length

L80= 80mm
L180= 180mm
L250= 250mm

Indexable Milling

Product family			RFM45	RFM90	RFM45	RFM88	RFM45
							
Page			097	100	103	105	107
Approach angle			45°	90°	45°	88°	45°
Max.ap (mm)			5mm	8mm	4mm	7mm	4.5mm
Diameter range (mm)			Ø50 - Ø200	Ø50 - Ø250	Ø50 - Ø315	Ø50 - Ø315	Ø50 - Ø315
Insert Type			SEET12T3	SDMT1205	SNMX1205/06	SNMX1205/06	HNMX0906/05
Application	Face Milling		•	•	•	•	•
	Shoulder Milling			•			
	Slot Milling			•			
	Ramping						
	Helical Interpolate Milling			•		•	
	Profile Milling						
	High Feed Milling						•

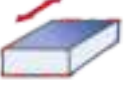
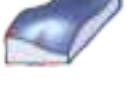
Indexable Milling

Product family			RFM45	RFM66	RFM70	RFM45	RFM90
							
Page			110	114	116	118	121
Approach angle			45°	66°	70°	45°	90°
Max.ap (mm)			3mm	6.1mm	6.4mm	6mm	8mm
Diameter range (mm)			Ø50 - Ø250	Ø50 - Ø200	Ø50 - Ø200	Ø50 - Ø250	Ø25 - Ø250
Insert Type			ONHU05/08	PNMU09	PXMU09	XNMU07/09	WNMU05/08
Application	Face Milling		•	•	•	•	•
	Shoulder Milling						•
	Slot Milling						•
	Ramping						
	Helical Interpolate Milling						•
	Profile Milling						
	High Feed Milling						

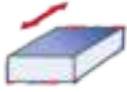
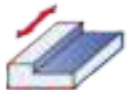
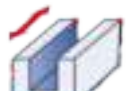
Indexable Milling

Product family			RFM90	RFM90	RFM43	RSM	RSM
							
Page			124	127	131	134	139
Approach angle			90°	90°	45°	90°	90°
Max.ap (mm)			12mm	12mm	3mm	17mm	14mm
Diameter range (mm)			Ø50 -1600 Ø	Ø16 -100 Ø	Ø40 -200 Ø	Ø16 -160 Ø	Ø16 - Ø125
Insert Type			LNKT1206	ANKX/PU	ODMT05/06	AXKT/APKT	APMT11/16
Application	Face Milling		•	•	•	•	•
	Shoulder Milling		•	•		•	•
	Slot Milling		•	•		•	•
	Ramping					•	•
	Helical Interpolate Milling		•	•		•	•
	Profile Milling						
	High Feed Milling						

Indexable Milling

Product family			RSM	RHF				
								
Page			143	146	149	154	157	
Approach angle			90°	10°	20°	12°	15°	
Max.ap (mm)			3mm	0.5mm	2mm	1.5mm	3mm	
Diameter range (mm)			Ø10 - Ø16	Ø10 - Ø16	Ø16 - Ø80	Ø16 - Ø80	Ø25 - Ø125	
Insert Type			AXMT0602	LPGT0102	UDMP06/09	XNMX07/09	SDMT09/12/15	
Application	Face Milling			•	•	•	•	
	Shoulder Milling		•	•	•	•	•	
	Slot Milling		•					
	Ramping		•	•	•	•	•	
	Helical Interpolate Milling		•	•	•	•	•	
	Profile Milling			•	•	•	•	
	High Feed Milling			•	•	•	•	

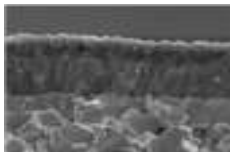
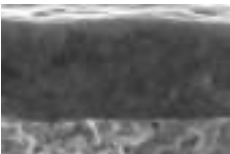
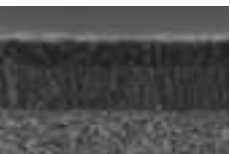
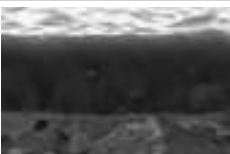
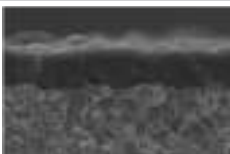
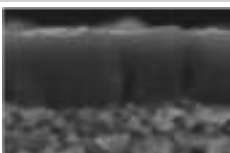
Indexable Milling

Product family			RPM				
							
Page			161	165	169	173	176
Approach angle			-	-	-	-	-
Max.ap (mm)			10mm	8mm	8mm	-	-
Diameter range (mm)			Ø16 - Ø160	Ø16 - Ø125	Ø16 - Ø125	-	-
Insert Type			RC08/10/12/16	RD08/10/12/16	RP08/10/12/16	TPKR/TPKN/ SPKN/SEET	SPMG/WCMX
Application	Face Milling		•	•	•		
	Shoulder Milling		•	•	•		
	Slot Milling						
	Ramping		•	•	•		
	Helical Interpolate Milling		•	•	•		
	Profile Milling		•	•	•		
	High Feed Milling						

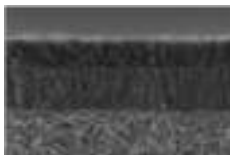
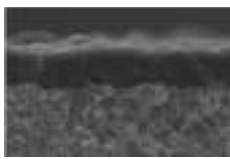
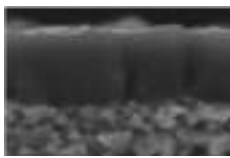
Application of Milling Garde

Workpiece Material	ISO	Coated		Uncoated	Cermet
		CVD	PVD		
P Steel	01	P6130			
	10	P2025	P1025		
	20	P4025			
	30	P4340			
	40				
	50				
M Stainless Steel	01		M1225		
	10				
	20		M8200		
	30		M1040		
	40				
	50				
K Cast Iron	01				
	10	K3115			
	20	K3120			
	30				
	40				
N Nonferrous Metal	01				
	10				
	20			K001	
	30				K20
	40				
S HRSA	01				
	10		M4000		
	20		M5000		
	30				
	40				
H Hardened Material	01				
	10				
	20				
	30				

Milling Grade

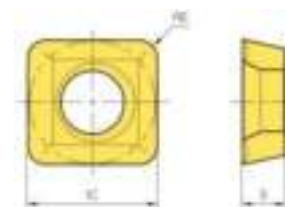
Grade	Application	Coating Structure	Advantages	Coating type
P6130	Semi finishing		CVD -coated grade based on Duratomic™ coating . Grade for high performance and productivity in steel material under stable conditions and for milling Ti (C, N) – Al ₂ O ₃	CVD
P1025	General application		Nano-structure AlCrN coating and micro carbide substrate, suitable on steel and cast iron processing of in case of medium and low speed	PVD
P4340	Semi finishing, roughing		CVD -coated grade based on Duratomic™ coating , First choice in steel for maximizing manufacturing output under most varying productivity. Alternative choice stainless steel applications under stable condition. Ti(C, N)-Al ₂ O ₃	CVD
P4025	Finishing, semi finishing		Highly wear resistant optimized grade for milling in steel. (Ti;Al)N	PVD
P2025	general application		Upgraded AlCrN+TiN coating and micro carbide substrate, has good wear resistance, suitable on steel processing of finishing to light roughing	PVD
M1225	general application		Upgraded TiAlN coating with good heat resistance and oxidation resistance, combined carbide substrate with high heat and wear resistance, ensure stable processing	PVD
M1040	Semi finishing, roughing		Nano-structure AlCrN coating and micro carbide substrate, suitable on steel and cast iron processing of in case of medium and low speed	PVD
M8200	Semi finishing, roughing		MT-TiCN+Al ₂ O ₃ coating with high strength carbide substrate, has good wear resistance, rigidity and heat stability, suitable for semi finishing to roughing of stainless and high temperature alloy	PVD
M5000	Semi finishing, roughing		Good wear resistance and rigidity, suitable on semi finishing to roughing processing of Ti and high temperature alloy	PVD

Milling Grade

Grade	Application	Coating Structure	Advantages	Coating type
K3115	Finishing, semi finishing		MT-TiCN+Al ₂ O ₃ coating with micro carbide substarte, has good wear resiatnce and rigidity, ensure stable processing, suitable on medium and high speed cast iron processing in case of finishing to semi finishing	CVD
K3120	Semi finishing, roughing		AlAlN coating with micro carbide substarte, has good wear resiatnce and rigidity, suitable on medium to roughing of gray cast iron and nodular cast iron	CVD
S4140	Semi finishing, roughing		TiAlN coating with micro carbide substarte, has good wear resiatnce and rigidity, suitable on semi finishing to roughing processing of Ti and high temperature alloy	PVD
K001	Medium load general application		Hard, wear resistant grade for milling in aluminium.	Uncoate d
K20	Finishing, semi finishing		Tough micro-grain carbide grade for milling in superalloys and aluminium.	Uncoate d

SEET

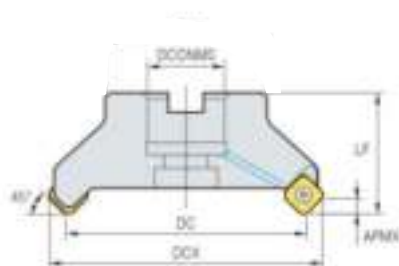
Positive 4 edge face milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	SEET12T3-SM	12.7	13.4	3.97	2.55	4.1	—	•	•		•	•				•	•				
	SEET12T3-HL	12.7	13.4	3.97	2.55	4.1	—													•	

SEET 45°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R-SE12T3	4	50	63.5	22	40	5	0.37	SExx 12T3xxx	Yes	●
RFM45-063-Z05-A22R-SE12T3	5	63	76.5	22	40	5	0.58	SExx 12T3xxx	Yes	●
RFM45-080-Z06-A27R-SE12T3	6	80	93.5	27	50	5	0.99	SExx 12T3xxx	Yes	●
RFM45-100-Z07-A32R-SE12T3	7	100	113.5	32	50	5	1.71	SExx 12T3xxx	NO	○
RFM45-125-Z08-A40R-SE12T3	8	125	138.5	40	50	5	3.09	SExx 12T3xxx	NO	○
RFM45-160-Z10-A40R-SE12T3	10	160	173.5	40	63	5	4.35	SExx 12T3xxx	NO	○
RFM45-200-Z12-A60R-SE12T3	10	200	213.5	60	63	5	5.95	SExx 12T3xxx	NO	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
SExx 12T3xxx	M351153160-A	3.0 N.m	W-IP15

SEET

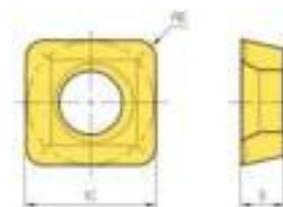
Positive 4 edge face milling

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	SEET12T3	0.5-2.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.5-2.5		
	Pre-harden Steel	HRC35-45			0.5-2.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	SEET12T3	0.5-2.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.5-2.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	SEET12T3	0.5-2.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.5-2.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.5-2.5	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.5-2.5	40 (30-60)	0.15 (0.1-0.3)

SDMT

Positive 4 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	SDMT120408-MF	12.7	12.7	4.76	–	4.4	0.8	●			●	●				●					

SDMT 90°

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RFM90-050-Z04-A22R SD1204	5	50	22	40	8	0.27	SD××1204×××	Yes	●
RFM90-063-Z05-A22R SD1204	6	63	22	40	8	0.38	SD××1204×××	Yes	●
RFM90-080-Z06-A27R SD1204	7	80	27	40	8	0.91	SD××1204×××	Yes	●
RFM90-100-Z07-A32R SD1204	8	100	32	50	8	1.29	SD××1204×××	No	○
RFM90-125-Z08-A40R SD1204	10	125	40	50	8	2.48	SD××1204×××	No	○
RFM90-160-Z10-A40R SD1204	12	160	40	63	8	4.36	SD××1204×××	No	○
RFM90-200-Z12-A60R SD1204	14	200	60	63	8	6.61	SD××1204×××	No	○
RFM90-250-Z14-A60R SD1204	16	250	60	63	8	8.76	SD××1204×××	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
SD××1204×××	M412257160-A	4.0 N.m	W-IP15

SDMT

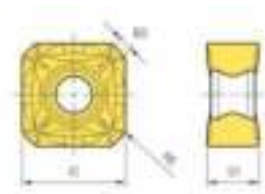
Positive 4 edge milling

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	SDMT1204	0.5-2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350		SDMT1204	0.5-2		
	Pre-harden Steel	HRC35-45		SDMT1204	0.5-2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	SDMT1204	0.5-2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270		SDMT1204	0.5-2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	SDMT1204	0.5-2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350		SDMT1204	0.5-2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20	SDMT1204	0.5-2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 M1225	SDMT1204	0.5-2	40 (30-60)	0.15 (0.1-0.3)

SN_ _

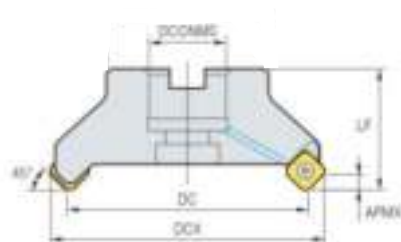
Negative 8 edge face milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	SNMX1205ANEN-TM	9.1	12.7	6.35	1.6	5.9	0.8	•	•			•			•	•					
	SNGX1205ANEN-TM	9.1	12.7	6.35	1.6	5.9	0.8	•	•			•				•	•				
	SNMX1205ANEN-M	9.1	12.7	6.35	1.6	5.9	0.8	•	•			•				•					
	SNGX1205ANEN-M	9.1	12.7	6.35	1.6	5.9	0.8	•	•			•				•					
	SNMX120508-M	10.7	12.7	6.35	—	5.9	0.8	•				•			•	•					
	SNMX120512-M	10.7	12.7	6.35	—	5.9	1.2	•				•			•	•					
	SNEU1205ZNEN-M	10.7	12.7	6.35	—	5.9	1.2	•				•			•	•					
	SNMX1206ANEN-GM	9.1	12.7	6.35	1.82	4.5	0.8	•	•			•				•					
	SNMX1206QNN-GM	12.7	12.7	6.35	—	4.5	0.8	•	•			•				•					

SN__45°

Arbor type

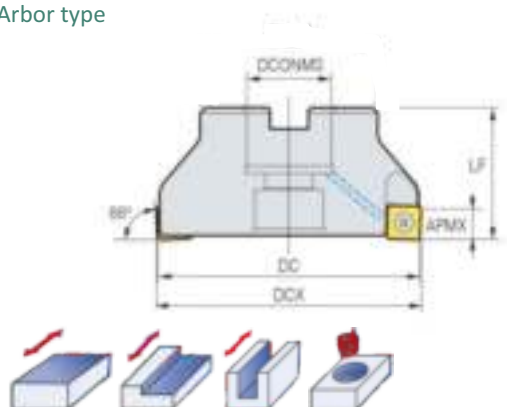


Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R SN1205	4	50	63.5	22	50	4	0.43	SNMX1205xxx	Yes	●
RFM45-063-Z05-A22R SN1205	5	63	76.5	22	50	4	0.6	SNMX1205xxx	Yes	●
RFM45-080-Z07-A27R SN1205	7	80	93.5	27	63	4	1.1	SNMX1205xxx	Yes	●
RFM45-100-Z08-A32R SN1205	8	100	113.5	32	63	4	1.5	SNMX1205xxx	No	●
RFM45-125-Z10-A40R SN1205	10	125	138.5	40	63	4	2.99	SNMX1205xxx	No	●
RFM45-160-Z12-A40R SN1205	12	160	173.5	40	63	4	4.37	SNMX1205xxx	No	○
RFM45-200-Z14-A60R SN1205	14	200	213.5	60	63	4	6.36	SNMX1205xxx	No	○
RFM45-250-Z16-A60R SN1205	16	250	263.5	60	63	4	9.39	SNMX1205xxx	No	○
RFM45-315-Z20-A60R SN1205	20	315	328.5	60	80	4	18.31	SNMX1205xxx	No	○

Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R SN1206	4	50	63.5	22	50	3	0.43	SNMX1206xxx	Yes	●
RFM45-063-Z05-A22R SN1206	5	63	76.5	22	50	3	0.6	SNMX1206xxx	Yes	●
RFM45-080-Z07-A27R SN1206	7	80	93.5	27	63	3	1.1	SNMX1206xxx	Yes	●
RFM45-100-Z08-A32R SN1206	8	100	113.5	32	63	3	1.5	SNMX1206xxx	No	●
RFM45-125-Z10-A40R SN1206	10	125	138.5	40	63	3	2.99	SNMX1206xxx	No	●
RFM45-160-Z12-A40R SN1206	12	160	173.5	40	63	3	4.37	SNMX1206xxx	No	○
RFM45-200-Z14-A60R SN1206	14	200	213.5	60	63	3	6.36	SNMX1206xxx	No	○
RFM45-250-Z16-A60R SN1206	16	250	263.5	60	63	3	9.39	SNMX1206xxx	No	○
RFM45-315-Z20-A60R SN1206	20	315	328.5	60	80	3	18.31	SNMX1206xxx	No	○

SN__88°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMA				
RFM88-050-Z04-A22R SN1205	4	50	51	22	40	7	0.36	SNMX1205xxx	Yes	●
RFM88-050-Z04-A22L SN1205	4	50	64	22	40	7	0.36	SNMX1205xxx	Yes	○
RFM88-063-Z05-A22R SN1205	5	63	64	22	40	7	0.43	SNMX1205xxx	Yes	●
RFM88-063-Z05-A22L SN1205	5	63	64	22	40	7	0.43	SNMX1205xxx	Yes	○
RFM88-080-Z07-A27R SN1205	7	80	81	27	50	7	0.99	SNMX1205xxx	Yes	●
RFM88-100-Z08-A32R SN1205	8	100	101	32	50	7	1.29	SNMX1205xxx	Yes	●
RFM88-125-Z10-A40R SN1205	10	125	126	40	63	7	2.88	SNMX1205xxx	No	●
RFM88-160-Z12-A40R SN1205	12	160	161	40	63	7	3.86	SNMX1205xxx	No	○
RFM88-200-Z14-A60R SN1205	14	200	201	60	63	7	6	SNMX1205xxx	No	○
RFM88-250-Z16-A60R SN1205	16	250	251	60	63	7	9.64	SNMX1205xxx	No	○
RFM88-315-Z20-A60R SN1205	20	315	316	60	80	7	16.9	SNMX1205xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
SNMX1205xxx	M51270860-B	5.0 N.m	W-IP20	TH-IP20
SNMX1206xxx	M412257160-A	4.0 N.m	W-IP15	TH-IP15

SN_ _

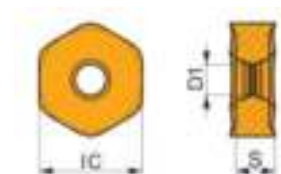
Negative 8 edge face milling

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	SN(M)X1205 SN(M)X1206	1.5-3.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			1.5-3.5		
	Pre-harden Steel	HRC35-45			1.5-3.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	SN(M)X1205 SN(M)X1206	1.5-3.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			1.5-3.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	SN(M)X1205 SN(M)X1206	1.5-3.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			1.5-3.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		1.5-2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 M1225		1.5-3.5	40 (30-60)	0.15 (0.1-0.3)

HN_ _

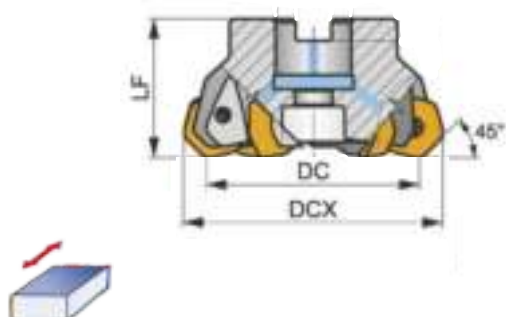
Negative 12 edge face milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		L10	D	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3110	K3215	S4140	K001	K20
	HNGX0905ANEN-FF	4.6	15.88	5.56	1.35	5.0	1.2	•	•			•				•					
	XNGJ0905ANSNGD	4.6	15.88	5.56	1.35	5.0	1.2	•								•		•			
	HNPJ130720ANSN-HD	7.3	22.25	7.48	—	8.0	2.0					•									
	HNMX0906ANSN-M	4.7	16.5	6.35	1.38	4.9	1.2	•			•	•			•						
	HNMG0906ANSN-R	4.7	16.5	6.35	1.38	4.9	1.2	•			•	•			•	•	•				

HN_45°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R HN0905	4	50	60.6	22	40	4	0.31	HNxx0905xx	Yes	○
RFM45-050-Z04-A22R HN0906	4	50	62	22	40	4.5	0.35	HNxx0906xx	Yes	●
RFM45-063-Z05-A22R HN0905	5	63	73.6	22	40	4	0.52	HNxx0905xx	Yes	○
RFM45-063-Z05-A22R HN0906	5	63	75	22	40	4.5	0.56	HNxx0906xx	Yes	●
RFM45-080-Z06-A27R HN0905	6	80	90.6	27	40	4	1.16	HNxx0905xx	Yes	○
RFM45-080-Z06-A27R HN0906	6	80	92	27	40	4.5	1.13	HNxx0906xx	Yes	●
RFM45-080-Z05-A27R HN1307	5	80	95.4	27	40	8	1.05	HNxx1307xx	Yes	●
RFM45-100-Z08-A32R HN0905	8	100	110.6	32	50	4	1.67	HNxx0905xx	No	○
RFM45-100-Z08-A32R HN0906	8	100	112	32	50	4.5	1.64	HNxx0906xx	No	●
RFM45-100-Z07-A32R HN1307	7	100	115.4	32	50	8	1.52	HNxx1307xx	No	●
RFM45-125-Z10-A40R HN0905	10	125	135.6	40	50	4	3.05	HNxx0905xx	No	○
RFM45-125-Z10-A40R HN0906	10	125	137	40	50	4.5	3.09	HNxx0906xx	No	●
RFM45-125-Z08-A40R HN1307	8	125	140.4	40	50	8	2.96	HNxx1307xx	No	○
RFM45-160-Z12-A40R HN0906	12	160	172	40	63	4.5	4.1	HNxx0906xx	No	○
RFM45-160-Z10-A40R HN1307	10	160	175.6	40	63	8	4.19	HNxx1307xx	No	○
RFM45-200-Z14-A60R HN0906	14	200	212	60	63	4.5	5.78	HNxx0906xx	No	○
RFM45-200-Z12-A60R HN1307	12	200	215.6	60	63	8	5.92	HNxx1307xx	No	○
RFM45-250-Z16-A60R HN0906	16	250	262	60	63	4.5	11.5	HNxx0906xx	No	○
RFM45-250-Z12-A60R HN1307	12	250	265.6	60	63	8	11.7	HNxx1307xx	No	○

HN_ _

Negative 12 edge face milling

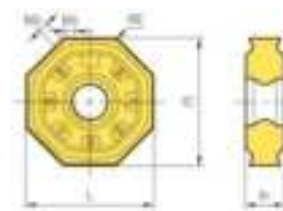
Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	HN(G)X0905 HN(M)X0906 HNPI1307	0.8-3.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.8-3.5		
	Pre-harden Steel	HRC35-45			0.8-3.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	HN(G)X0905 HN(M)X0906 HNPI1307	0.8-3.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphaside	≤ HB270			0.8-3.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	HN(G)X0905 HN(M)X0906 HNPI1307	0.8-3.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.8-3.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 M1225		0.8-3.5	40 (30-60)	0.15 (0.1-0.3)

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape Insert				
HN××0906××	M4512660860-A	4.5 N.m	W-IP20	TH-IP20
HN××0905××	M4512660860-A	4.5 N.m	W-IP20	TH-IP20
HN××1307××	SR45M060160IK	8.0 N.m		TH-IP25

ON_ _

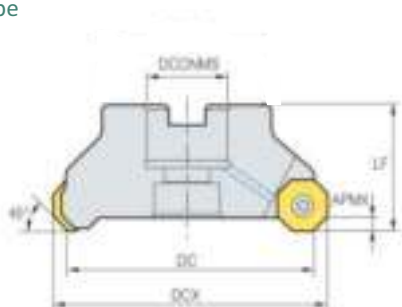
Negative 16 edge face milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		L	IC	S	BS	Ød	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	ONGU060408-GM	6.38	15.87	4.76	—	4.4	0.8	•			•	•				•					
	ONHU080608-GM	8.39	20.2	6	—	5.3	0.8	•		•		•				•	•		•		
	ONHU050408-F	5.26	12.7	4.86	—	4.4	0.8	•				•			•	•					
	ONGU050408-F	5.26	12.7	4.86	—	4.4	0.8	•				•			•	•					
	OXMU050410ANTN-F	4.1	12	4.5	0.3	4.4	1.0					•			•						
	OXMU090520ANTN-M	7.7	22	5.56	2.1	5.3	2.0	•				•				•	•				

OX_45°

Arbor type

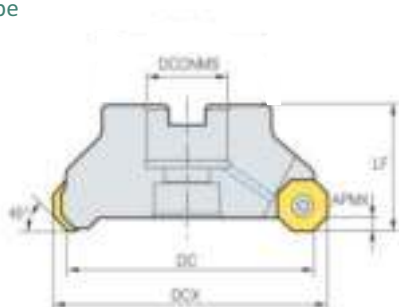


Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z05-A22R OX0504	5	50	58.35	22	40	3	0.36	OXxx0504xx	Yes	●
RFM45-063-Z06-A22R OX0504	6	63	71.35	22	40	3	0.52	OXxx0504xx	Yes	●
RFM45-063-Z04-A22R OX0905	4	63	78	22	40	3	0.51	OX xx0905xx	Yes	●
RFM45-080-Z08-A27R OX0504	8	80	88.35	27	40	3	1.16	OXxx0504xx	Yes	●
RFM45-080-Z06-A27R OX0905	6	80	95	27	40	3	1.13	OX xx0905xx	Yes	●
RFM45-100-Z10-A32R OX0504	10	100	108.35	32	50	3	1.64	OXxx0504xx	No	●
RFM45-100-Z08-A32R OX0905	8	100	115	32	50	3	1.61	OX xx0905xx	No	●
RFM45-125-Z12-A40R OX0504	12	125	133.35	40	50	3	3.01	OXxx0504xx	No	●
RFM45-125-Z10-A40R OX0905	10	125	140	40	50	3	3.11	OX xx0905xx	No	●
RFM45-160-Z15-A40R OX0504	15	160	168.35	40	63	3	4.09	OXxx0504xx	No	○
RFM45-160-Z14-A40R OX0905	14	160	175	40	63	3	4.12	OX xx0905xx	No	○
RFM45-200-Z18-A60R OX0905	18	200	215	60	63	3	5.71	OX xx0905xx	No	○
RFM45-250-Z16-A60R OX0905	16	250	265	60	63	3	11.7	OX xx0905xx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
OXxx0504xx	M412551260-A	4.0 N.m	W-IP15	TH-IP15
OXxx0905xx	M513681260-B	5.0 N.m	W-IP20	TH-IP20

ON_45°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R ON0604	4	50	60	22	40	3	0.32	ONxx0604xx	Yes	○
RFM45-050-Z04-A22R ON0504	4	50	58	22	40	3	0.36	ONxx0504xx	Yes	●
RFM45-063-Z05-A22R ON0604	5	63	60	22	40	3	0.51	ONxx0604xx	Yes	○
RFM45-063-Z05-A22R ON0504	5	63	58	22	40	3	0.53	ONxx0504xx	Yes	●
RFM45-063-Z04-A22R ON0806	4	63	78	22	40	3	0.5	ONxx0806xx	Yes	●
RFM45-080-Z07-A27R ON0604	7	80	90	27	40	3	1.16	ONxx0604xx	Yes	○
RFM45-080-Z07-A27R ON0504	7	80	88	27	40	3	1.19	ONxx0504xx	Yes	●
RFM45-080-Z06-A27R ON0806	6	80	95	27	40	3	1.13	ONxx0806xx	Yes	●
RFM45-100-Z08-A32R ON0604	8	100	110	32	50	3	1.64	ONxx0604xx	No	○
RFM45-100-Z08-A32R ON0504	8	100	108	32	50	3	1.62	ONxx0504xx	No	●
RFM45-100-Z07-A32R ON0806	7	100	115	32	50	3	1.66	ONxx0806xx	No	●
RFM45-125-Z10-A40R ON0604	10	125	135	40	50	3	3.08	ONxx0604xx	No	○
RFM45-125-Z10-A40R ON0504	10	125	133	40	50	3	3.05	ONxx0504xx	No	○
RFM45-125-Z08-A40R ON0806	8	125	140	40	50	3	3.11	ONxx0806xx	No	●
RFM45-160-Z10-A40R ON0806	10	160	175	40	63	3	4.12	ONxx0806xx	No	○
RFM45-200-Z12-A60R ON0806	12	200	215	60	63	3	5.89	ONxx0806xx	No	○
RFM45-250-Z14-A60R ON0806	14	250	265	60	63	3	11.53	ONxx0806xx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
ONxx0604xx	M412551260-A	4.0 N.m	W-IP15	TH-IP15
ONxx0504xx	M412551260-A	4.0 N.m	W-IP15	TH-IP15
ONxx0806xx	M51270860-B	5.0 N.m	W-IP20	TH-IP20

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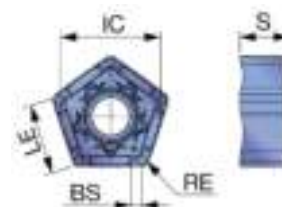
Negative 16 edge face milling

Recommended Cutting Data

Workpiece		Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	ON(G)U0604 ON(G)U08T5 ON(H)U0504 ON(H)U0806 OXMU0504 OXMU0905	0.6- 3.1	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.6- 3.1		
	Pre-harden Steel	HRC35-45			0.6- 3.1	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	ON(G)U0604 ON(G)U08T5 ON(H)U0504 ON(H)U0806 OXMU0504 OXMU0905	0.6- 3.1	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic)	≤ HB270			0.6- 3.1	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215		0.6- 3.1	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.6- 3.1	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 M1225		0.6- 3.1	40 (30-60)	0.15 (0.1-0.3)

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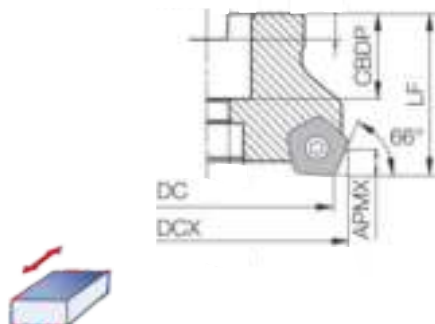
Negative 10 edge face milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4125	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	PNMU0905XNER-GM	9.81	14.6	5.56	2	4.7	0.8	•	•		•			•							
	PMMU090508ENER-GM	9.81	14.6	5.56	2	4.7	0.8	•	•		•			•							
	PXMU0905GNER-M	8.9	12.2	6	1.4	4.7	0.8	•													
	PXCU0905GNER-M	8.9	12.2	6	1.4	4.7	0.8	•				•		•							

PN__66°

Arbor type

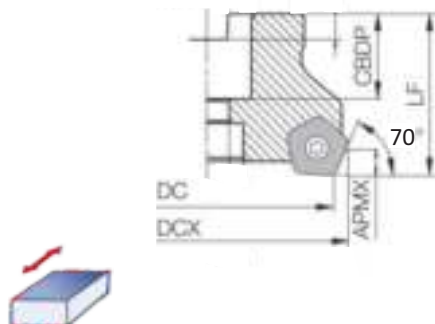


Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM66-050-Z04-A22R PN0905	4	50	58	22	40	6.1	0.34	PN××0905××	Yes	○
RFM66-050-Z05-A22R PN0905	5	50	58	22	40	6.1	0.3	PN××0905××	Yes	●
RFM66-063-Z04-A22R PN0905	4	63	75	22	40	6.1	0.53	PN××0905××	Yes	○
RFM66-063-Z06-A22R PN0905	6	63	75	22	40	6.1	0.49	PN××0905××	Yes	●
RFM66-080-Z06-A27R PN0905	6	80	88	27	40	6.1	1.09	PN××0905××	Yes	●
RFM66-080-Z08-A27R PN0905	8	80	88	27	40	6.1	1.02	PN××0905××	Yes	●
RFM66-100-Z07-A32R PN0905	7	100	108	32	50	6.1	1.66	PN××0905××	No	●
RFM66-100-Z10-A32R PN0905	10	100	108	32	50	6.1	1.59	PN××0905××	No	○
RFM66-125-Z08-A40R PN0905	8	125	133	40	50	6.1	3.08	PN××0905××	No	●
RFM66-125-Z12-A40R PN0905	12	125	133	40	50	6.1	2.92	PN××0905××	No	○
RFM66-160-Z11-A40R PN0905	11	160	168	40	63	6.1	4.19	PN××0905××	No	○
RFM66-160-Z14-A40R PN0905	14	160	168	40	63	6.1	4.12	PN××0905××	No	○
RFM66-200-Z13-A60R PN0905	13	200	208	60	63	6.1	5.71	PN××0905××	No	○
RFM66-250-Z16-A60R PN0905	16	250	258	60	63	6.1	11.5	PN××0905××	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
PN××0905××	M412257160-A	4.0 N.m	W-IP15	TH-IP15

PX__ 70°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM70-050-Z04-A22R PX0905	4	50	56	22	40	6.4	0.33	PXxx0905xx	Yes	○
RFM70-050-Z05-A22R PX0905	5	50	56	22	40	6.4	0.31	PXxx0905xx	Yes	●
RFM70-063-Z04-A22R PX0905	4	63	69	22	40	6.4	0.52	PXxx0905xx	Yes	○
RFM70-063-Z06-A22R PX0905	6	63	69	22	40	6.4	0.48	PXxx0905xx	Yes	●
RFM70-080-Z06-A27R PX0905	6	80	86	27	40	6.4	1.08	PXxx0905xx	Yes	●
RFM70-080-Z08-A27R PX0905	8	80	86	27	40	6.4	1.01	PXxx0905xx	Yes	●
RFM70-100-Z07-A32R PX0905	7	100	106	32	50	6.4	1.64	PXxx0905xx	No	●
RFM70-100-Z10-A32R PX0905	10	100	106	32	50	6.4	1.58	PXxx0905xx	No	○
RFM70-125-Z08-A40R PX0905	8	125	131	40	50	6.4	3.01	PXxx0905xx	No	●
RFM70-125-Z12-A40R PX0905	12	125	131	40	50	6.4	2.89	PXxx0905xx	No	○
RFM70-160-Z11-A40R PX0905	11	160	166	40	63	6.4	4.12	PXxx0905xx	No	○
RFM70-160-Z14-A40R PX0905	14	160	166	40	63	6.4	4.06	PXxx0905xx	No	○
RFM70-200-Z13-A60R PX0905	13	200	206	60	63	6.4	5.65	PXxx0905xx	No	○
RFM70-250-Z16-A60R PX0905	16	250	256	60	63	6.4	11.3	PXxx0905xx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
PXxx0905xx	M412257160-A	4.0 N.m	W-IP15	TH-IP15

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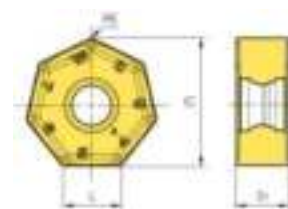
Negative 10 edge face milling

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	PNMU0905 PXMU0905 PXCUI0905	0.5-3	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.5-3		
	Pre-harden Steel	HRC35-45			0.5-3	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	PNMU0905 PXMU0905 PXCUI0905	0.5-3	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.5-3	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	PNMU0905 PXMU0905 PXCUI0905	0.5-3	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.5-3	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20	PNMU0905 PXMU0905 PXCUI0905	0.5-3	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 M1225		0.5-3	40 (30-60)	0.15 (0.1-0.3)

XN_ _

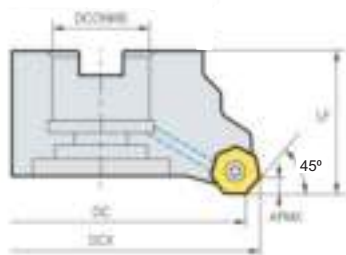
Negative 14 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4240	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	XNMU0708ANN-FF	6.98	14.5	5	1.1	4.07	0.8	•				•				•					
	XNMU070805-FF	6.98	14.5	5	–	4.07	0.8	•	•			•	•		•						
	XNMU070508-GR	6.98	14.5	5	1.1	4.07	0.8	•				•	•			•					
	XNMU090612-GR	–	19.5	5.88	–	5.6	1.2	•				•	•			•					

XN__45°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-050-Z04-A22R XN0705	4	50	60	22	40	4.4	0.3	XNxx0705xx	Yes	●
RFM45-063-Z05-A22R XN0705	5	63	73	22	40	4.4	0.51	XNxx0705xx	Yes	●
RFM45-063-Z05-A22R XN0906	5	63	75.86	22	40	6	0.54	XNxx0906xx	Yes	●
RFM45-080-Z06-A27R XN0705	6	80	90	27	40	4.4	1.16	XNxx0705xx	Yes	●
RFM45-080-Z07-A27R XN0705	7	80	90	27	40	4.4	1.14	XNxx0705xx	Yes	●
RFM45-080-Z06-A27R XN0906	6	80	92.86	27	40	6	1.12	XNxx0906xx	Yes	●
RFM45-100-Z08-A32R XN0705	8	100	110	32	50	4.4	1.64	XNxx0705xx	No	●
RFM45-100-Z07-A32R XN0906	7	100	112.86	32	50	6	1.65	XNxx0906xx	No	●
RFM45-100-Z08-A32R XN0906	8	100	112.86	32	50	6	1.62	XNxx0906xx	No	○
RFM45-125-Z10-A40R XN0705	10	125	135	40	50	4.4	3.12	XNxx0705xx	No	○
RFM45-125-Z08-A40R XN0906	8	125	137.86	40	50	6	3.12	XNxx0906xx	No	●
RFM45-125-Z10-A40R XN0906	10	125	137.86	40	50	6	3.05	XNxx0906xx	No	○
RFM45-160-Z12-A40R XN0705	12	160	170	40	63	4.4	4.18	XNxx0705xx	No	○
RFM45-160-Z10-A40R XN0906	10	160	172.86	40	63	6	4.09	XNxx0906xx	No	○
RFM45-200-Z12-A60R XN0906	12	200	212.86	60	63	6	5.91	XNxx0906xx	No	○
RFM45-250-Z16-A60R XN0906	16	250	262.86	60	63	6	11.62	XNxx0906xx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
XNxx0705xx	M351153160-A	3.0 N.m	W-IP15	TH-IP15
XNxx0906xx	M513681260-B	5.0 N.m	W-IP20	TH-IP20

XN_ _

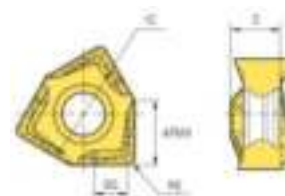
Negative 14 edge milling

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	XN(M)U0705 XN(M)U0906	0.6-2.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.6-2.5		
	Pre-harden Steel	HRC35-45			0.6-2.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	XN(M)U0705 XN(M)U0906	0.6-2.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.6-2.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	XN(M)U0705 XN(M)U0906	0.6-2.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.6-2.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 M1225		0.6-2.5	40 (30-60)	0.15 (0.1-0.3)

WN_ _

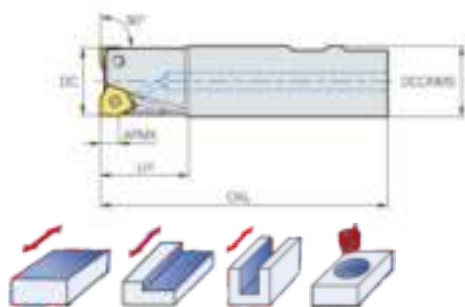
Negative 6 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	WNMU050408EN-GM	4.8	8.5	4.2	—	3.4	0.8	●				●			●						
	WNMU080608EN-GM	7.8	14.02	6.65	—	6.2	0.8	●				●			●	●					

WN_ _90°

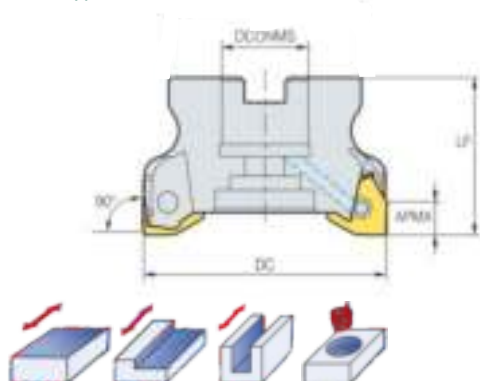
Cylindrical straight type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RSM-025-Z02-A25R-WN0504-L180	2	25	25	50	180	0.62	WNxx0504xxx	Yes	●
RSM-025-Z02-A25R-WN0504-L250	2	25	25	50	250	0.86	WNxx0504xxx	Yes	○
RSM-032-Z03-A32R-WN0504-L200	3	25	25	70	200	1.12	WNxx0504xxx	Yes	●
RSM-032-Z03-A32R-WN0504-L250	3	32	32	70	250	1.41	WNxx0504xxx	Yes	○
RSM-040-Z04-A40R-WN0504-L200	4	40	32	70	200	1.36	WNxx0504xxx	Yes	●
RSM-040-Z04-A40R-WN0504-L250	4	40	32	70	250	1.71	WNxx0504xxx	Yes	○

WN__90°

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RFM90-050-Z05-A22R-WN05	5	50	22	40	4	0.4	WNxx0504xxx	Yes	○
RFM90-063-Z06-A22R-WN05	6	63	22	40	4	0.5	WNxx0504xxx	Yes	○
RFM90-063-Z05-A22R-WN08	5	63	22	40	7	0.46	WNxx0806xxx	Yes	●
RFM90-080-Z07-A27R-WN05	7	80	27	40	4	1.2	WNxx0504xxx	Yes	○
RFM90-080-Z06-A27R-WN08	6	80	27	40	7	1	WNxx0806xxx	Yes	●
RFM90-100-Z09-A32R-WN05	9	100	32	50	4	1.6	WNxx0504xxx	No	○
RFM90-100-Z08-A32R-WN08	8	100	32	50	7	1.3	WNxx0806xxx	No	●
RFM90-125-Z11-A40R-WN05	11	125	40	50	4	2.8	WNxx0504xxx	No	○
RFM90-125-Z09-A40R-WN08	9	125	40	50	7	2.6	WNxx0806xxx	No	●
RFM90-160-Z12-A40R-WN08	12	160	40	63	7	3.9	WNxx0806xxx	No	○
RFM90-200-Z14-A60R-WN08	14	200	60	63	7	6.3	WNxx0806xxx	No	○
RFM90-250-Z16-A60R-WN08	16	250	60	63	7	8.7	WNxx0806xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape			
WNxx0504xxx	M372420760-A	1.8 N.m	W-IP09
WNxx0806xxx	M51270860-B	5.0 N.m	W-IP20

WN_ _

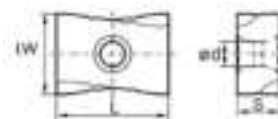
Negative 6 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	WNNMU0504 WNNMU0806	0.5-2.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.5-2.5		
	Pre-harden Steel	HRC35-45			0.5-2.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	WNNMU0504 WNNMU0806	0.5-2.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.5-2.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	WNNMU0504 WNNMU0806	0.5-2.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.5-2.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.5-2.5	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 P1025		0.5-2.5	40 (30-60)	0.15 (0.1-0.3)

LNKT

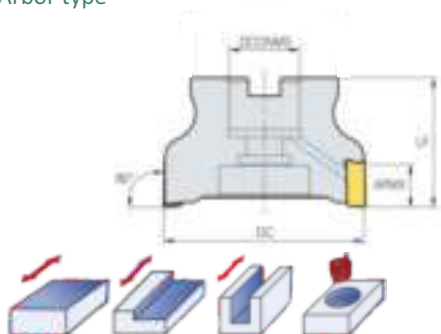
Negative 4 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	LNKT1206R08	12.7	—	6.65	—	4.4	0.8	●													
	LNKT1206R2.0	12.7	—	6.65	—	4.4	2.0	●													
	LNKT1206R3.5	12.7	—	6.65	—	4.4	3.5	●													

LN__90°

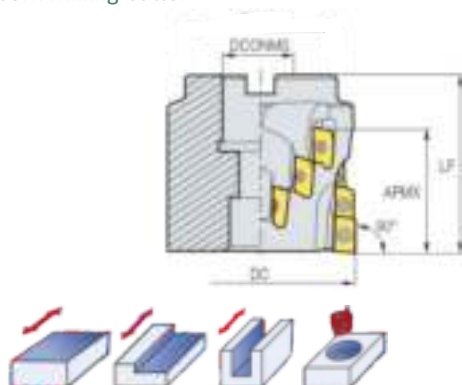
Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RFM90-050-Z05-A22R LN1206	5	50	22	40	8	0.3	LN××1206×××	Yes	●
RFM90-063-Z06-A22R LN1206	6	63	22	40	8	0.54	LN××1206×××	Yes	●
RFM90-080-Z07-A27R LN1206	7	80	27	40	8	1.18	LN××1206×××	Yes	●
RFM90-100-Z08-A32R LN1206	8	100	32	50	8	1.64	LN××1206×××	No	●
RFM90-125-Z10-A40R LN1206	10	125	40	50	8	2.74	LN××1206×××	No	○
RFM90-160-Z12-A40R LN1206	12	160	40	63	8	4.56	LN××1206×××	No	○

LNKT

Corn Milling Cutter



Product code	Teeth	Dimension(mm)				No. of flute	Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	APMAX	LF					
RHM90-040-033-Z06-A16R LN1206-2F	6	40	16	33	55	2	0.3	LNKT 1206 xxx	No	o
RHM90-040-043-Z08-A16R LN1206-2F	8	40	16	43	65	2	0.36	LNKT 1206 xxx	No	o
RHM90-050-033-Z09-A22R LN1206-3F	9	50	22	33	55	3	0.5	LNKT 1206 xxx	No	o
RHM90-050-043-Z12-A22R LN1206-3F	12	50	22	43	70	3	0.65	LNKT 1206 xxx	No	o
RHM90-063-043-Z16-A22R LN1206-4F	16	63	22	43	70	4	1.02	LNKT 1206 xxx	No	o
RHM90-063-053-Z20-A22R LN1206-4F	20	63	22	53	80	4	1.2	LNKT 1206 xxx	No	o
RHM90-080-043-Z20-A27R LN1206-5F	20	80	27	43	70	5	1.91	LNKT 1206 xxx	No	o
RHM90-080-053-Z25-A27R LN1206-5F	25	80	27	53	80	5	2.1	LNKT 1206 xxx	No	o
RHM90-100-063-Z36-A32R LN1206-6F	36	100	32	63	90	6	3.3	LNKT 1206 xxx	No	o

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
LNxx1206xxx	M412257160-A	4.0 N.m	W-IP15

LNKT

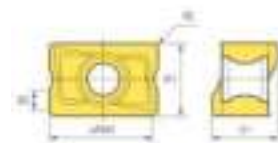
Negative 4 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	LNKT1206	1-3.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350		LNKT1206	1-3.5		
	Pre-harden Steel	HRC35-45		LNKT1206	1-3.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	LNKT1206	1-3.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270		LNKT1206	1-3.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	LNKT1206	1-3.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350		LNKT1206	1-3.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20				
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025	LNKT1206	1-3.5	40 (30-60)	0.15 (0.1-0.3)

AN_ _

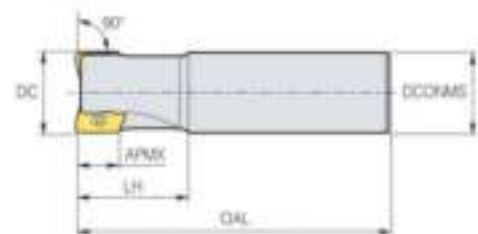
Negative 4 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	ANKX120508PNTR-M	13.67	10	9.15	3.5	4.6	0.8	●	●			●	●						●		
	LNKU110408SRGE-MM	12.1	6.6	4.83	0.9	3.6	0.8	●				●		●							

AN_90°

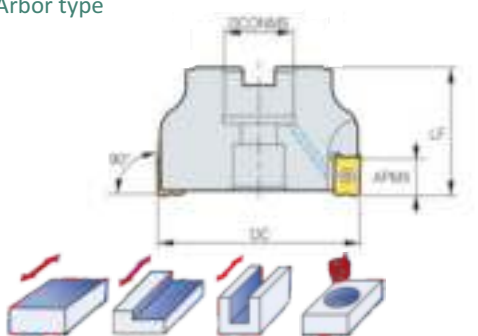
Cylindrical straight type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RSM-016-Z02-A16R-LP1104-L150	2	16	25	50	150	0.51	LP××1104×××	Yes	●
RSM-020-Z02-A20R-LP1104-L150	2	20	25	50	150	0.51	LP××1104×××	Yes	●
RSM-025-Z03-A25R-LP1104-L150	3	25	25	50	150	0.51	LP××1104×××	Yes	●
RSM-025-Z02-A25R-AN1205-L150	2	25	25	50	150	0.51	AN××1205×××	Yes	●
RSM-025-Z02-A25R-AN1205-L200	2	25	25	50	200	0.69	AN××1205×××	Yes	○
RSM-032-Z03-A32R-AN1205-L150	3	25	25	50	1500	1.12	AN××1205×××	Yes	●
RSM-032-Z03-A32R-AN1205-L200	3	32	32	70	200	1.41	AN××1205×××	Yes	○
RSM-040-Z04-A40R-AN1205-L200	4	40	32	70	200	1.36	AN××1205×××	Yes	●
RSM-040-Z04-A40R-AN1205-L250	4	40	32	70	250	1.71	AN××1205×××	Yes	○

AN_90°

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RFM90-050-Z04-A22R-AN1205	4	50	22	40	12	0.31	AN××1205×××	Yes	●
RFM90-063-Z05-A22R-AN1205	5	63	22	40	12	0.49	AN××1205×××	Yes	●
RFM90-080-Z06-A27R-AN1205	6	80	27	50	12	0.88	AN××1205×××	Yes	●
RFM90-100-Z08-A32R-AN1205	8	100	32	50	12	1.34	AN××1205×××	NO	○

AN__90°

Corn Milling Cutter



Product code	Teeth	Dimension(mm)				No. of flute	Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	APMAX	LF					
RHM90-050-035-Z09-A22R AN1205-3F	9	50	22	35	60	3	0.6	ANKX1205xxx	No	o
RHM90-050-047-Z16-A22R AN1205-4F	16	50	22	47	70	4	0.5	ANKX1205xxx	No	o
RHM90-063-047-Z16-A22R AN1205-4F	16	63	22	47	70	4	1.1	ANKX1205xxx	No	o

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
LPxx1104xxx	M310420760-A	1.8 N.m	W-IP09
ANxx1205xxx	M41155160-A	4.0 N.m	W-IP15

AN _ _

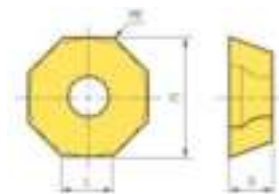
Negative 4 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	ANKX1205	1-3.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			1-3.5		
	Pre-harden Steel	HRC35-45			1-3.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	ANKX1205	1-3.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			1-3.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	ANKX1205	1-3.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			1-3.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 P1025		1-3.5	40 (30-60)	0.15 (0.1-0.3)

OD_ _

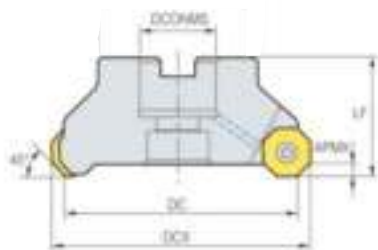
Positive 8 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		L	D	S	BS	D1	R	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	ODMT060508TN-SN	5.8	15.87	5.56	–	5.6	0.8	•				•								•	
	ODMT0504ZNN-HM	4.8	12.7	4.76	–	4.4	0.8	•				•									

OD__45°

Arbor type



Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-040-Z03-A16R OD0504	3	40	50	16	40	3	0.2	ODMT0504xxx	Yes	○
RFM45-050-Z04-A22R OD0504	4	50	60	22	40	3	0.31	ODMT0504xxx	Yes	●
RFM45-063-Z05-A22R OD0504	5	63	72	22	40	3	0.5	ODMT0504xxx	Yes	●
RFM45-080-Z06-A27R OD0504	6	80	90	27	40	3	0.88	ODMT0504xxx	Yes	●
RFM45-100-Z07-A32R OD0504	7	100	110	32	50	3	1.43	ODMT0504xxx	No	●
RFM45-125-Z08-A40R OD0504	8	125	135	40	50	3	3.02	ODMT0504xxx	No	●
RFM45-160-Z10-A40R OD0504	10	160	170	40	63	3	4.12	ODMT0504xxx	No	○
RFM45-200-Z12-A60R OD0504	12	200	210	60	63	3	6.42	ODMT0504xxx	No	○

Product code	Teeth	Dimension(mm)					Weight (kg)	Insert	Coolant	Stock
		DC	DCX	DCONMS	LF	APMAX				
RFM45-040-Z03-A16R OD0605	3	40	50	16	40	3	0.2	ODMT0504xxx	Yes	○
RFM45-050-Z04-A22R OD0605	4	50	60	22	40	3	0.31	ODMT0504xxx	Yes	●
RFM45-063-Z05-A22R OD0605	5	63	72	22	40	3	0.5	ODMT0504xxx	Yes	●
RFM45-080-Z06-A27R OD0605	6	80	90	27	40	3	0.88	ODMT0504xxx	Yes	●
RFM45-100-Z07-A32R OD0605	7	100	110	32	50	3	1.43	ODMT0504xxx	No	●
RFM45-125-Z08-A40R OD0605	8	125	135	40	50	3	3.02	ODMT0504xxx	No	●
RFM45-160-Z10-A40R OD0605	10	160	170	40	63	3	4.12	ODMT0504xxx	No	○
RFM45-200-Z12-A60R OD0605	12	200	210	60	63	3	6.42	ODMT0504xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench	
Shape				
Insert				
ODMT0504xxx	M412551260-A	4.0 N.m	W-IP15	TH-IP15
ODMT0605xxx	M51270860-B	5.0 N.m	W-IP20	TH-IP20

OD _ _

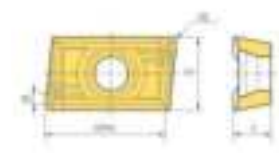
Positive 8 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	OD(M)T0605 OD(M)T0504	1.5-2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			1.5-2		
	Pre-harden Steel	HRC35-45			1.5-2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	OD(M)T0605 OD(M)T0504	1.5-2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			1.5-2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	OD(M)T0605 OD(M)T0504	1.5-2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			1.5-2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20	OD(M)T0605 OD(M)T0504	1.5-2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 M1225		1.5-2	40 (30-60)	0.15 (0.1-0.3)

AXKT

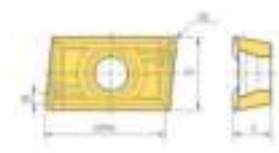
Positive 2 edge milling insert

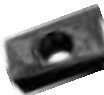


Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	AXKT1003PDER-MF	9.8	6.76	3.53	1.2	2.88	0.8	•	•		•	•	•	•					•		
	AXKT1003PDER-MM	9.8	6.76	3.53	1.2	2.88	0.8	•	•		•	•	•	•					•		
	AXKT1003PDER-MR	9.8	6.76	3.53	1.2	2.88	0.8	•	•		•	•				•	•				
	AXKT170508PDER-MM	16	10.7	5.56	2.26	4.4	0.8	•				•			•	•				•	
	AXKT170516PDER-MM	16	10.7	5.56	2.26	4.4	1.6	•	•			•			•	•					
	AXKT170524PDER-MM	16	10.7	5.56	2.26	4.4	2.4	•				•			•	•					

APKT_ _

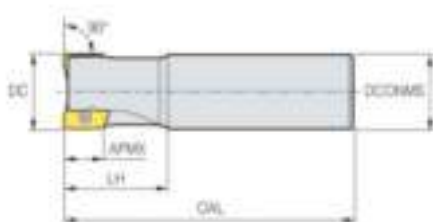
Positive 2 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	APKT160408-GM	15.2	9.3	4.76	1.86	4.4	0.8	•	•			•	•			•			•		
	APKT11T304-GM	9.7	6.16	3.5	1.2	2.8	0.8	•				•									
	APKT11T316-GM	9.7	6.16	3.5	1.2	2.8	0.8	•				•									
	APKT160408-PM	15.2	9.3	4.76	1.86	4.4	0.8	•	•			•	•			•			•		
	APKT11T308-PM	9.7	6.16	3.5	1.2	2.8	0.8	•	•			•	•			•			•		
	APKT160408-AC	15.2	9.3	4.76	1.86	4.4	0.8													•	
	APKT1604PDFR-AH	15.2	9.3	4.76	1.86	4.4	0.8													•	

APKT__90°

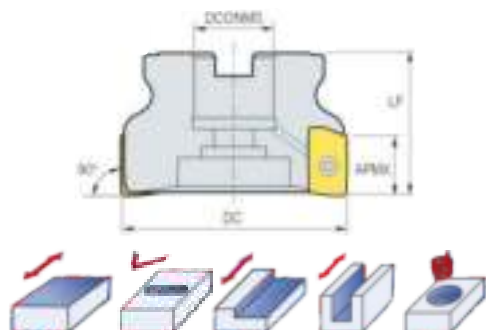
Cylindrical straight type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RSM-016-Z02-A16R-AX1003-L150	2	16	16	50	150	0.21	AX××1003×××	Yes	●
RSM-016-Z02-A16R-AX1003-L200	2	16	16	50	200	0.28	AX××1003×××	Yes	○
RSM-016-Z02-A16R-AP11T3-L150	2	16	16	50	150	0.21	AP××11T3×××	Yes	○
RSM-020-Z02-A20R-AX1003-L150	2	20	20	50	150	0.34	AX××1003×××	Yes	●
RSM-020-Z03-A20R-AX1003-L150	3	20	20	50	150	0.33	AX××1003×××	Yes	○
RSM-020-Z03-A20R-AX1003-L200	3	20	20	50	200	0.45	AX××1003×××	Yes	○
RSM-020-Z02-A20R-AP11T3-L150	2	20	20	50	150	0.34	AP××11T3×××	Yes	○
RSM-025-Z03-A25R-AX1003-L180	3	25	25	50	180	0.62	AX××1003×××	Yes	●
RSM-025-Z04-A25R-AX1003-L180	4	25	25	50	180	0.61	AX××1003×××	Yes	○
RSM-025-Z03-A25R-AX1003-L250	3	25	25	50	250	0.86	AX××1003×××	Yes	○
RSM-025-Z03-A25R-AX11T3-L180	3	25	25	50	180	0.62	AP××11T3×××	Yes	○
RSM-025-Z02-A25R-APKT1604 L180	2	25	25	50	180	0.61	APKT1604×××	Yes	●
RSM-025-Z02-A25R-AX1705-L180	2	25	25	50	180	0.61	AX××1705×××	Yes	●
RSM-025-Z02-A25R-AX1705-L250	2	25	25	50	250	0.86	AX××1705×××	Yes	○
RSM-032-Z04-A32R-AX1003-L200	4	25	25	70	200	1.12	AX××1003×××	Yes	●
RSM-032-Z05-A32R-AX1003-L200	5	32	32	70	200	1.11	AX××1003×××	Yes	○
RSM-032-Z04-A32R-AX1003-L250	4	32	32	70	250	1.41	AX××1003×××	Yes	●
RSM-032-Z03-A32R-APKT1604-L200	3	32	32	70	200	1.12	AP××1604×××	Yes	○
RSM-032-Z03-A32R-AX1705-L200	3	32	32	70	200	1.12	AX××1705×××	Yes	●
RSM-032-Z03-A32R-AX1705-L250	3	32	32	70	250	1.41	AX××1705×××	Yes	○

AX/P_ _90°

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RSM-040-Z05-A16R-AX1003	5	40	16	40	9	0.21	AX××1003×××	Yes	●
RSM-040-Z03-A16R-AX1705	3	40	16	40	17.2	0.18	AX××1705×××	Yes	○
RSM-040-Z03-A16R-APKT1604	3	40	16	40	16.4	0.19	APKT1604×××	Yes	○
RSM-050-Z06-A22R-AX1003	6	50	22	40	9	0.33	AX××1003×××	Yes	●
RSM-050-Z04-A22R-AX1705	4	50	22	40	17.2	0.31	AX××1705×××	Yes	●
RSM-050-Z04-A22R-APKT1604	4	50	22	40	16.4	0.31	APKT1604×××	Yes	○
RSM-063-Z07-A22R-AX1003	7	63	22	40	9	0.49	AX××1003×××	Yes	●
RSM-063-Z07-A22R-AX1705	5	63	22	40	17.2	0.46	AX××1705×××	Yes	●
RSM-063-Z06-A22R-APKT1604	5	63	22	40	16.4	0.46	APKT1604×××	Yes	○
RSM-080-Z08-A27R-AX1705	7	80	27	50	17.2	1	AX××1705×××	Yes	●
RSM-080-Z08-A27R-APKT1604	7	80	27	50	16.4	1	APKT1604×××	Yes	○
RSM-100-Z08-A32R-AX1705	8	100	32	50	17.2	1.7	AX××1705×××	Yes	○
RSM-125-Z09-A40R-AX1705	9	125	40	63	17.2	2.76	AX××1705×××	Yes	○
RSM-160-Z10-A40R-AX1705	10	160	40	63	17.2	4.05	AX××1705×××	Yes	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
AX××1003×××	M2565360860TP8-A	1.2 N.m	W-IP08
APKT1604×××	M41155160-A	4.0 N.m	W-IP15
AX××1705×××	M41155160-A	4.0 N.m	W-IP15

A(X)KT_ _

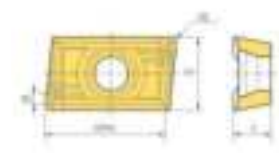
Positive 2 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	AXKT1003 AXKT1705 APKT11T3 APKT1604	0.2-4.2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.2-4.2		
	Pre-harden Steel	HRC35-45			0.2-4.2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	AXKT1003 AXKT1705 APKT11T3 APKT1604	0.2-4.2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.2-4.2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	AXKT1003 AXKT1705 APKT11T3 APKT1604	0.2-4.2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.2-4.2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.2-4.2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.2-4.2	40 (30-60)	0.15 (0.1-0.3)

AP(M)T__

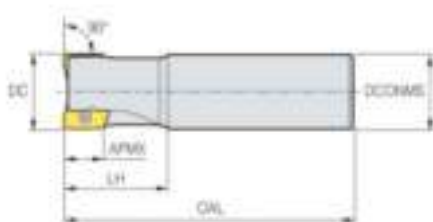
Positive 2 edge milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	APMT1135PDER-M2	9.7	6.16	3.5	1.2	2.8	0.8	•	•	•	•	•	•	•	•	•	•		•	•	
	APMT1604PDER-M2	14.9	9.26	4.76	2	4.6	0.8	•	•	•	•	•	•	•	•	•	•		•	•	
	APMT1135PDER-H2	9.7	6.16	3.5	1.2	2.8	0.8	•	•	•	•	•	•	•	•	•	•		•	•	
	APMT1604PDER-H2	14.9	9.26	4.76	2	4.6	0.8	•	•	•	•	•	•	•	•	•	•		•	•	
	APMT1135PDER-MK	9.7	6.16	3.5	1.2	2.8	0.8	•		•	•	•	•	•			•		•	•	
	APMT1604PDER-MK	14.9	9.26	4.76	2	4.6	0.8	•		•	•	•	•	•			•		•	•	
	APMT1135PDER-TG	9.7	6.16	3.5	1.2	2.8	0.8	•		•	•	•	•	•			•		•	•	
	APMT1604PDER-TG	14.9	9.26	4.76	2	4.6	0.8	•		•	•	•	•	•			•		•	•	
	APMT160416PDER-DR	14.9	9.26	4.76	2	4.6	1.6	•		•	•	•				•			•		
	APMT160420PDER-DR	14.9	9.26	4.76	2	4.6	2.0	•		•	•	•				•			•		
	APMT160430PDER-DR	14.9	9.26	4.76	2	4.6	3.0	•		•	•	•				•			•		

AP(M)T_90°

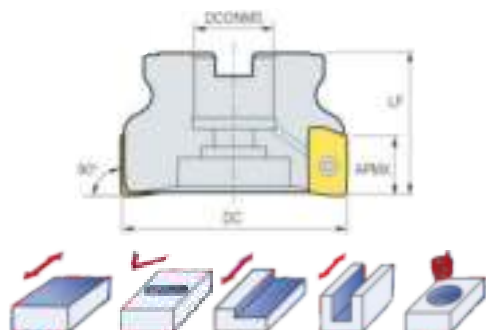
Cylindrical straight type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RSM-016-Z02-A16R-AP1135-L150	2	16	16	50	150	0.21	APxx1135xxx	Yes	●
RSM-020-Z02-A20R-AP1135-L150	2	20	20	50	150	0.34	APxx1135xxx	Yes	●
RSM-020-Z03-A20R-AP1135-L150	3	20	20	50	150	0.34	APxx1135xxx	Yes	○
RSM-025-Z03-A25R-AP1135-L180	3	25	25	50	180	0.62	APxx1135xxx	Yes	●
RSM-025-Z04-A25R-AP1135-L180	4	25	25	50	180	0.61	APxx1135xxx	Yes	○
RSM-025-Z02-A25R-AP1604-L180	2	25	25	50	180	0.62	APxx1604xxx	Yes	●
RSM-032-Z04-A32R-AP1135-L200	4	25	25	70	200	1.12	APxx1135xxx	Yes	●
RSM-032-Z05-A32R-AP1135-L250	5	32	32	70	250	1.41	APxx1135xxx	Yes	○
RSM-032-Z03-A32R-AP1604-L250	3	32	32	70	250	1.39	APxx1604xxx	Yes	●

AP(M)T__90°

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RSM-040-Z05-A16R-AP1135	5	40	16	40	9	0.22	APxx1135xxx	Yes	○
RSM-040-Z03-A16R-AP1604	3	40	16	40	14	0.2	APxx1604xxx	Yes	●
RSM-050-Z06-A22R-AP1135	6	50	22	40	9	0.37	APxx1135xxx	Yes	○
RSM-050-Z04-A22R-AP1604	4	50	22	40	14	0.33	APxx1604xxx	Yes	●
RSM-063-Z07-A22R-AP1135	7	63	22	40	9	0.56	APxx1135xxx	Yes	○
RSM-063-Z05-A22R-AP1604	5	63	22	40	14	0.61	APxx1604xxx	Yes	●
RSM-080-Z06-A27R-AP1604	6	80	27	50	14	0.96	APxx1604xxx	Yes	○
RSM-100-Z07-A32R-AP1604	7	100	32	63	14	2.13	APxx1604xxx	Yes	○
RSM-125-Z08-A40R-AP1604	8	125	40	63	14	2.81	APxx1604xxx	Yes	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape			
Insert			
APxx1135xxx	M2565360860TP8-A	1.2 N.m	W-IP08
APxx1604xxx	M41155160-A	4.0 N.m	W-IP15

AP(M)T__

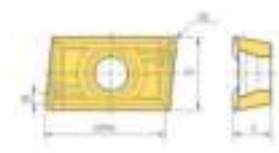
Positive 2 edge milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	APMT1135 APMT1604	0.3-1.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-1.5		
	Pre-harden Steel	HRC35-45			0.3-1.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	APMT1135 APMT1604	0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-1.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	APMT1135 APMT1604	0.3-1.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.3-1.5	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-1.5	40 (30-60)	0.15 (0.1-0.3)

AXMT_ _

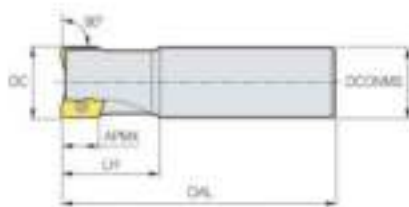
Positive 2 edge Mini-milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	AXMT060202R-EM	5.5	4.15	2.6	0.76	2.2	0.2	•													
	AXMT060204R-EM	5.5	4.15	2.6	0.76	2.2	0.4	•	•												
	AXMT060208R-EM	5.5	4.15	2.6	0.76	2.2	0.8	•	•												

AXMT__

Mini-milling Cylindrical straight type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RSM-010-Z02-A10R-AX0602-L80	2	10	10	16	75	0.05	AXxx0602xxx	Yes	●
RSM-010-Z02-A10R-AX0602-L120	2	10	10	20	120	0.06	AXxx0602xxx	Yes	●
RSM-012-Z02-A12R-AX0602-L80	2	12	12	20	80	0.07	AXxx0602xxx	Yes	●
RSM-012-Z03-A12R-AX0602-L80	3	12	12	20	80	0.07	AXxx0602xxx	Yes	○
RSM-012-Z02-A12R-AX0602-L120	2	12	12	20	120	0.09	AXxx0602xxx	Yes	○
RSM-014-Z02-A14R-AX0602-L100	2	14	14	20	80	0.12	AXxx0602xxx	Yes	●
RSM-014-Z03-A14R-AX0602-L100	3	14	14	20	80	0.12	AXxx0602xxx	Yes	○
RSM-016-Z03-A16R-AX0602-L110	3	16	16	25	110	0.16	AXxx0602xxx	Yes	●
RSM-016-Z04-A16R-AX0602-L110	4	16	16	25	110	0.16	AXxx0602xxx	Yes	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
AXxx0602xxx	TS 18041I/HG	0.5 N.m	W-IP06

AXMT_ _

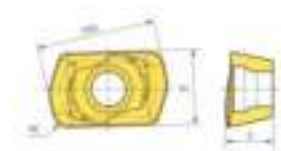
Positive 2 edge Mini-milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	AXMT0602	0.2-1	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.2-1		
	Pre-harden Steel	HRC35-45			0.2-1	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	AXMT0602	0.2-1	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic)	≤ HB270			0.2-1	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	AXMT0602	0.2-1	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.2-1	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.2-1	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 P1025		0.2-1	40 (30-60)	0.15 (0.1-0.3)

LPGT_ _

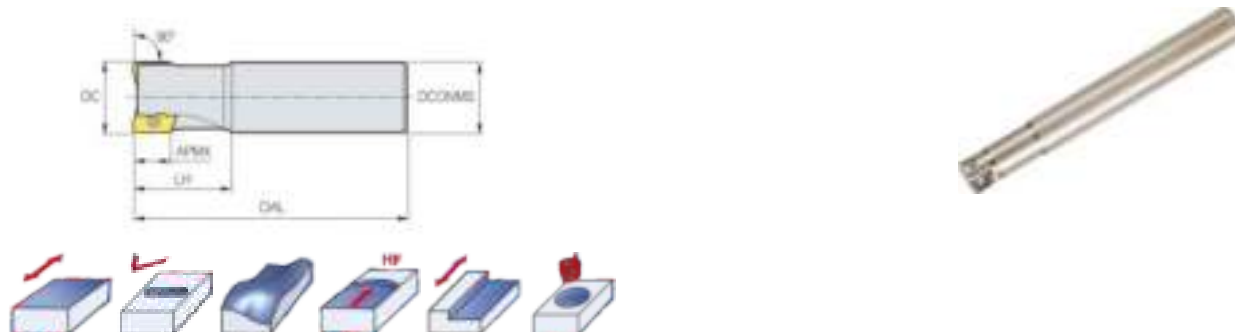
Positive 2 edge Mini-High Feed milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	LPGT010210ER-GM	6.26	4.19	2.19	2.2	2.1	1.0	●				●	●		●				●		

LPGT__

Mini-High Feed milling Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RHF-010-Z02-A10R-LP0102-L75	2	10	10	16	75	0.04	LPxx0102xxx	Yes	●
RHF-012-Z02-A12R-LP0102-L80	2	12	12	20	80	0.06	LPxx0102xxx	Yes	●
RHF-012-Z03-A12R-LP0102-L80	3	12	12	20	80	0.06	LPxx0102xxx	Yes	○
RHF-014-Z02-A14R-LP0102-L80	2	14	14	20	80	0.09	LPxx0102xxx	Yes	●
RHF-014-Z03-A14R-LP0102-L80	3	14	14	20	80	0.09	LPxx0102xxx	Yes	○
RHF-016-Z03-A16R-LP0102-L90	3	16	16	25	90	0.12	LPxx0102xxx	Yes	●
RHF-016-Z04-A16R-LP0102-L90	4	16	16	25	90	0.12	LPxx0102xxx	Yes	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape			
LPxx0102xxx	TS 18041I/HG	0.5 N.m	W-IP06

LPGT_ _

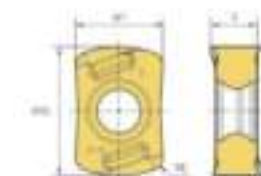
Positive 2 edge Mini-High Feed milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	LPGT0102	0.1-0.3	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.1-0.3		
	Pre-harden Steel	HRC35-45			0.1-0.3	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	LPGT0102	0.1-0.3	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.1-0.3	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	LPGT0102	0.1-0.3	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.1-0.3	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.1-0.3	40 (30-60)	0.15 (0.1-0.3)

UDMP06/09

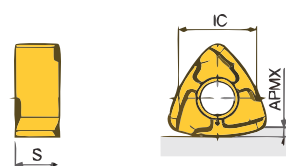
Negative 4 edge High Feed milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	UDMP0603R-M	9	6.39	3.73	—	2.8	2.0	●	●			●	●		●				●		
	UDMP0904R-M	11.94	9.2	4.79	—	4	2.5	●	●			●	●		●				●		

UDMP13

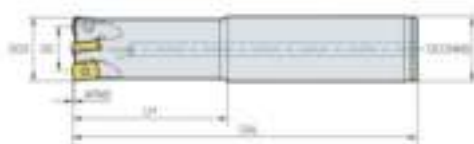
Negative 6 edge High Feed milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	W1	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	UDMP1306R-MM	12.3	—	7.1	—	5.45	1.8	●	●			●	●								

UDMP06/09

High Feed milling Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RHF-016-Z02-A16R-UD06-L150	2	16	16	50	150	0.21	UDxx0602xxx	Yes	●
RHF-020-Z02-A20R-UD06-L150	2	20	20	50	150	0.34	UDxx0602xxx	Yes	●
RHF-020-Z03-A20R-UD06-L150	3	20	20	50	150	0.34	UDxx0602xxx	Yes	○
RHF-020-Z02-A20R-UD06-L200	2	20	20	50	200	0.34	UDxx0602xxx	Yes	○
RHF-025-Z03-A25R-UD06-L180	3	25	25	50	180	0.62	UDxx0602xxx	Yes	●
RHF-025-Z04-A25R-UD06-L180	4	25	25	50	180	0.62	UDxx0602xxx	Yes	○
RHF-025-Z03-A25R-UD06-L250	3	25	25	50	250	0.86	UDxx0602xxx	Yes	○
RHF-025-Z02-A25R-UD09-L180	2	25	25	50	180	0.62	UDxx0904xxx	Yes	●
RHF-025-Z03-A25R-UD09-L180	3	25	25	50	180	0.62	UDxx0904xxx	Yes	○
RHF-025-Z02-A25R-UD09-L250	2	25	25	50	250	0.86	UDxx0904xxx	Yes	○
RHF-032-Z04-A32R-UD06-L200	4	25	25	70	200	1.12	UDxx0602xxx	Yes	●
RHF-032-Z05-A32R-UD06-L200	5	32	32	70	200	1.12	UDxx0602xxx	Yes	○
RHF-032-Z04-A32R-UD06-L250	4	32	32	70	250	1.40	UDxx0602xxx	Yes	○
RHF-032-Z03-A32R-UD09-L200	3	32	32	70	200	1.12	UDxx0904xxx	Yes	●
RHF-032-Z04-A32R-UD09-L200	4	32	32	70	200	1.12	UDxx0904xxx	Yes	○
RHF-032-Z03-A32R-UD09-L250	3	32	32	70	250	1.40	UDxx0904xxx	Yes	○

UDMP06/09

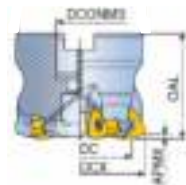
Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RHF-040-Z06-A16R-UD0603	6	36	16	40	1	0.17	UD××0603×××	Yes	○
RHF-040-Z04-A16R-UD0904	4	34	16	40	2	0.19	UD××0904×××	Yes	●
RHF-050-Z07-A22R-UD0603	7	46	22	40	1	0.33	UD××0603×××	Yes	○
RHF-050-Z06-A22R-UD0904	6	44	22	40	2	0.32	UD××0904×××	Yes	●
RHF-063-Z08-A22R-UD0603	8	59	22	40	1	0.52	UD××0603×××	Yes	○
RHF-063-Z07-A22R-UD0904	7	57	22	40	2	0.49	UD××0904×××	Yes	●
RHF-080-Z08-A27R-UD0904	8	74	27	50	2	0.96	UD××0904×××	Yes	○

UDMP13

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RHF-040-Z03-A16R-UD1306	3	40	16	40	2	0.17	UDxx1306xxx	Yes	○
RHF-050-Z03-A22R-UD1306	3	50	22	40	2	0.33	UDxx1306xxx	Yes	○
RHF-063-Z04-A22R-UD1306	4	63	22	40	2	0.52	UDxx1306xxx	Yes	●
RHF-080-Z05-A27R-UD1306	5	80	27	50	2	0.96	UDxx1306xxx	Yes	●
RHF-100-Z06-A32R UD1306	6	100	32	50	2	1.43	UDxx1306xxx	No	○
RHF-125-Z07-A40R UD1306	7	125	40	50	2	3.02	UDxx1306xxx	No	○
RHF-160-Z08-A40R UD1306	8	160	40	63	2	4.12	UDxx1306xxx	No	○
RHF-200-Z10-A60R UD1306	10	200	60 No	63	2	6.42	UDxx1306xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
UDxx0603xxx	M2565360860TP8-A	1.2 N.m	W-IP08
UDxx0904xxx	M3587530760-A	1.8 N.m	W-IP15
UDxx1306xx	M51270860-B	5.0 N.m	W-IP20

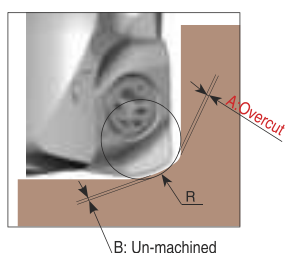
UDMP06/09/13

Negative 4/6 edge Feed milling insert

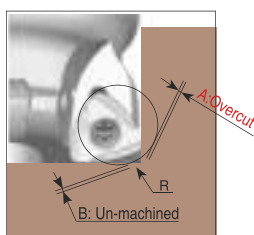
Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	UDMP0603 UDMP0904 UDMP1306	0.3-1.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-1.5		
	Pre-harden Steel	HRC35-45			0.3-1.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	UDMP0603 UDMP0904 UDMP1306	0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Duplex	≤ HB270			0.3-1.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	UDMP0603 UDMP0904 UDMP1306	0.3-1.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-1.5	40 (30-60)	0.15 (0.1-0.3)

Recommended Programing Radius 'R'



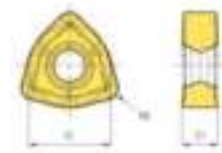
	R Program	A Over cut	B Un-machined material thickness
UDMP 06	2.0	0	0.42
	2.5	0.12	0.26
	3.0	0.29	0.17
UDMP 09	2.5	0	0.61
	3.0	0.09	0.45
	3.5	0.24	0.30
	4.0	0.41	0.17
	3.0	0.36	0.04



	R Program	A Over cut	B Un-machined material thickness
UDMP 13	3.0	0	1.31
	3.5	0	1.17
	4.0	0.04	1.03
	4.5	0.15	0.89
	5.0	0.3	0.76

XNMX06/09

Negative 6 edge High Feed milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	D	D1	RE	P1025	P6130	P4025	P2025	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	XNMX060312ZNN-MM	—	6.35	3.18	1.2	2.8	1.2	●				●									
	XNMX09T316ZNN-MM	—	9.525	3.97	1.7	3.6	1.6	●				●	●								

XNMX6/09

High Feed milling Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RHF-040-Z04-A16R-XN0603	4	40	16	40	1	0.18	XN××0603×××	Yes	○
RHF-040-Z03-A16R-XN09T3	3	40	16	40	1.5	0.2	XN××09T3×××	Yes	●
RHF-050-Z05-A22R-XN0603	5	50	22	40	1	0.29	XN××0603×××	Yes	○
RHF-050-Z04-A22R-XN09T3	4	50	22	40	1.5	0.31	XN××09T3×××	Yes	●
RHF-063-Z07-A22R-XN0603	7	63	22	40	1	0.53	XN××0603×××	Yes	○
RHF-063-Z06-A22R-XN09T3	6	63	22	40	1.5	0.51	XN××09T3×××	Yes	●
RHF-080-Z08-A27R-XN09T3	8	80	27	50	1.5	0.92	XN××09T3×××	Yes	○

XNMX06/09

High Feed milling Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RHF-016-Z02-A16R-XN0603-L150	2	16	16	50	150	0.21	XNxx0603xxx	Yes	●
RHF-020-Z02-A20R-XN0603-L150	2	20	20	50	150	0.34	XNxx0603xxx	Yes	●
RHF-020-Z02-A20R-XN0603-L200	2	20	20	50	200	0.45	XNxx0603xxx	Yes	○
RHF-025-Z03-A25R-XN0603-L180	3	25	25	50	180	0.62	XNxx0603xxx	Yes	●
RHF-025-Z03-A25R-XN0603-L250	3	25	25	50	250	0.86	XNxx0603xxx	Yes	○
RHF-025-Z02-A25R-XN09T3-L180	2	25	25	50	180	0.62	XNxx09T3xxx	Yes	●
RHF-025-Z02-A25R-XN09T3-L250	2	25	25	50	250	0.86	XNxx09T3xxx	Yes	○
RHF-032-Z04-A32R-XN0603-L200	4	25	25	70	200	1.20	XNxx0603xxx	Yes	●
RHF-032-Z04-A32R-XN0603-L250	4	32	32	70	250	1.40	XNxx0603xxx	Yes	○
RHF-032-Z03-A32R-XN09T3-L200	3	32	32	70	200	1.20	XNxx09T3xxx	Yes	●
RHF-032-Z03-A32R-XN09T3-L250	3	32	32	70	250	1.40	XNxx09T3xxx	Yes	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
XNxx0603xxx	M2567345160TP8-A	1.2 N.m	W-IP08
XNxx09T3xxx	M372420760-A	1.8 N.m	W-IP09

XNMX06/09

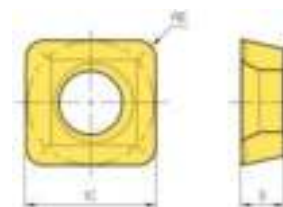
Negative 6 edge Feed milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	XNMX0603 XNMX09T3	0.3-1	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-1		
	Pre-harden Steel	HRC35-45			0.3-1	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	XNMX0603 XNMX09T3	0.3-1	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-1	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	XNMX0603 XNMX09T3	0.3-1	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-1	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy andTitaniumAlloy	HRC30-45	S4140 P1025		0.3-1	40 (30-60)	0.15 (0.1-0.3)

SDMT09/12/15

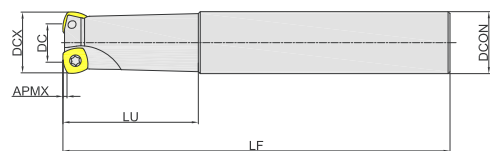
Positive 4 edge High Feed milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	SDMT06T205-DM	6	6.35	2.78	—	—	0.5	●				●									
	SDMT09T307-DM	9	9	3.5	—	3.5	0.7	●				●									
	SDMT120512-GM	12.7	12.7	5.6	—	4.5	1.2	●				●			●						
	SDMT120520-GM	12.7	12.7	5.6	—	4.5	2.0	●				●			●						
	SDMT150512-GM	15.88	15.88	5.6	—	5.6	1.2	●				●									

SDMT09/12/15

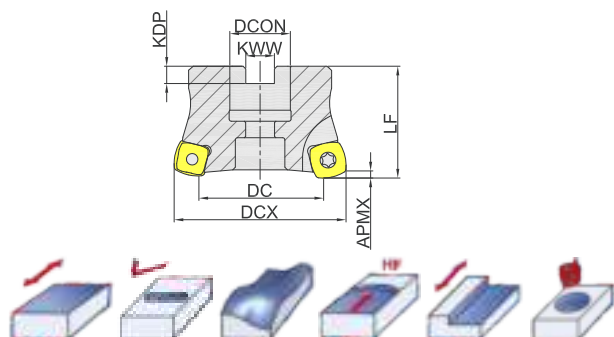
High Feed milling Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RHF-025-Z03-A25R-SD09T3-L180	3	25	25	50	180	0.62	SDxx09T3xxx	Yes	●
RHF-025-Z03-A25R-SD09T3-L250	3	25	25	70	250	0.86	SDxx09T3xxx	Yes	○
RHF-032-Z04-A16R-SD09T3-L200	4	32	32	70	200	1.12	SDxx09T3xxx	Yes	●
RHF-032-Z04-A16R-SD09T3-L250	4	32	32	70	250	1.4	SDxx09T3xxx	Yes	○
RHF-032-Z03-A16R-SD1205-L200	3	32	32	70	200	1.09	SDxx1205xxx	Yes	●
RHF-032-Z03-A16R-SD1205-L250	3	32	32	70	250	1.39	SDxx1205xxx	Yes	○

SDMT09/12/15

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RHF-040-Z05-A16R-SD09T3	5	25	16	40	1	0.17	SDxx09T3xxx	Yes	●
RHF-040-Z04-A16R-SD1205	4	24	16	40	2	0.19	SDxx1205xxx	Yes	○
RHF-050-Z06-A22R-SD09T3	6	50	22	40	1	0.27	SDxx09T3xxx	Yes	○
RHF-050-Z04-A22R-SD1205	4	34	22	40	2	0.29	SDxx1205xxx	Yes	●
RHF-063-Z07-A22R-SD09T3	7	63	22	40	1	0.53	SDxx09T3xxx	Yes	○
RHF-063-Z05-A22R-SD1205	5	47	22	40	2	0.48	SDxx1205xxx	Yes	●
RHF-063-Z04-A22R-SD1505	4	42	22	40	3	0.38	SDxx1505xxx	Yes	○
RHF-080-Z06-A27R-SD1205	6	64	27	50	2	0.98	SDxx1205xxx	Yes	○
RHF-080-Z05-A27R-SD1505	5	59	27	50	3	0.75	SDxx1505xxx	Yes	○
RHF-100-Z07-A32R-SD1205	7	84	32	50	2	1.05	SDxx1205xxx	NO	○
RHF-100-Z06-A32R-SD1505	6	79	32	50	3	1.19	SDxx1505xxx	NO	○
RHF-125-Z08-A32R-SD1205	8	109	40	63	2	2.21	SDxx1205xxx	NO	○
RHF-125-Z07-A32R-SD1505	7	104	40	63	3	2.27	SDxx1505xxx	NO	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
SDxx09T3xxx	M372420760-A	1.8 N.m	W-IP09
SDxx1205xxx	M41155160-A	4.0 N.m	W-IP15
SDxx1505xxx	M51270860-B	5.0 N.m	W-IP20

SDMT09/12/15

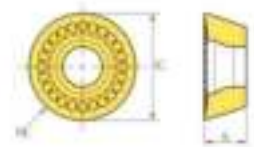
Positive 4 edge Feed milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	SDMT09T3 SDMT1205 SDMT1505	0.3-1.5	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-1.5		
	Pre-harden Steel	HRC35-45			0.3-1.5	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	SDMT09T3 SDMT1205 SDMT1505	0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-1.5	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	SDMT09T3 SDMT1205 SDMT1505	0.3-1.5	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-1.5	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20				
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-1.5	40 (30-60)	0.15 (0.1-0.3)

RC_ _

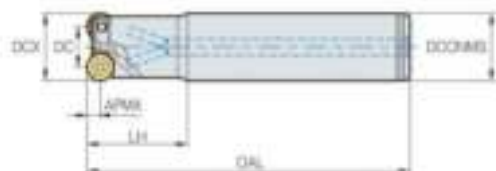
Positive Round milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	RCGX0803MO-AC	—	8	3.175	—	3.4	4.0														•
	RCGX10T3MO-AC	—	10	3.97	—	4.4	5.0														•
	RCGX1204MO-AC	—	12	4.76	—	4.0	6.0														•
	RCKT10T3MO-MM		10	3.97		4.4	5.0	•			•	•									•
	RCKT1204MO-MM		12	4.76	—	4.0	6.0	•			•	•	•	•	•	•			•	•	
	RCMT1606MO		16	6.35		5.5	8.0	•	•		•	•				•		•	•		
	RCMT2006MO		20	6.35		6.5	10.0	•	•		•	•				•			•		

RC__

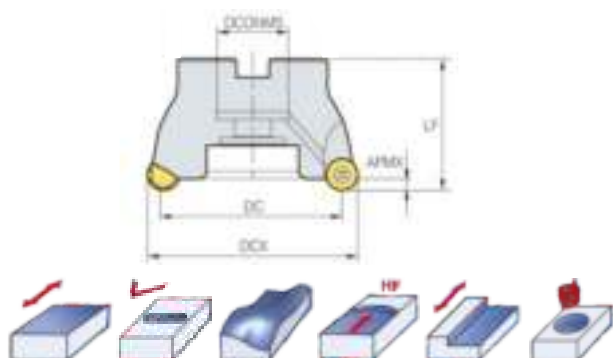
Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RPM-016-Z02-A16R-RC0803-L120	2	16	16	50	120	0.17	RCxx0803xxx	Yes	●
RPM-016-Z02-A16R-RC0803-L150	2	16	16	50	150	0.21	RCxx0803xxx	Yes	○
RPM-020-Z02-A20R-RC0803-L150	2	20	20	50	150	0.34	RCxx0803xxx	Yes	●
RPM-020-Z02-A20R-RC10T3-L150	2	20	20	50	150	0.33	RCxx10T3xxx	Yes	○
RPM-020-Z02-A20R-RC10T3-L200	2	20	20	50	200	0.45	RCxx10T3xxx	Yes	○
RPM-025-Z02-A25R-RC10T3-L180	2	25	25	50	180	0.62	RCxx10T3xxx	Yes	●
RPM-025-Z02-A25R-RC1204-L180	2	25	25	50	180	0.61	RCxx1204xxx	Yes	○
RPM-032-Z03-A32R-RC10T3-L200	3	25	25	70	200	1.13	RCxx10T3xxx	Yes	●
RPM-032-Z03-A32R-RC1205-L200	3	32	32	70	200	1.12	RCxx1204xxx	Yes	○
RPM-032-Z03-A32R-RC1205-L250	3	32	32	70	250	1.41	RCxx1204xxx	Yes	●

RC__

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RPM-050-Z04-A22R-RC1204	4	50	22	40	6	0.32	RCxx1204xxx	Yes	●
RPM-063-Z05-A22R-RC1204	5	63	22	40	6	0.54	RCxx1204xxx	Yes	●
RPM-063-Z04-A22R-RC1606	4	63	22	40	8	0.43	RCxx1606xxx	Yes	○
RPM-080-Z06-A27R-RC1204	6	80	27	40	6	0.87	RCxx1204xxx	Yes	●
RPM-080-Z05-A27R-RC1606	5	80	27	40	8	0.78	RCxx1606xxx	Yes	●
RPM-100-Z06-A32R-RC1606	6	100	32	50	8	1.11	RCxx1606xxx	No	○
RPM-100-Z06-A32R-RC2006	6	100	32	50	10	1.06	RCxx2006xxx	No	○
RPM-125-Z07-A40R-RC1606	7	125	40	50	8	2.26	RCxx1606xxx	No	○
RPM-125-Z07-A40R-RC2006	7	125	40	50	10	2.35	RCxx2006xxx	No	○
RPM-160-Z08-A40R-RC2006	8	160	40	63	10	4.49	RCxx2006xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
RCxx1204xxx	M3587530760-A	3.0 N.m	W-IP15
RCxx1606xxx	M51270860-B	5.0 N.m	W-IP20
RCxx2006xxx	I60M060160-085095	7.5 N.m	T-IP25
RCxx0803xxx	M2565360860TP8-A	1.8 N.m	W-IP08
RCxx10T3xxx	M41155160-A	4.0 N.m	W-IP15

RC_ _

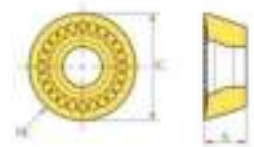
Positive Round milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	RC(X)0803 RCKT10T3 RCGX1204 RCMT1606 RCMT200	0.3-3.2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-3.2		
	Pre-harden Steel	HRC35-45			0.3-3.2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	RC(X)0803 RCKT10T3 RCGX1204 RCMT1606 RCMT200	0.3-3.2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-3.2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	RC(X)0803 RCKT10T3 RCGX1204 RCMT1606 RCMT200	0.3-3.2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-3.2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.3-3.2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-3.2	40 (30-60)	0.15 (0.1-0.3)

RD _ _

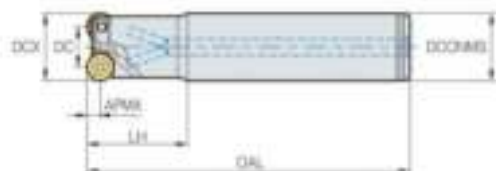
Positive Round milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	RDHX1003MOT		8	3.18		2.9	4.0	•				•									
	RDHX12T3MOT		12	3.97		4.4	6.0	•				•									
	RDKW1003MO		8	3.18		2.9	4.0	•				•									
	RDKW10T3MO		10	3.97		4.4	5.0	•				•							•		
	RDKW1204MO		12	4.76		4.4	6.0	•				•				•			•		
	RDMT1604MO		16	4.76		5.5	8.0	•				•				•			•		
	RDMT0803MO		8	3.18		2.9	4.0	•				•							•		
	RDMT10T3MO		10	3.97		4.4	5.0	•			•	•	•			•			•		
	RDMT1204MO		12	4.76		4.4	6.0	•	•		•	•	•		•	•			•		
	RDMT1604MO		16	4.76		5.5	8.0	•		•	•										

RD_ _

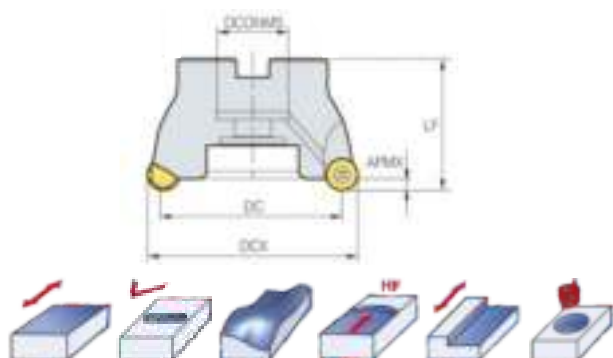
Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RPM-016-Z02-A16R-RD0803-L120	2	16	16	50	120	0.17	RDxx0803xxx	Yes	●
RPM-016-Z02-A16R-RD0803-L150	2	16	16	50	150	0.21	RDxx0803xxx	Yes	○
RPM-020-Z02-A20R-RD0803-L150	2	20	20	50	150	0.34	RDxx0803xxx	Yes	●
RPM-020-Z02-A20R-RD10T3-L150	2	20	20	50	150	0.33	RDxx10T3xxx	Yes	○
RPM-020-Z02-A20R-RD10T3-L200	2	20	20	50	200	0.45	RDxx10T3xxx	Yes	○
RPM-025-Z02-A25R-RD10T3-L180	2	25	25	50	180	0.62	RDxx10T3xxx	Yes	●
RPM-025-Z02-A25R-RD1204-L180	2	25	25	50	180	0.61	RDxx1204xxx	Yes	○
RPM-032-Z03-A32R-RD10T3-L200	3	25	25	70	200	1.13	RDxx10T3xxx	Yes	●
RPM-032-Z03-A32R-RD1205-L200	3	32	32	70	200	1.12	RDxx1204xxx	Yes	○
RPM-032-Z03-A32R-RD1205-L250	3	32	32	70	250	1.41	RDxx1204xxx	Yes	●

RD__

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RPM-050-Z04-A22R-RD1204	4	50	22	40	6	0.3	RD××1204×××	Yes	●
RPM-063-Z05-A22R-RD1204	5	63	22	40	6	0.51	RD××1204×××	Yes	●
RPM-063-Z04-A22R-RD1604	4	63	22	40	8	0.53	RD××1604×××	Yes	○
RPM-080-Z06-A27R-RD1204	6	80	27	40	6	0.82	RD××1204×××	Yes	●
RPM-080-Z05-A27R-RD1604	5	80	27	40	8	0.86	RD××1604×××	Yes	○
RPM-100-Z06-A32R-RD1604	6	100	32	50	8	1.13	RD××1604×××	No	○
RPM-125-Z07-A40R-RD1604	7	125	40	50	8	2.37	RD××1604×××	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
RD××0803×××	M2565360860TP8-A	1.8 N.m	W-IP08
RD××10T3×××	M41155160-A	4.0 N.m	W-IP15
RD××1204×××	M41155160-A	4.0 N.m	W-IP15
RD××1604×××	M51270860-B	5.0 N.m	W-IP20

RD _ _

Positive Round milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	RDHX1003 RDHX12T3 RDKW1204 RDMT1604	0.3-2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-2		
	Pre-harden Steel	HRC35-45			0.3-2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	RDHX1003 RDHX12T3 RDKW1204 RDMT1604	0.3-2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	RDHX1003 RDHX12T3 RDKW1204 RDMT1604	0.3-2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210					
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-2	40 (30-60)	0.15 (0.1-0.3)

RP_ _

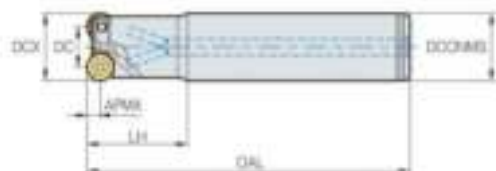
Positive Round milling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	RPMT08T2MO		8	2.78		2.9	4.0	•			•	•	•	•		•			•	•	
	RPMT10T3MO		10	3.97		4.4	5.0	•			•	•	•	•		•			•	•	
	RPMT1204MO		12	4.76		4.4	6.0	•			•	•	•	•		•			•	•	
	RPMT1606MO		16	6.35		5.5	8.0	•			•	•	•	•		•			•	•	
	RPHX10T3-DF		10	3.97		4.4	5.0	•				•									
	RPHX1204-DF		12	4.76		4.4	6.0	•				•									
	RPHX10T3-DM		10	3.97		4.4	5.0	•				•									
	RPHX1204-DM		12	4.76		4.4	6.0	•				•									
	RPMT08T2MOE-JS		8	2.78		2.9	4.0	•			•	•				•				•	
	RPMT10T3MOE-JS		10	3.97		4.4	5.0	•	•		•	•	•			•			•	•	
	RPMT1204MOE-JS		12	4.76		4.4	6.0	•	•		•	•	•			•			•	•	
	RPMT1606MOE-JS		16	6.35		5.5	8.0	•			•	•				•					
	RPMW08T2MO		8	2.78		2.9	4.0														
	RPMW10T3MO		10	3.97		4.4	5.0														
	RPMW1204MO		12	4.76		4.4	6.0														
	RPMW1606MO		16	6.35		5.5	8.0														

RP__

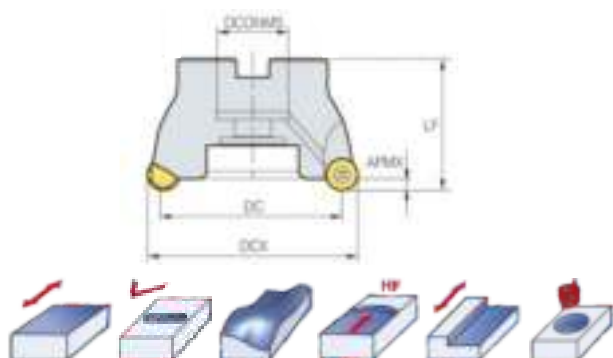
Cylindrical type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LH	OAL				
RPM-016-Z02-A16R-RP0803-L120	2	16	16	50	120	0.17	RPxx0803xxx	Yes	●
RPM-016-Z02-A16R-RP0803-L150	2	16	16	50	150	0.21	RPxx0803xxx	Yes	○
RPM-020-Z02-A20R-RP0803-L150	2	20	20	50	150	0.34	RPxx0803xxx	Yes	●
RPM-020-Z02-A20R-RP10T3-L150	2	20	20	50	150	0.33	RPxx10T3xxx	Yes	○
RPM-020-Z02-A20R-RP10T3-L200	2	20	20	50	200	0.45	RPxx10T3xxx	Yes	○
RPM-025-Z02-A25R-RP10T3-L180	2	25	25	50	180	0.62	RPxx10T3xxx	Yes	●
RPM-025-Z02-A25R-RP1204-L180	2	25	25	50	180	0.61	RPxx1204xxx	Yes	○
RPM-032-Z03-A32R-RP10T3-L200	3	25	25	70	200	1.13	RPxx10T3xxx	Yes	●
RPM-032-Z03-A32R-RP1205-L200	3	32	32	70	200	1.12	RPxx1204xxx	Yes	○
RPM-032-Z03-A32R-RP1205-L250	3	32	32	70	250	1.41	RPxx1204xxx	Yes	●

RP__

Arbor type



Product code	Teeth	Dimension(mm)				Weight (kg)	Insert	Coolant	Stock
		DC	DCONMS	LF	APMAX				
RPM-050-Z04-A22R-RP1003	4	50	22	40	5	0.33	RPxx1003xxx	Yes	●
RPM-050-Z04-A22R-RP1204	4	50	22	40	6	0.32	RPxx1204xxx	Yes	●
RPM-063-Z05-A22R-RP1204	5	63	22	40	6	0.51	RPxx1204xxx	Yes	●
RPM-063-Z04-A22R-RP1606	4	63	22	40	8	0.33	RPxx1606xxx	Yes	○
RPM-080-Z06-A27R-RP1204	6	80	27	40	6	0.83	RPxx1204xxx	Yes	●
RPM-080-Z05-A27R-RP1606	5	80	27	40	8	0.86	RPxx1606xxx	Yes	○
RPM-100-Z06-A32R-RP1606	6	100	32	50	8	1.18	RPxx1606xxx	No	○
RPM-125-Z07-A40R-RP1606	7	125	40	50	8	2.29	RPxx1606xxx	No	○

Part Name	Insert Screw	Torque	Insert Screw Wrench
Shape Insert			
RPxx1003xxx	M41155160-A	4.0 N.m	W-IP15
RPxx1204xxx	M41155160-A	4.0 N.m	W-IP15
RPxx1606xxx	M51270860-B	5.0 N.m	W-IP20
RPxx0803xxx	M2565360860TP8-A	1.2 N.m	W-IP08

RP_ _

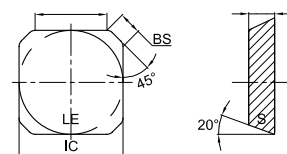
Positive Round milling insert

Recommended Cutting Data

	Workpiece	Hardness	Grade	Specification	Ap (mm)	Cutting Speed Vc(m/min)	Feed fz(mm/teeth)
P	Soft Steel	≤ HB180	P6130 P1025 P4340 P4025 P2025	RPMT08T2 RPMT10T3 RPMT1204 RPMT1606	0.3-2.2	220 (180-260)	0.25 (0.15-0.35)
	Carbon Steel, Alloy Steel	HB180-350			0.3-2.2		
	Pre-harden Steel	HRC35-45			0.3-2.2	150 (180-260)	0.15 (0.1-0.2)
M	Stainless (Ferrite, Martensite)	≤ HB270	M1225 M1040 M8200 M5000	RPMT08T2 RPMT10T3 RPMT1204 RPMT1606	0.3-2.2	160 (120-200)	0.25 (0.15-0.35)
	Stainless Austenite, Diphasic	≤ HB270			0.3-2.2	140 (100-180)	0.15 (0.1-0.3)
K	Grey Cast Iron	≤ HB280	K3115 K3120 K3215	RPMT08T2 RPMT10T3 RPMT1204 RPMT1606	0.3-2.2	180 (140-220)	0.25 (0.15-0.35)
	Nodular Cast Iron,	≤ HB350			0.3-2.2	160 (120-200)	0.25 (0.15-0.35)
N	Nonferrous Metal	HB60-210	K001 K20		0.3-2.2	≥ 300	0.2 (0.1-0.3)
S	Heatresistant Alloy and Titanium Alloy	HRC30-45	S4140 P1025		0.3-2.2	40 (30-60)	0.15 (0.1-0.3)

SEEN/R_ _

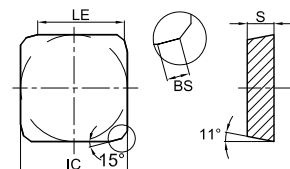
Positive 45° milling insert



Shape	Product code	Dimension(mm)				P				M				K		N	
		LE	IC	S	BS	P1025	P6130	P4125	P4330	M1225	M1040	M8200	M5000	K3115	K3215	K001	K20
	SEEN1203AFTN-D3	8.8	12.7	3.18	2.3	•			•	•	•			•			
	SEEN1203AFTN	8.8	12.7	3.18	2.3	•			•	•	•			•			
	SEEN1504AFTN	10.45	15.875	4.76	2.4	•			•	•	•			•			
	SEER1203-AFS	8.8	12.7	3.18	2.3	•			•	•	•			•			
	SEER1203-AFS-3	8.8	12.7	3.18	2.3	•			•	•	•			•			
	SEER1504-AFS	10.45	15.875	4.76	2.4	•			•	•	•			•			

SPKN_ _

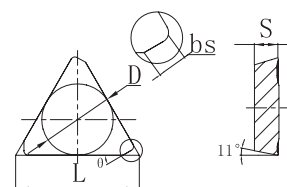
Positive milling insert



Shape	Product code	Dimension(mm)				P				M				K		N	
		LE	IC	S	BS	P1025	P6130	P4125	P4330	M1225	M1040	M8200	M5000	K3115	K3215	K001	K20
	SPKN1203EDR	10.8	12.7	3.18	1.4				•					•			
	SPKN1203EDR-D3	10.8	12.7	3.18	1.4	•				•							
	SPKN1203EDTR-D3	10.8	12.7	3.18	1.4	•			•	•				•			
	SPKN1504EDR	13.5	15.875	4.76	1.4				•					•			
	SPKN1504EDR-D3	13.5	15.875	4.76	1.4	•				•				•			
	SPKN150420-D3	13.5	15.875	4.76	2.0				•								
	SPKN150430-D3	13.5	15.875	4.76	3.0				•								
	SPKN150440-D3	13.5	15.875	4.76	4.0				•								
	SPKN150450-D3	13.5	15.875	4.76	5.0				•								
	SPKN190430	15.1	19.05	5.56	3.0	•											
	SPKN190460-D3	15.1	19.05	5.56	6.0	•								•			
	SPKN1504EDL	13.5	15.875	4.76	1.4												
	SPKN1504EDFL	13.5	15.875	4.76	1.4									•		•	•
	SPKN1504EDSKR	13.5	15.875	4.76	1.4	•	•		•	•							

TPKR/N_ _

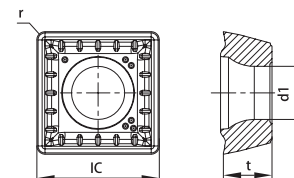
Positive milling insert



Shape	Product code	Dimension(mm)				P				M				K		N	
		LE	IC	S	BS	P1025	P6130	P4125	P4330	M1225	M1040	M8200	M5000	K3115	K3215	K001	K20
	TPKR2204PDTR-NN	18.66	12.7	4.76	1.4	•			•	•							
	TPKR2204PDR-EM	18.66	12.7	4.76	1.4	•			•	•							
	TPKN1603PDSKR-D3	13.2	9.525	3.18	1.3	•			•	•				•		•	
	TPKN2204PDR-D3	18.66	12.7	4.76	1.4	•				•							
	TPKN1603PDTR-D3	13.2	9.525	3.18	1.3	•				•							
	TPKN2204PDER	18.66	12.7	4.76	1.4	•				•							
	TPKN2204PDTR-D3	18.66	12.7	4.76	1.4	•				•				•			
	TPUN160304	13.2	9.525	3.18	0.4	•			•	•				•			
	TPUN160308	13.2	9.525	3.18	0.8	•			•	•				•			
	TPUN220408-D3	18.66	12.7	4.76	0.8	•			•	•				•			
	TPUN220412	18.66	12.7	4.76	1.2	•			•	•				•			

SPMG__

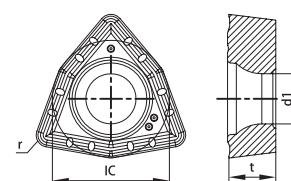
General Drilling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S	BS	D1	RE	P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	SPMG050204-GM	5	5	2.38	—	2.25		●				●									
	SPMG060204-GM	5	5	2.38	—	2.61		●				●									
	SPMG07T308-GM	7.94	7.94	3.97	—	2.85		●				●									
	SPMG090408-GM	9.8	9.8	4.76	—	4.05		●				●									
	SPMG110408-GM	11.5	11.5	4.76	—	4.45		●				●									
	SPMG140512-GM	14.3	14.3	5.2	—	5.75		●				●									

WCMX__

General Drilling insert



Shape	Product code	Dimension(mm)						P				M				K			S	N	
		LE	IC	S ^{RE}	BS	D1		P1025	P6130	P4025	P4340	M1225	M1040	M8200	M5000	K3115	K3120	K3215	S4140	K001	K20
	WCMX030208-GM	3.8	5.56	2.38	—	2.3	0.8	●				●									
	WCMX040208-GM	4.3	6.35	238	—	3.1	0.8	●				●									
	WCMX050308-GM	5.4	7.94	3.18	—	3.2	0.8	●				●									
	WCMX06T308-GM	6.5	9.525	3.97	—	3.7	0.8	●				●									
	WCMX080412-GM	8.7	12.7	4.76	—	4.3	1.2	●				●									

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Hole Making Solution XTREAM Drill Series



XTREAM Drill Head



Code	D	L
RHX1250-PDPA	12.50	9.60
RHX1300-PDPA	13.00	9.60
RHX1350-PDPA	13.50	9.60
RHX1400-PDPA	14.00	10.10
RHX1450-PDPA	14.50	10.10
RHX1500-PDPA	15.00	10.60
RHX1550-PDPA	15.50	10.60
RHX1600-PDPA	16.00	11.60
RHX1650-PDPA	16.50	11.60
RHX1700-PDPA	17.00	11.60
RHX1750-PDPA	17.50	11.60
RHX1800-PDPA	18.00	11.60
RHX1850-PDPA	18.50	12.60
RHX1900-PDPA	19.00	12.60
RHX1950-PDPA	19.50	12.60
RHX2000-PDPA	20.00	13.60
RHX2050-PDPA	205.00	13.60
RHX2100-PDPA	21.00	13.60
RHX2150-PDPA	21.50	13.60

XTREAM Drill Head



Code	D	L
RHX2200-PDPA	22.00	13.60
RHX2250-PDPA	22.50	14.60
RHX2300-PDPA	23.00	14.60
RHX2350-PDPA	23.50	14.60
RHX2400-PDPA	24.00	14.60
RHX2450-PDPA	24.50	15.60
RHX2500-PDPA	25.00	15.60
RHX2550-PDPA	25.50	15.60
RHX2600-PDPA	26.00	15.60
RHX2650-PDPA	26.50	16.60
RHX2700-PDPA	27.00	16.60
RHX2750-PDPA	27.50	16.60
RHX2800-PDPA	28.00	16.60
RHX2850-PDPA	28.50	17.60
RHX2900-PDPA	29.00	17.60
RHX2950-PDPA	29.50	17.60
RHX3000-PDPA	30.00	17.60
RHX3050-PDPA	30.50	18.60
RHX3100-PDPA	31.00	18.60

XTREAM Drill Head



Code	D	L
RHX3150-PDPA	31.50	18.60
RHX3200-PDPA	32.00	18.60
RHX3250-PDPA	32.50	20.60
RHX3300-PDPA	33.00	20.60
RHX3350-PDPA	33.50	20.60
RHX3400-PDPA	34.00	20.60
RHX3450-PDPA	34.50	20.60
RHX3500-PDPA	35.00	20.60
RHX3550-PDPA	35.50	20.60
RHX3600-PDPA	36.00	20.60
RHX3650-PDPA	36.50	22.60
RHX3700-PDPA	37.00	22.60
RHX3750-PDPA	37.50	22.60
RHX3800-PDPA	38.00	22.60
RHX3850-PDPA	38.50	22.60
RHX3900-PDPA	39.00	22.60
RHX3950-PDPA	39.50	22.60
RHX4000-PDPA	40.00	22.60

XTREAM Drill Body 3D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX03-125-SD16	12.5-13.0	112	38	48	2	16	M3.0/M2.5*14	T6*156
RHX03-130-SD16	13.0-13.5	122	39	48	2.1	16	M3.0/M2.5*14	T6*156
RHX03-135-SD16	13.5	111.5	41	48	2.1	16	M3.0/M2.5*14	T6*156
RHX03-136-SD16	13.51-14.0	111.5	42	48	2.2	16	M3.0/M2.5*14	T6*156
RHX03-140-SD16	14.0-15.0	112	42	48	2.2	16	M3.0/M2.5*14	T6*156
RHX03-145-SD20	14.5	118.5	44	50	2.3	20	M3.0/M2.5*14	T6*156
RHX03-146-SD20	14.51-15.0	118.5	45	50	2.3	20	M3.0/M2.5*14	T6*156
RHX03-150-SD20	15.0-15.5	119.5	45	50	2.4	20	M3.0/M2.5*14	T6*156
RHX03-155-SD20	15.5-15.88	121	47	50	2.5	20	M3.0/M2.5*14	T6*156
RHX03-160-SD20	15.9-16.5	121	48	50	2.5	20	M3.5/M3.0*16	1.5*185
RHX03-165-SD20	16.5-17.0	124	50	50	2.6	20	M3.5/M3.0*16	1.5*185
RHX03-170-SD20	17.0-17.5	124.5	51	50	2.7	20	M3.5/M3.0*16	1.5*185
RHX03-175-SD20	17.5-18.0	126	53	50	2.8	20	M3.5/M3.0*16	1.5*185
RHX03-180-SD20	18.0	129.5	54	50	2.9	20	M3.5/M3.0*16	1.5*185
RHX03-181-SD25	18.01-18.5	135.9	56	56	2.9	25	M3.5/M3.0*16	1.5*185
RHX03-185-SD25	18.5-19.0	138	56	56	2.9	25	M3.5/M3.0*16	1.5*185
RHX03-190-SD25	19.0-19.5	139.8	57	56	3.0	25	M3.5/M3.0*16	1.5*185
RHX03-195-SD25	19.5-19.99	141	59	56	3.1	25	M3.5/M3.0*16	1.5*185
RHX03-200-SD25	20.0-20.5	155.7	60	56	3.2	25	M4.0/M3.0*19	2.0*210
RHX03-205-SD25	20.5-21.0	152	62	56	3.3	25	M4.0/M3.0*19	2.0*210
RHX03-210-SD25	21.0-21.5	148.7	63	56	3.3	25	M4.0/M3.0*19	2.0*210
RHX03-215-SD25	21.5-22.0	155	65	56	3.4	25	M4.0/M3.0*19	2.0*210

XTREAM Drill Body 3D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX03-220-SD25	22.0	163	66	56	3.5	25	M4.0/M3.0*19	2.0*210
RHX03-221-SD25	22.01-22.5	163.5	68	56	3.5	25	M4.0/M3.0*19	2.0*210
RHX03-225-SD25	22.5-23.0	161	68	56	3.6	25	M4.0/M3.0*19	2.0*210
RHX03-230-SD25	23.0-23.5	156.7	69	56	3.7	25	M4.0/M3.0*19	2.0*210
RHX03-235-SD25	23.5-24.0	164	71	56	3.7	25	M4.0/M3.0*19	2.0*210
RHX03-240-SD25	24.0	160.7	72	56	3.8	25	M4.0/M3.0*19	2.0*210
RHX03-241-SD32	24.01-24.5	176.5	74	60	3.8	32	M5.0/M4.0*23	2.5*240
RHX03-245-SD32	24.5-25.0	173	74	60	3.9	32	M5.0/M4.0*23	2.5*240
RHX03-250-SD32	25.0-25.5	170.8	75	60	3.8	32	M5.0/M4.0*23	2.5*240
RHX03-255-SD32	25.5-26.0	176	77	60	3.9	32	M5.0/M4.0*23	2.5*240
RHX03-260-SD32	26.0	179.4	78	60	4.0	32	M5.0/M4.0*23	2.5*240
RHX03-261-SD32	26.01-26.5	179.8	80	60	4.0	32	M5.0/M4.0*23	2.5*240
RHX03-265-SD32	26.5-27.0	176.3	80	60	4.1	32	M5.0/M4.0*23	2.5*240
RHX03-270-SD32	27.0-27.5	177.8	81	60	4.2	32	M5.0/M4.0*23	2.5*240
RHX03-275-SD32	27.5-28.0	184	83	60	4.2	32	M5.0/M4.0*23	2.5*240
RHX03-280-SD32	28.0	181.4	84	60	4.3	32	M5.0/M4.0*23	2.5*240
RHX03-281-SD32	28.01-28.5	181.8	86	60	4.3	32	M6.0/M5.0*28	3.0*265
RHX03-285-SD32	28.5-29.0	190	86	60	4.4	32	M6.0/M5.0*28	3.0*265
RHX03-290-SD32	29.0-29.5	186.8	87	60	4.5	32	M6.0/M5.0*28	3.0*265
RHX03-295-SD32	29.5-30.0	193	89	60	4.5	32	M6.0/M5.0*28	3.0*265
RHX03-300-SD32	30.0	189.5	90	60	4.6	32	M6.0/M5.0*28	3.0*265
RHX03-301-SD32	30.01-30.5	190	91	60	4.6	32	M6.0/M5.0*28	3.0*265

XTREAM Drill Body 3D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX03-305-SD32	30.5-31.0	203	91	60	4.7	32	M6.0/M5.0*28	3.0*265
RHX03-310-SD32	31.0-31.5	197	93	60	4.8	32	M6.0/M5.0*28	3.0*265
RHX03-315-SD32	31.5-32.0	202	95	60	4.8	32	M6.0/M5.0*28	3.0*265
RHX03-320-SD32	32.0	200	96	60	4.9	32	M6.0/M5.0*28	3.0*265
RHX03-321-SD40	32.01-33.0	229	99	70	4.9	40	M6.0/M6.0*32	3.0*265
RHX03-330-SD40	33.0-34.0	217.3	99	70	5.1	40	M6.0/M6.0*32	3.0*265
RHX03-340-SD40	34.0-35.0	225	102	70	5.2	40	M6.0/M6.0*32	3.0*265
RHX03-350-SD40	35.0-36.0	235	105	70	5.4	40	M6.0/M6.0*32	3.0*265
RHX03-360-SD40	36.0	233	108	70	5.5	40	M6.0/M6.0*32	3.0*265
RHX03-361-SD40	36.01-37.0	246	111	70	5.5	40	M6.0/M6.0*32	3.0*265
RHX03-370-SD40	37.0-38.0	244	111	70	5.7	40	M6.0/M6.0*32	3.0*265
RHX03-380-SD40	38.0-39.0	242	114	70	5.8	40	M6.0/M6.0*32	3.0*265
RHX03-390-SD40	39.0-40.0	252	117	70	6.0	40	M6.0/M6.0*32	3.0*265
RHX03-400-SD40	40.0	250	120	70	6.2	40	M6.0/M6.0*32	3.0*265

XTREAM Drill Body 5D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX05-125-SD16	12.5-13.0	137	63	48	2	16	M3.0/M2.5*14	T6*156
RHX05-130-SD16	13.0-13.5	138	65	48	2.1	16	M3.0/M2.5*14	T6*156
RHX05-135-SD16	13.5	138.5	68	48	2.1	16	M3.0/M2.5*14	T6*156
RHX05-136-SD16	13.51-14.0	138.5	69	48	2.2	16	M3.0/M2.5*14	T6*156
RHX05-140-SD16	14.0-15.0	140	70	48	2.2	16	M3.0/M2.5*14	T6*156
RHX05-145-SD20	14.5	147.5	73	50	2.3	20	M3.0/M2.5*14	T6*156
RHX05-146-SD20	14.51-15.0	147.5	74	50	2.3	20	M3.0/M2.5*14	T6*156
RHX05-150-SD20	15.0-15.5	149.5	75	50	2.4	20	M3.0/M2.5*14	T6*156
RHX05-155-SD20	15.5-15.88	152	78	50	2.5	20	M3.0/M2.5*14	T6*156
RHX05-160-SD20	15.9-16.5	153	80	50	2.5	20	M3.5/M3.0*16	1.5*185
RHX05-165-SD20	16.5-17.0	157	83	50	2.6	20	M3.5/M3.0*16	1.5*185
RHX05-170-SD20	17.0-17.5	158.5	85	50	2.7	20	M3.5/M3.0*16	1.5*185
RHX05-175-SD20	17.5-18.0	161	88	50	2.8	20	M3.5/M3.0*16	1.5*185
RHX05-180-SD20	18.0	165.5	90	50	2.9	20	M3.5/M3.0*16	1.5*185
RHX05-181-SD25	18.01-18.5	171.9	92	56	2.9	25	M3.5/M3.0*16	1.5*185
RHX05-185-SD25	18.5-19.0	175	93	56	2.9	25	M3.5/M3.0*16	1.5*185
RHX05-190-SD25	19.0-19.5	177.8	95	56	3.0	25	M3.5/M3.0*16	1.5*185
RHX05-195-SD25	19.5-19.99	180	98	56	3.1	25	M3.5/M3.0*16	1.5*185
RHX05-200-SD25	20.0-20.5	195.7	100	56	3.2	25	M4.0/M3.0*19	2.0*210
RHX05-205-SD25	20.5-21.0	193	103	56	3.3	25	M4.0/M3.0*19	2.0*210
RHX05-210-SD25	21.0-21.5	190.7	105	56	3.3	25	M4.0/M3.0*19	2.0*210
RHX05-215-SD25	21.5-22.0	198	108	56	3.4	25	M4.0/M3.0*19	2.0*210

XTREAM Drill Body 5D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX05-220-SD25	22.0	207	110	56	3.5	25	M4.0/M3.0*19	2.0*210
RHX05-221-SD25	22.01-22.5	207.5	112	56	3.5	25	M4.0/M3.0*19	2.0*210
RHX05-225-SD25	22.5-23.0	206	113	56	3.6	25	M4.0/M3.0*19	2.0*210
RHX05-230-SD25	23.0-23.5	202.7	115	56	3.7	25	M4.0/M3.0*19	2.0*210
RHX05-235-SD25	23.5-24.0	211	118	56	3.7	25	M4.0/M3.0*19	2.0*210
RHX05-240-SD25	24.0	208.7	120	56	3.8	25	M4.0/M3.0*19	2.0*210
RHX05-241-SD32	24.01-24.5	224.5	122	60	3.8	32	M5.0/M4.0*23	2.5*240
RHX05-245-SD32	24.5-25.0	222	123	60	3.9	32	M5.0/M4.0*23	2.5*240
RHX05-250-SD32	25.0-25.5	220.7	125	60	3.8	32	M5.0/M4.0*23	2.5*240
RHX05-255-SD32	25.5-26.0	227	128	60	3.9	32	M5.0/M4.0*23	2.5*240
RHX05-260-SD32	26.0	231.4	130	60	4.0	32	M5.0/M4.0*23	2.5*240
RHX05-261-SD32	26.01-26.5	231.8	132	60	4.0	32	M5.0/M4.0*23	2.5*240
RHX05-265-SD32	26.5-27.0	229.3	133	60	4.1	32	M5.0/M4.0*23	2.5*240
RHX05-270-SD32	27.0-27.5	231.8	135	60	4.2	32	M5.0/M4.0*23	2.5*240
RHX05-275-SD32	27.5-28.0	239	138	60	4.2	32	M5.0/M4.0*23	2.5*240
RHX05-280-SD32	28.0	237.4	140	60	4.3	32	M5.0/M4.0*23	2.5*240
RHX05-281-SD32	28.01-28.5	237.8	142	60	4.3	32	M6.0/M5.0*28	3.0*265
RHX05-285-SD32	28.5-29.0	247	143	60	4.4	32	M6.0/M5.0*28	3.0*265
RHX05-290-SD32	29.0-29.5	244.8	145	60	4.5	32	M6.0/M5.0*28	3.0*265
RHX05-295-SD32	29.5-30.0	252	143	60	4.5	32	M6.0/M5.0*28	3.0*265
RHX05-300-SD32	30.0	249.5	150	60	4.6	32	M6.0/M5.0*28	3.0*265
RHX05-301-SD32	30.01-30.5	250	151	60	4.6	32	M6.0/M5.0*28	3.0*265

XTREAM Drill Body 5D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX05-305-SD32	30.5-31.0	264	152	60	4.7	32	M6.0/M5.0*28	3.0*265
RHX05-310-SD32	31.0-31.5	259	155	60	4.8	32	M6.0/M5.0*28	3.0*265
RHX05-315-SD32	31.5-32.0	265	158	60	4.8	32	M6.0/M5.0*28	3.0*265
RHX05-320-SD32	32.0	264	160	60	4.9	32	M6.0/M5.0*28	3.0*265
RHX05-321-SD40	32.01-33.0	293	163	70	4.9	40	M6.0/M6.0*32	3.0*330
RHX05-330-SD40	33.0-34.0	283	165	70	5.1	40	M6.0/M6.0*32	3.0*330
RHX05-340-SD40	34.0-35.0	293	170	70	5.2	40	M6.0/M6.0*32	3.0*330
RHX05-350-SD40	35.0-36.0	305	175	70	5.4	40	M6.0/M6.0*32	3.0*330
RHX05-360-SD40	36.0	305	180	70	5.5	40	M6.0/M6.0*32	3.0*330
RHX05-361-SD40	36.01-37.0	318	183	70	5.5	40	M6.0/M6.0*32	3.0*330
RHX05-370-SD40	37.0-38.0	318	185	70	5.7	40	M6.0/M6.0*32	3.0*330
RHX05-380-SD40	38.0-39.0	318	190	70	5.8	40	M6.0/M6.0*32	3.0*330
RHX05-390-SD40	39.0-40.0	330	195	70	6.0	40	M6.0/M6.0*32	3.0*330
RHX05-400-SD40	40.0	330	200	70	6.2	40	M6.0/M6.0*32	3.0*330

XTREAM Drill Body 7D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX07-125-SD16	12.5-13.0	162	88	48	2	16	M3.0/M2.5*14	T6*188
RHX07-130-SD16	13.0-13.5	164	91	48	2.1	16	M3.0/M2.5*14	T6*188
RHX07-135-SD16	13.5	165.5	95	48	2.1	16	M3.0/M2.5*14	T6*188
RHX07-136-SD16	13.51-14.0	165.5	96	48	2.2	16	M3.0/M2.5*14	T6*188
RHX07-140-SD16	14.0-15.0	168	98	48	2.2	16	M3.0/M2.5*14	T6*188
RHX07-145-SD20	14.5	176.5	102	50	2.3	20	M3.0/M2.5*14	T6*188
RHX07-146-SD20	14.51-15.0	176.5	103	50	2.3	20	M3.0/M2.5*14	T6*188
RHX07-150-SD20	15.0-15.5	179.5	105	50	2.4	20	M3.0/M2.5*14	T6*188
RHX07-155-SD20	15.5-15.88	183	109	50	2.5	20	M3.0/M2.5*14	T6*188
RHX07-160-SD20	15.9-16.5	185	112	50	2.5	20	M3.5/M3.0*16	1.5*225
RHX07-165-SD20	16.5-17.0	190	116	50	2.6	20	M3.5/M3.0*16	1.5*225
RHX07-170-SD20	17.0-17.5	192.5	119	50	2.7	20	M3.5/M3.0*16	1.5*225
RHX07-175-SD20	17.5-18.0	196	123	50	2.8	20	M3.5/M3.0*16	1.5*225
RHX07-180-SD20	18.0	201.5	126	50	2.9	20	M3.5/M3.0*16	1.5*225
RHX07-181-SD25	18.01-18.5	207.9	128	56	2.9	25	M3.5/M3.0*16	1.5*225
RHX07-185-SD25	18.5-19.0	212	130	56	2.9	25	M3.5/M3.0*16	1.5*225
RHX07-190-SD25	19.0-19.5	215.8	133	56	3.0	25	M3.5/M3.0*16	1.5*225
RHX07-195-SD25	19.5-19.99	219	137	56	3.1	25	M3.5/M3.0*16	1.5*225
RHX07-200-SD25	20.0-20.5	235.7	140	56	3.2	25	M4.0/M3.0*19	2.0*260
RHX07-205-SD25	20.5-21.0	234	144	56	3.3	25	M4.0/M3.0*19	2.0*260
RHX07-210-SD25	21.0-21.5	232.7	147	56	3.3	25	M4.0/M3.0*19	2.0*260
RHX07-215-SD25	21.5-22.0	241	151	56	3.4	25	M4.0/M3.0*19	2.0*260

XTREAM Drill Body 7D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX07-220-SD25	22.0	251	154	56	3.5	25	M4.0/M3.0*19	2.0*260
RHX07-221-SD25	22.01-22.5	251.5	156	56	3.5	25	M4.0/M3.0*19	2.0*260
RHX07-225-SD25	22.5-23.0	251	158	56	3.6	25	M4.0/M3.0*19	2.0*260
RHX07-230-SD25	23.0-23.5	248.7	161	56	3.7	25	M4.0/M3.0*19	2.0*260
RHX07-235-SD25	23.5-24.0	258	165	56	3.7	25	M4.0/M3.0*19	2.0*260
RHX07-240-SD25	24.0	256.7	168	56	3.8	25	M4.0/M3.0*19	2.0*260
RHX07-241-SD32	24.01-24.5	272.5	170	60	3.8	32	M5.0/M4.0*23	2.5*295
RHX07-245-SD32	24.5-25.0	271	172	60	3.9	32	M5.0/M4.0*23	2.5*295
RHX07-250-SD32	25.0-25.5	270.7	175	60	3.8	32	M5.0/M4.0*23	2.5*295
RHX07-255-SD32	25.5-26.0	278	179	60	3.9	32	M5.0/M4.0*23	2.5*295
RHX07-260-SD32	26.0	283.4	182	60	4.0	32	M5.0/M4.0*23	2.5*295
RHX07-261-SD32	26.01-26.5	283.8	184	60	4.0	32	M5.0/M4.0*23	2.5*295
RHX07-265-SD32	26.5-27.0	282.3	186	60	4.1	32	M5.0/M4.0*23	2.5*295
RHX07-270-SD32	27.0-27.5	285.8	189	60	4.2	32	M5.0/M4.0*23	2.5*295
RHX07-275-SD32	27.5-28.0	294	193	60	4.2	32	M5.0/M4.0*23	2.5*295
RHX07-280-SD32	28.0	293.4	196	60	4.3	32	M5.0/M4.0*23	2.5*295
RHX07-281-SD32	28.01-28.5	293.8	198	60	4.3	32	M6.0/M5.0*28	3.0*330
RHX07-285-SD32	28.5-29.0	304	200	60	4.4	32	M6.0/M5.0*28	3.0*330
RHX07-290-SD32	29.0-29.5	302	203	60	4.5	32	M6.0/M5.0*28	3.0*330
RHX07-295-SD32	29.5-30.0	311	207	60	4.5	32	M6.0/M5.0*28	3.0*330
RHX07-300-SD32	30.0	309.5	210	60	4.6	32	M6.0/M5.0*28	3.0*330
RHX07-301-SD32	30.01-30.5	310	211	60	4.6	32	M6.0/M5.0*28	3.0*330

XTREAM Drill Body 7D



Part Code	Insert Dia. Range	Specification					Suitable Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Height	Shank Dia		
		L	L1	L2	L3	D1		
RHX07-305-SD32	30.5-31.0	325	213	60	4.7	32	M6.0/M5.0*28	3.0*330
RHX07-310-SD32	31.0-31.5	321	217	60	4.8	32	M6.0/M5.0*28	3.0*330
RHX07-315-SD32	31.5-32.0	328	221	60	4.8	32	M6.0/M5.0*28	3.0*330
RHX07-320-SD32	32.0	328	224	60	4.9	32	M6.0/M5.0*28	3.0*330
RHX07-321-SD40	32.01-33.0	357	227	70	4.9	40	M6.0/M6.0*32	3.0*439
RHX07-330-SD40	33.0-34.0	349	231	70	5.1	40	M6.0/M6.0*32	3.0*439
RHX07-340-SD40	34.0-35.0	361	238	70	5.2	40	M6.0/M6.0*32	3.0*439
RHX07-350-SD40	35.0-36.0	375	245	70	5.4	40	M6.0/M6.0*32	3.0*439
RHX07-360-SD40	36.0	377	252	70	5.5	40	M6.0/M6.0*32	3.0*439
RHX07-361-SD40	36.01-37.0	390	255	70	5.5	40	M6.0/M6.0*32	3.0*439
RHX07-370-SD40	37.0-38.0	392	259	70	5.7	40	M6.0/M6.0*32	3.0*439
RHX07-380-SD40	38.0-39.0	394	266	70	5.8	40	M6.0/M6.0*32	3.0*439
RHX07-390-SD40	39.0-40.0	408	273	70	6.0	40	M6.0/M6.0*32	3.0*439
RHX07-400-SD40	40.0	410	280	70	6.2	40	M6.0/M6.0*32	3.0*439

XTREAM Drill Body 10D



Part Code	Insert Dia. Range	Specification					Suiteble Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Hight	Shank Dia		
		L	L1	L2	L3	D1		
RHX10-125-SD16	12.5-13.0	199.5	125	48	2	16	M3.0/M2.5*14	T6*230
RHX10-130-SD16	13.0-13.5	203	130	48	2.1	16	M3.0/M2.5*14	T6*230
RHX10-135-SD16	13.5	206	135	48	2.1	16	M3.0/M2.5*14	T6*230
RHX10-136-SD16	13.51-14.0	206	136	48	2.2	16	M3.0/M2.5*14	T6*230
RHX10-140-SD16	14.0-15.0	210	140	48	2.2	16	M3.0/M2.5*14	T6*230
RHX10-145-SD20	14.5	220	145	50	2.3	20	M3.0/M2.5*14	T6*230
RHX10-146-SD20	14.51-15.0	220	146	50	2.3	20	M3.0/M2.5*14	T6*230
RHX10-150-SD20	15.0-15.5	224.5	150	50	2.4	20	M3.0/M2.5*14	T6*230
RHX10-155-SD20	15.5-15.88	229.5	155	50	2.5	20	M3.0/M2.5*14	T6*230
RHX10-160-SD20	15.9-16.5	233	160	50	2.5	20	M3.5/M3.0*16	1.5*297
RHX10-165-SD20	16.5-17.0	239.5	165	50	2.6	20	M3.5/M3.0*16	1.5*297
RHX10-170-SD20	17.0-17.5	243.5	170	50	2.7	20	M3.5/M3.0*16	1.5*297
RHX10-175-SD20	17.5-18.0	248.5	175	50	2.8	20	M3.5/M3.0*16	1.5*297
RHX10-180-SD20	18.0	255.5	180	50	2.9	20	M3.5/M3.0*16	1.5*297
RHX10-181-SD25	18.01-18.5	261.9	182	56	2.9	25	M3.5/M3.0*16	1.5*297
RHX10-185-SD25	18.5-19.0	267.5	185	56	2.9	25	M3.5/M3.0*16	1.5*297
RHX10-190-SD25	19.0-19.5	272.8	190	56	3.0	25	M3.5/M3.0*16	1.5*297
RHX10-195-SD25	19.5-19.99	277.5	195	56	3.1	25	M3.5/M3.0*16	1.5*297
RHX10-200-SD25	20.0-20.5	395.7	200	56	3.2	25	M4.0/M3.0*19	2.0*343
RHX10-205-SD25	20.5-21.0	395.5	205	56	3.3	25	M4.0/M3.0*19	2.0*343
RHX10-210-SD25	21.0-21.5	395.7	210	56	3.3	25	M4.0/M3.0*19	2.0*343
RHX10-215-SD25	21.5-22.0	305.5	215	56	3.4	25	M4.0/M3.0*19	2.0*343

XTREAM Drill Body 10D



Part Code	Insert Dia. Range	Specification					Suiteble Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Hight	Shank Dia		
		L	L1	L2	L3	D1		
RHX10-220-SD25	22.0	317	220	56	3.5	25	M4.0/M3.0*19	2.0*343
RHX10-221-SD25	22.01-22.5	317.5	222	56	3.5	25	M4.0/M3.0*19	2.0*343
RHX10-225-SD25	22.5-23.0	318.5	225	56	3.6	25	M4.0/M3.0*19	2.0*343
RHX10-230-SD25	23.0-23.5	317.7	230	56	3.7	25	M4.0/M3.0*19	2.0*343
RHX10-235-SD25	23.5-24.0	328.5	235	56	3.7	25	M4.0/M3.0*19	2.0*343
RHX10-240-SD25	24.0	328.7	240	56	3.8	25	M4.0/M3.0*19	2.0*343
RHX10-241-SD32	24.01-24.5	344.5	242	60	3.8	32	M5.0/M4.0*23	2.5*393
RHX10-245-SD32	24.5-25.0	344.5	245	60	3.9	32	M5.0/M4.0*23	2.5*393
RHX10-250-SD32	25.0-25.5	345.7	250	60	3.8	32	M5.0/M4.0*23	2.5*393
RHX10-255-SD32	25.5-26.0	354.5	255	60	3.9	32	M5.0/M4.0*23	2.5*393
RHX10-260-SD32	26.0	361.4	260	60	4.0	32	M5.0/M4.0*23	2.5*393
RHX10-261-SD32	26.01-26.5	361.8	262	60	4.0	32	M5.0/M4.0*23	2.5*393
RHX10-265-SD32	26.5-27.0	361.8	265	60	4.1	32	M5.0/M4.0*23	2.5*393
RHX10-270-SD32	27.0-27.5	366.8	270	60	4.2	32	M5.0/M4.0*23	2.5*393
RHX10-275-SD32	27.5-28.0	376.5	275	60	4.2	32	M5.0/M4.0*23	2.5*393
RHX10-280-SD32	28.0	377.4	280	60	4.3	32	M5.0/M4.0*23	2.5*393
RHX10-281-SD32	28.01-28.5	377.8	282	60	4.3	32	M6.0/M5.0*28	3.0*439
RHX10-285-SD32	28.5-29.0	389.5	285	60	4.4	32	M6.0/M5.0*28	3.0*439
RHX10-290-SD32	29.0-29.5	389.8	290	60	4.5	32	M6.0/M5.0*28	3.0*439
RHX10-295-SD32	29.5-30.0	399.5	295	60	4.5	32	M6.0/M5.0*28	3.0*439
RHX10-300-SD32	30.0	399.5	300	60	4.6	32	M6.0/M5.0*28	3.0*439
RHX10-301-SD32	30.01-30.5	400	302	60	4.6	32	M6.0/M5.0*28	3.0*439

XTREAM Drill Body 10D



Part Code	Insert Dia. Range	Specification					Suiteble Screw	Spanner
		Total Length	Effective length	Shank Length	Blade Tip Hight	Shank Dia		
		L	L1	L2	L3	D1		
RHX10-305-SD32	30.5-31.0	416.5	305	60	4.7	32	M6.0/M5.0*28	3.0*439
RHX10-310-SD32	31.0-31.5	414	310	60	4.8	32	M6.0/M5.0*28	3.0*439
RHX10-315-SD32	31.5-32.0	422.5	315	60	4.8	32	M6.0/M5.0*28	3.0*439
RHX10-320-SD32	32.0	424	320	60	4.9	32	M6.0/M5.0*28	3.0*439
RHX10-321-SD40	32.01-33.0	453	323	70	4.9	40	M6.0/M6.0*32	3.0*530
RHX10-330-SD40	33.0-34.0	448.3	330	70	5.1	40	M6.0/M6.0*32	3.0*530
RHX10-340-SD40	34.0-35.0	463	340	70	5.2	40	M6.0/M6.0*32	3.0*530
RHX10-350-SD40	35.0-36.0	480	350	70	5.4	40	M6.0/M6.0*32	3.0*530
RHX10-360-SD40	36.0	485	360	70	5.5	40	M6.0/M6.0*32	3.0*530
RHX10-361-SD40	36.01-37.0	498	363	70	5.5	40	M6.0/M6.0*32	3.0*530
RHX10-370-SD40	37.0-38.0	503	370	70	5.7	40	M6.0/M6.0*32	3.0*530
RHX10-380-SD40	38.0-39.0	508	380	70	5.8	40	M6.0/M6.0*32	3.0*530
RHX10-390-SD40	39.0-40.0	525	390	70	6.0	40	M6.0/M6.0*32	3.0*530
RHX10-400-SD40	40.0	530	400	70	6.2	40	M6.0/M6.0*32	3.0*530

Formula for Drilling

Cutting speed (vc)

$$vc = \frac{\pi \cdot DC \cdot n}{1000} \text{ (m/min)}$$

vc (m/min) : Cutting Speed
 DC (mm) : Drill Diameter
 π : (3.14)
 n (min⁻¹) : Spindle Speed RPM

Problem

What is the cutting speed when main axis spindle speed is 1350min⁻¹ and drill diameter is 12mm ?

Answer:

Substitute $\pi=3.14$, DC=12, n=1350 into the formula

$$vc = \pi \times DC \times n \div 1000$$

$$= 3.14 \times 12 \times 1350 \div 1000$$

$$= 50.9 \text{ m/min} \text{ (The cutting speed is 50.9m/min.)}$$

Feed of the main spindle (vf)

$$vf = fr \cdot n \text{ (mm/min)}$$

vf(mm/min): Feed Speed of the Main Spindle (Z axis)
 fr(mm/rev): Feed per Revolution
 n(min⁻¹) : Spindle Speed RPM

Problem

What is the spindle feed (vf) when the feed per revolution is 0.2mm/rev and main axis spindle speed is 1350min⁻¹ ?

Answer:

Substitute fr=0.2, n=1350 into the formula

$$vf = fr \times n$$

$$= 0.2 \times 1350 = 270 \text{ mm/min} \text{ (The spindle feed is 270mm/min.)}$$

Drilling time (Tc)

$$Tc = \frac{ld \cdot i}{n \cdot fr}$$

Problem

What is the drilling time required for drilling a 30mm length hole in alloy steel at a cutting speed of 50m/min and a feed 0.15mm/rev ?

Answer:

$$n = (50 \times 1000) \div (15 \times 3.14) = 1061.57 \text{ min}^{-1}$$

$$Tc = (30 \times 1) \div (1061.57 \times 0.15) = 0.188 \text{ min}$$

$$= 0.188 \times 60$$

$$= 11.3 \text{ sec}$$

Tc (min) : Drilling Time
 n (min⁻¹) : Spindle Speed RPM
 ld (mm) : Hole Depth
 fr (mm/rev): Feed per Revolution
 i : Number of Holes

Trouble Shooting For Drilling

Solution Trouble Factors			Cutting Conditions								Style and Design of the Tool						Machine, Installation of Tool						
			Cutting speed	Feed	Lower feed at initial cutting	Lower feed when breaking through	Step feed	Increase accuracy of prep-hole and depth	Coolant			Chisel width	Honing width	Core thickness	Shorten flute length	Decrease lip height	Use internal coolant type drill	Change to a drill with X type thinning	Increase tool installation accuracy	Shorten tool overhang	Flat workpiece face	Increase work clamping rigidity	Reduce machine backlash and increase rigidity
									Increase oil ratio	Increase volume	Increase coolant pressure												
Deterioration of Tool Life	Drill breakage	Lack of drill rigidity												•	•								
		Improper cutting conditions		•																			
	Large deflection of the tool holder																	•				•	
	Workpiece face is inclined																			•			
	Large wear at the peripheral cutting edge and along the land	Improper cutting conditions	•														•						
	An increase in temperature at the cutting point							•		•													
	Poor run-out accuracy																	•					
Chipping of the peripheral cutting edge	Improper cutting conditions		•				•																
	Large deflection of the tool holder																						
	chattering, vibration											•						•			•	•	
Chisel edge chipping	The chisel edge width is too wide											•											
	Poor entry																						
	Chattering, vibration											•							•		•	•	
Deterioration of Hole Accuracy	Hole diameter increases	Lack of drill rigidity												•	•								
		Improper drill geometry																					
	Hole diameter becomes smaller	An increase in temperature at the cutting point								•		•					•						
		Improper cutting conditions	•																				
		Improper drill geometry																					
	Poor straightness	Lack of drill rigidity												•	•								
		Large deflection of the tool holder																					
		Poor guiding properties								•										•			•
Poor hole positioning accuracy, roundness and surface finish	Lack of drill rigidity													•	•								
	Poor entry																						
	Improper cutting conditions																						
	Large deflection of the tool holder																		•			•	
Burrs	Burrs at the hole exit	Improper drill geometry												•									
		Improper cutting conditions																					
Poor Chip Disposal	Long chips	Improper cutting conditions		•					•														
		Poor chip disposal																					
	Chip jamming	Improper cutting conditions	•	•					•														
	Poor chip disposal																						

Notes

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface. There is no handwriting or other markings on the paper.

SOLID CARBIDE ROUND TOOLS

PRECISION

INNOVATION

PROFESSIONAL



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SOLID CARBIDE
ENDMILLING TOOLS

END MILL SERIES

RP210

RP210 Series Have Variable Helix Geometry & Good Wear Resistance, Mainly Recommended For High Alloy Steel 35 To 45HRC

RX230

RX230 Series Have High Wear Resistance , Very Strong Geometry It Is High Power Universal Series Recommended For P, M & K Group Material Up To 48HRC

RM360

RM360 Series Have Variable Helix With Sharper Geometry Preparation & Good Heat Resistance Mainly Recommended For Austenitic SS ,Duplex And Complex Material

RN480

RN480 Series Have More Sharp Geometry And High Wear Resistance, Recommended For AL, CU, Brass And All Non Ferrous Material

RS500

RS500 Is High Power End Mill Series With Good Heat & Wear Resistance Use For Ti, Fe & Ni Base Alloys Material

END MILL SERIES

RH600

RH600 Series Have High Helix Geometry With Good Wear Resistance, Recommended For Hard Material 45HRC To 55HRC

RH650

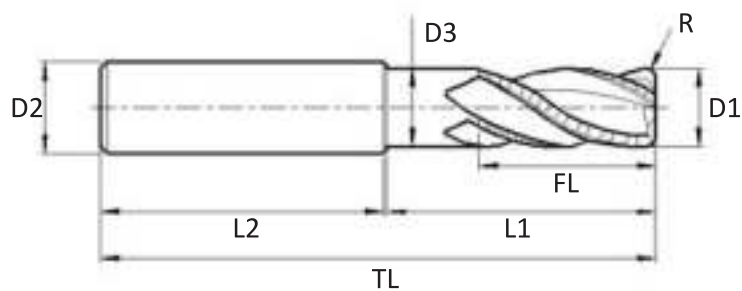
RH650 Series Have Strong Geometry With Negative Rake, High Wear Resistance, Recommended For Hard Material Above 55HRC

END MILL SERIES SELECTION

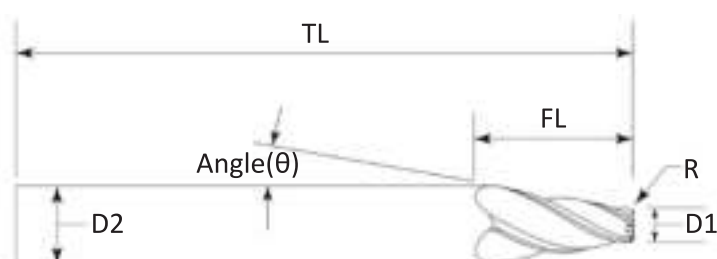
P	P10			RH600
	P15			
	P20	RX230		
	P30		RP210	
	P40			
M	M10			
	M15			
	M20	RM360	RX230	
	M30			RS500
	M40			
K	K05			RH600
	K10			
	K15			
	K20		RX230	
	K30			
N	N10			
	N20			
	N25			
	P30	RN480		
S	S10			RH600
	S20			
	S30			
	S40		RS500	
	S50			
H	H05			
	H10			RH650
	H15		RH600	

SPECIAL DESIGN END MILL

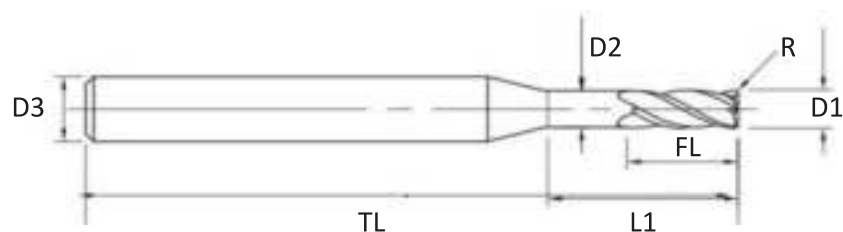
ROUGHING END MILL



TAPER END MILL



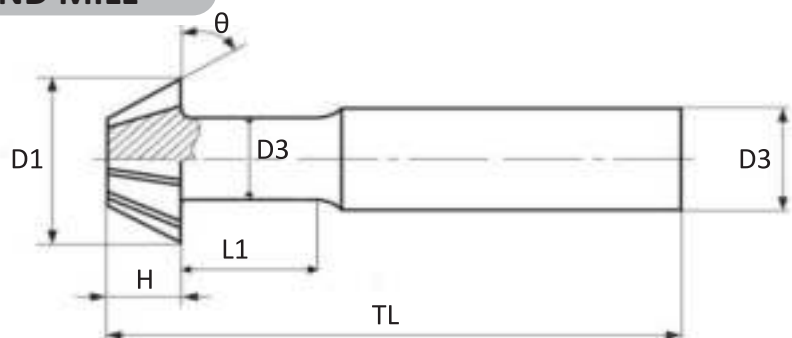
MICRO END MILL



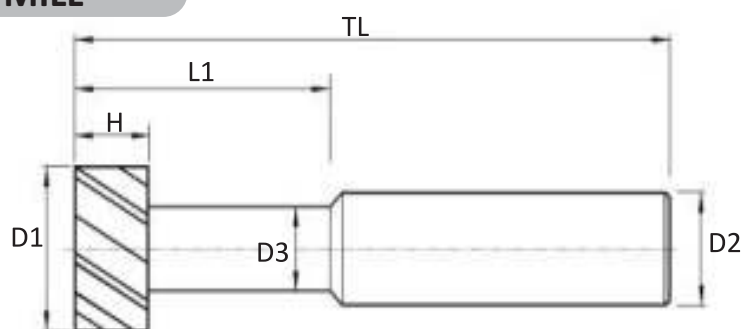
CAN BE MAKE ON REQUEST...

SPECIAL DESIGN END MILL

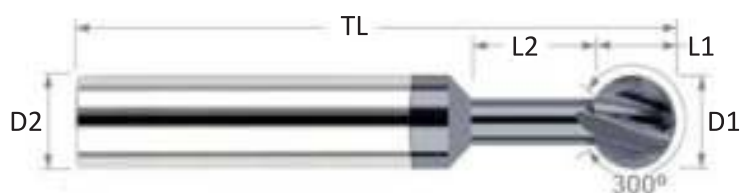
DOVETAIL END MILL



T-SLOT END MILL

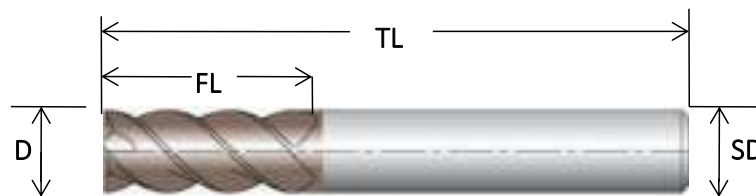


SPHERICAL END MILL



CAN BE MAKE ON REQUEST...

END MILL CODE DESCRIPTION



Where,

D : END MILL DIAMETER (mm)
TL : TOTAL LENGTH (mm)
FL : FLUTE LENGTH (mm)
SD : SHANK DIAMETER
:

RX230 END MILL SERIES

4 NO. OF FLUTE : 1, 2, 3, 4, 6, 8,

F F - FLATE END MILL, B - BALL END MILL

03 D - END MILL DIAMETER (00)

03 SD - SHANK DIAMETER (00)

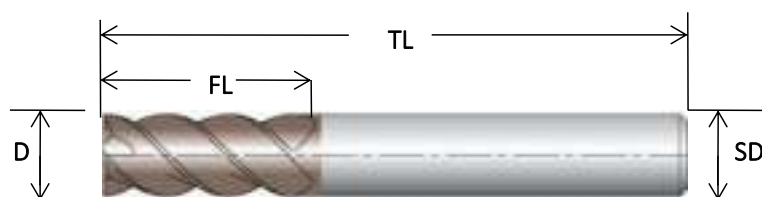
014 FL - FLUTE LENGTH (000)

050 TL - TOTAL LENGTH (000)

CODE : SERIES-(NO OF FLUT)(F/B) - DIA (00) SHD (00) FL(000) TL(000)

FOR EX. 3MM CODE : RX230-3F-03 03 014 050

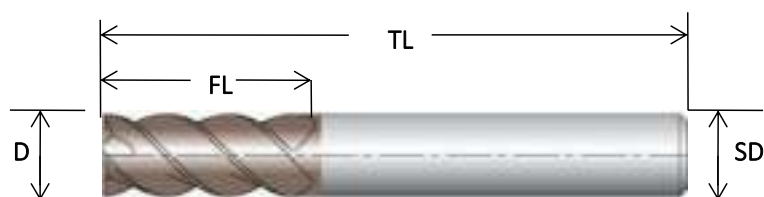
FLAT & BALL END MILL



D(mm)	SD(mm)	STANDARD		LONG		EXTRA LONG	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
1	3	4	38				
2	3	4	38				
2.5	3	4	38				
3	3	14	50	19	63	25	75
4	4	14	50	19	63	25	75
5	6	16	50	20	63	28	75
6	6	19	50	28	75	30	100
8	8	20	63	30	75	30	100
10	10	25	75	50	100	50	125
12	12	25	75	50	100	75	125
14	14	30	90	50	100	75	125
16	16	32	90	50	125	75	150
20	20	38	100	50	125	75	150
25	25	38	100	50	125	75	150

NOTE : SHANK DIA. (H6)

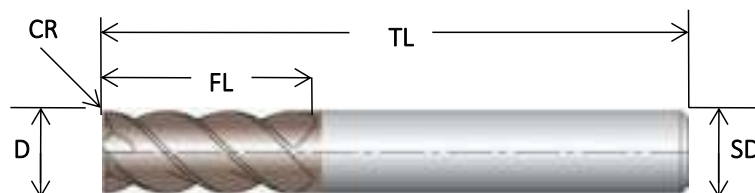
FLAT & BALL END MILL



D(mm)	SD(mm)	XL TYPE		XXL-TYPE	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)
3	3	25	100		
4	4	30	100		
5	6	30	100		
6	6	30	125	40	150
8	8	40	125	40	150
10	10	75	150	75	200
12	12	75	150	75	200
14	14	75	150	75	200
16	16	75	200	90	230
20	20	75	200	90	230
25	25	75	200	90	230

NOTE : SHANK DIA. (H6)

CORNER RADIUS END MILL CODE DESCRIPTION



Where,

CR	:	CORNER RADIUS
D	:	END MILL DIAMETER (mm)
TL	:	TOTAL LENGTH (mm)
FL	:	FLUTE LENGTH (mm)
SD	:	SHANK DIAMETER (mm)

RX230 END MILL SERIES

4 NO. OF FLUTE : 1, 2, 3, 4, 6, 8,

R02 R02 : 0.2mm CORNER RADIUS

03 D - END MILL DIAMETER (00)

03 SD - SHANK DIAMETER (00)

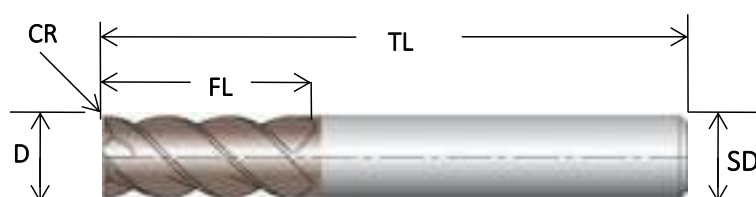
014 FL - FLUTE LENGTH (000)

050 TL - TOTAL LENGTH (000)

CODE : SERIES-(NO OF FLUT)R(00)-DIA(00) SHD(00) FL(000) TL(000)

FOR EX. 3MM CODE : RX230 3R02-03 03 014 050

CORNER RADIUS END MILL



D(mm)	SD(mm)	STANDARD		LONG		EXTRA LONG		AVAILABLE CR
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)	
3	3	14	50	19	63	25	75	CR0.2 CR0.5
4	4	14	50	19	63	25	75	CR0.2 CR0.5
5	6	16	50	20	63	28	75	CR0.5 CR1.0
6	6	19	50	28	75	30	100	CR0.5 CR1.0
8	8	20	63	30	75	30	100	CR0.5 CR1.0 CR1.5 CR2.0
10	10	25	75	50	100	50	125	CR0.5 CR1.0 CR1.5 CR2.0 CR3.0
12	12	25	75	50	100	75	125	CR0.5 CR1.0 CR1.5 CR2.0 CR3.0
16	16	32	90	50	125	75	150	CR0.5 CR1.0 CR2.0 CR3.0
20	20	38	100	50	125	75	150	CR1.0 CR2.0 CR3.0

NOTE : SHANK DIA. (H6)

Customized corner radius can be formed on Request.

For, Ex. 5mm Dia with CR 0.12mm

TROUBLESHOOTING FOR END MILL

Solution Trouble Factors			Insert Grade Selection	Cutting Conditions								Style and Design of the Tool				Machine, Installation of Tool									
			Coated tool	Cutting speed		Feed	Depth of cut	Pick feed	Down cut	Use air blow	Coolant				Helix angle	Insert number	Concavity angle of end cutting edge	Tool diameter	Cutter rigidity	Wider chip pocket	Shorten tool overhang	Increase tool installation accuracy	Increase spindle collet run-out accuracy	Collet inspection and exchange	Increase chuck clamping power
Up ↗ Down ↘	Down ↘	Down cut		Increase coolant quantity	Do not use water-soluble cutting fluid	Determine dry or wet cutting	Up ↗ Down ↘	Larger Smaller																	
Deterioration of Tool Life	Large peripheral cutting edge wear	Non-coated end mill is used A small number of cutting edges Improper cutting conditions Up cut milling is used	●										↗												
	Severe chipping	Improper cutting conditions Fragile cutting edge Insufficient clamping force Low clamping rigidity														●									
	Breakage during cutting	Improper cutting conditions Low end mill rigidity Overhang longer than necessary Chip jamming				↗									↗	●				●	●		●	●	●
Deterioration of Surface Finish	Vibration during cutting	Improper cutting conditions Low end mill rigidity Low clamping rigidity		↗	↗								↗	↗		↗	●			●	●	●	●	●	●
	Poor surface finish on walls	Large cutting edge wear Improper cutting conditions Chip packing	●	↗		↗				●	●	Wet													
	Poor surface finish on faces	The end cutting edge does not have a concave angle Large pick feed			↗	↗		●							↗										
	Out of vertical	Large cutting edge wear Improper cutting conditions Lack of end mill rigidity	●			↗	↗							↗	↗		↗	●							
	Poor dimensional accuracy	Improper cutting conditions Low clamping rigidity		↗	↗	↗														●	●	●	●	●	●
	Burr or chipping occurs	Improper cutting conditions Large helix angle			↗	↗							↗												
Burr, Chipping, etc.	Quick burr formation	Notch wear Improper cutting conditions	●	↗	↗																				
	Chip packing	Metal removal too large Lack of chip pocket			↗	↗									●		●								

INDEX

SOLID CARBIDE DRILL

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SOLID CARBIDE **DRILLING** TOOLS



DRILL SERIES

200XP

200XP Drill Series Have High Working Temperature Ability With Good Wear Resistance , Mainly Recommended For High Alloy Steel 35 To 50HRC

260DX

260DX Drill Series Have High Wear Resistance & Very Strong Geometry. It Is High Power Universal Series Recommended For P, M & K Group Material Up To 48HRC

300XM

300XM Drill Series Have Good Heat Resistance & Sharp Geometry Preparation, Mainly Recommended For Austenitic SS ,Duplex And Complex Material

400XN

400XN Drill Series Have More Sharp Geometry And Good Toughness Mainly Recommended For Soft Aluminum & Non Ferrous Material

450XN

450XN Drill Series Is Sharp And High Wear Resistance Series, Mainly Recommended For Hard AL With SI Content, Hard CU And Non Ferrous Alloys Material

DRILL SERIES

500XS

500XS Is High Power Drill Series Use For Ti, Fe & Ni Base Alloys Material

550XS

550XS Drill Series Have More Strong Geometry And Good Wear Resistance
Recommended For High Heat Generate & More Sticky Material

600XH

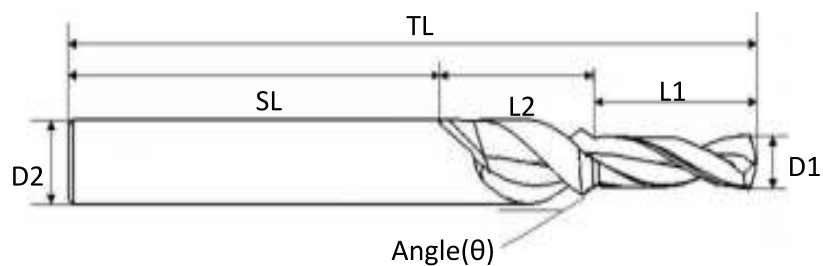
600XH Drill Series Mainly Recommended For High Hard Material
(45HRC To 60HRC)Which Have High Wear Resistance & Strong Geometry

DRILL SERIES SELECTION

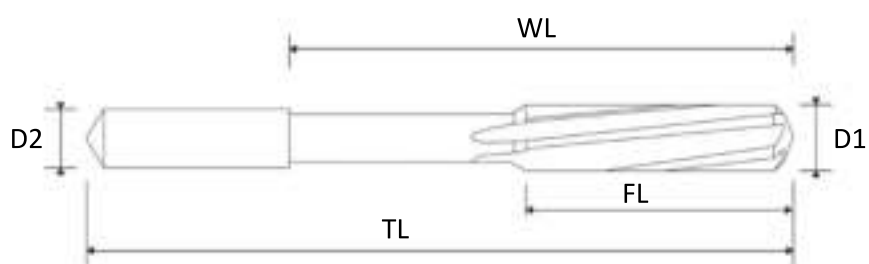
P	P10	
	P15	
	P20	260DX
	P30	200XP
	P40	
M	M10	
	M15	300XM
	M20	260DX
	M30	
	M40	400XN
K	K05	
	K10	
	K15	260DX
	K20	
	K30	600XH
N	N10	
	N20	
	N25	400XN
	P30	450XN
S	S10	
	S20	
	S30	500XS
	S40	
	S50	550XS
H	H05	
	H10	
	H15	600XH

SPECIAL DESIGN DRILL

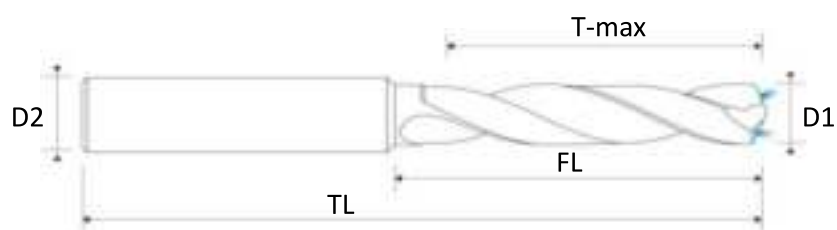
STEP DRILL



SOLID REAMER



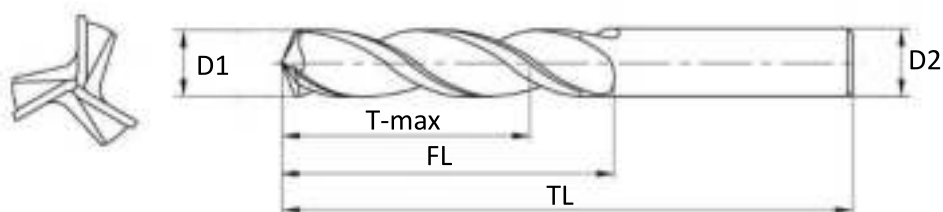
SPECIAL SIZE DRILL



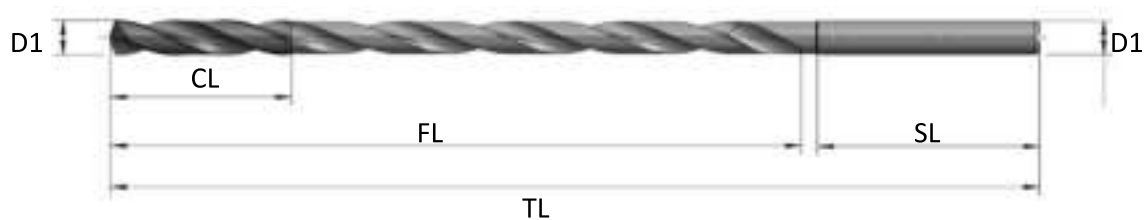
CAN BE MAKE ON REQUEST...

SPECIAL DESIGN DRILL

3 FLUTE DRILL

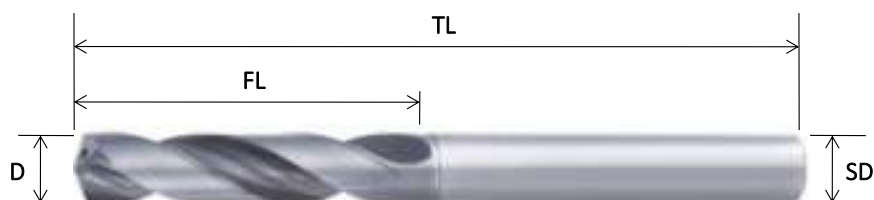


EXTRA LONG DRILL ABOVE $L/D=8$



CAN BE MAKE ON REQUEST...

DRILL CODE DISCRIPTION



WHERE,

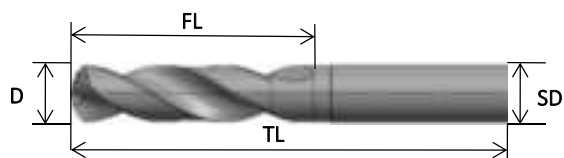
D	:	DRILL DIAMETER (mm)
TL	:	TOTAL LENGTH (mm)
FL	:	FLUTE LENGTH (mm)
SD	:	SHANK DIAMETER (mm)

260DX	DRILL SERIES
2	NO. OF FLUTE : 2, 3
N	N - NON THROUGH COOLANT, T - THROUGH COOLANT
14.50	D - DRILL DIAMETER (00.00)
16	SD - SHANK DIAMETER (00)
065	FL - FLUTE LENGTH (000)
115	TL - TOTAL LENGTH (000)

CODE : SERIES-(NO OF FLUT)(N/T) D(00.00) SD(00) TL(000) FL(000)

FOR EX. 8MM CODE : 300XM 2T 08.00 08 091 053

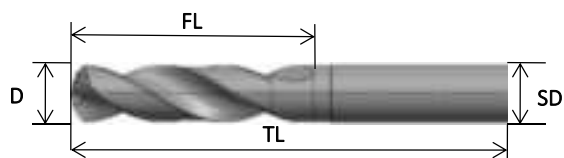
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
3.00	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.10	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.15	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.17	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.20	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.25	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.30	4.00	20.00	62.00	28.00	66.00	30.00	70.00
3.40	4.00	20.00	62.00	28.00	66.00	35.00	75.00
3.50	4.00	20.00	62.00	28.00	66.00	35.00	75.00
3.57	4.00	20.00	62.00	28.00	66.00	35.00	75.00
3.60	4.00	20.00	62.00	28.00	66.00	35.00	75.00
3.70	4.00	20.00	62.00	28.00	66.00	35.00	75.00
3.80	4.00	24.00	66.00	36.00	74.00	37.50	75.00
3.85	4.00	24.00	66.00	36.00	74.00	37.50	75.00
3.90	4.00	24.00	66.00	36.00	74.00	37.50	75.00
3.97	4.00	24.00	66.00	36.00	74.00	37.50	75.00
4.00	4.00	24.00	66.00	36.00	74.00	37.50	75.00
4.10	6.00	24.00	66.00	36.00	74.00	37.50	75.00
4.20	6.00	24.00	66.00	36.00	74.00	37.50	75.00
4.30	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.37	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.40	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.45	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.50	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.60	6.00	24.00	66.00	36.00	74.00	45.00	85.00

NOTE : SHANK DIA. (H6)

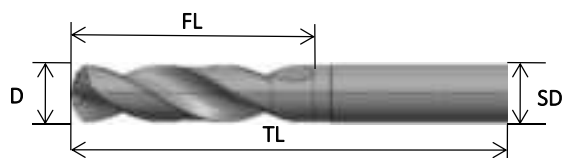
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
4.65	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.70	6.00	24.00	66.00	36.00	74.00	45.00	85.00
4.76	6.00	28.00	66.00	44.00	82.00	50.00	90.00
4.80	6.00	28.00	66.00	44.00	82.00	50.00	90.00
4.90	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.00	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.05	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.10	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.16	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.20	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.30	6.00	28.00	66.00	44.00	82.00	50.00	90.00
5.40	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.50	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.55	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.56	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.60	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.70	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.75	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.80	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.90	6.00	28.00	66.00	44.00	82.00	57.00	97.00
5.95	6.00	28.00	66.00	44.00	82.00	57.00	97.00
6.00	6.00	28.00	66.00	44.00	82.00	57.00	97.00
6.10	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.20	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.30	8.00	34.00	79.00	53.00	91.00	66.00	106.00

NOTE : SHANK DIA. (H6)

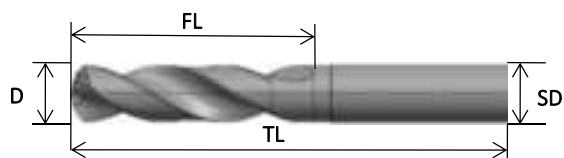
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
6.35	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.40	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.50	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.55	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.60	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.70	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.75	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.80	8.00	34.00	79.00	53.00	91.00	66.00	106.00
6.90	8.00	34.00	79.00	53.00	91.00	76.00	116.00
7.00	8.00	34.00	79.00	53.00	91.00	76.00	116.00
7.10	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.14	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.20	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.25	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.30	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.40	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.45	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.50	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.54	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.55	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.60	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.70	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.80	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.90	8.00	41.00	79.00	53.00	91.00	76.00	116.00
7.94	8.00	41.00	79.00	53.00	91.00	76.00	116.00

NOTE : SHANK DIA. (H6)

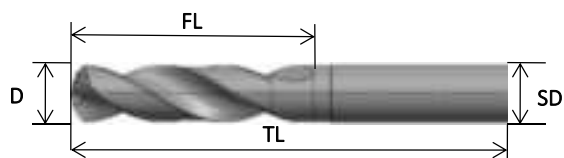
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
8.00	8.00	41.00	79.00	53.00	91.00	76.00	116.00
8.10	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.20	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.30	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.33	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.40	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.50	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.55	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.60	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.70	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.73	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.75	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.80	10.00	47.00	89.00	61.00	103.00	87.00	131.00
8.90	10.00	47.00	89.00	61.00	103.00	87.00	131.00
9.00	10.00	47.00	89.00	61.00	103.00	87.00	131.00
9.10	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.13	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.20	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.25	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.30	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.40	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.50	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.55	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.52	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.60	10.00	47.00	89.00	61.00	103.00	95.00	139.00

NOTE : SHANK DIA. (H6)

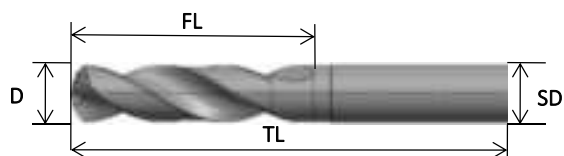
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
9.65	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.70	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.80	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.90	10.00	47.00	89.00	61.00	103.00	95.00	139.00
9.92	10.00	47.00	89.00	61.00	103.00	95.00	139.00
10.00	10.00	47.00	89.00	61.00	103.00	95.00	139.00
10.10	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.20	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.30	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.40	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.50	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.60	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.70	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.72	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.80	12.00	55.00	102.00	71.00	118.00	106.00	155.00
10.90	12.00	55.00	102.00	71.00	118.00	106.00	155.00
11.00	12.00	55.00	102.00	71.00	118.00	106.00	155.00
11.10	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.11	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.20	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.30	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.40	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.50	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.51	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.55	12.00	55.00	102.00	71.00	118.00	114.00	163.00

NOTE : SHANK DIA. (H6)

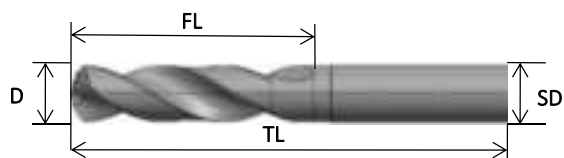
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
11.60	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.70	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.80	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.90	12.00	55.00	102.00	71.00	118.00	114.00	163.00
11.91	12.00	55.00	102.00	71.00	118.00	114.00	163.00
12.00	12.00	55.00	102.00	71.00	118.00	114.00	163.00
12.10	14.00	55.00	102.00	77.00	124.00	133.00	182.00
12.20	14.00	60.00	107.00	77.00	124.00	133.00	182.00
12.30	14.00	60.00	107.00	77.00	124.00	133.00	182.00
12.50	14.00	60.00	107.00	77.00	124.00	133.00	182.00
12.70	14.00	60.00	107.00	77.00	124.00	133.00	182.00
12.80	14.00	60.00	107.00	77.00	124.00	133.00	182.00
12.90	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.00	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.10	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.30	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.49	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.50	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.55	14.00	60.00	107.00	77.00	124.00	133.00	182.00
13.70	14.00	60.00	107.00	77.00	124.00	133.00	182.00
14.00	14.00	60.00	107.00	77.00	124.00	133.00	182.00
14.20	16.00	65.00	115.00	83.00	133.00	152.00	204.00
14.25	16.00	65.00	115.00	83.00	133.00	152.00	204.00
14.30	16.00	65.00	115.00	83.00	133.00	152.00	204.00
14.50	16.00	65.00	115.00	83.00	133.00	152.00	204.00

NOTE : SHANK DIA. (H6)

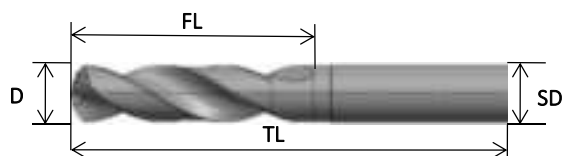
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
14.70	16.00	65.00	115.00	83.00	133.00	152.00	204.00
14.75	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.00	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.10	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.20	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.25	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.30	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.50	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.55	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.70	16.00	65.00	115.00	83.00	133.00	152.00	204.00
15.87	16.00	65.00	115.00	83.00	133.00	152.00	204.00
16.00	16.00	65.00	115.00	83.00	133.00	152.00	204.00
16.25	18.00	73.00	123.00	93.00	143.00	171.00	223.00
16.30	18.00	73.00	123.00	93.00	143.00	171.00	223.00
16.50	18.00	73.00	123.00	93.00	143.00	171.00	223.00
16.75	18.00	73.00	123.00	93.00	143.00	171.00	223.00
16.90	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.00	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.30	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.50	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.55	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.75	18.00	73.00	123.00	93.00	143.00	171.00	223.00
17.80	18.00	73.00	123.00	93.00	143.00	171.00	223.00
18.00	18.00	73.00	123.00	93.00	143.00	171.00	223.00
18.25	20.00	79.00	131.00	101.00	153.00	190.00	244.00

NOTE : SHANK DIA. (H6)

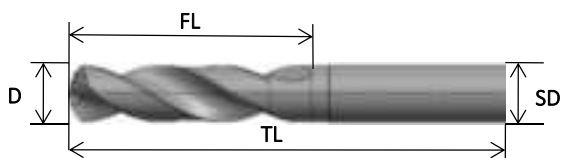
3D, 5D & 7D HIGH PERFORMANCE DRILL



D(mm)	SD(mm)	3D DRILL DIMENSION		5D DRILL DIMENSION		7D DRILL DIMENSION	
		FL(mm)	TL(mm)	FL(mm)	TL(mm)	FL(mm)	TL(mm)
18.30	20.00	79.00	131.00	101.00	153.00	190.00	244.00
18.50	20.00	79.00	131.00	101.00	153.00	190.00	244.00
18.90	20.00	79.00	131.00	101.00	153.00	190.00	244.00
19.00	20.00	79.00	131.00	101.00	153.00	190.00	244.00
19.05	20.00	79.00	131.00	101.00	153.00	190.00	244.00
19.30	20.00	79.00	131.00	101.00	153.00	190.00	244.00
19.50	20.00	79.00	131.00	101.00	153.00	190.00	244.00
19.75	20.00	79.00	131.00	101.00	153.00	190.00	244.00
20.00	20.00	79.00	131.00	101.00	153.00	190.00	244.00

NOTE : SHANK DIA. (H6)

PS STUB & JOBBER DRILL

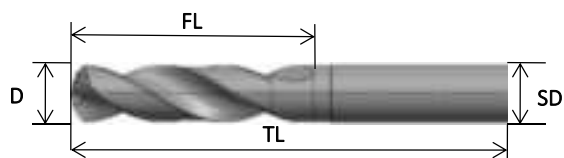


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
0.50	3.00	20.00		
0.60	3.50	21.00		
0.70	4.50	23.00		
0.80	5.00	24.00		
0.90	5.50	25.00		
1.00	6.00	26.00	12.00	34.00
1.02	6.00	26.00	12.00	34.00
1.04	7.00	28.00	12.00	34.00
1.07	7.00	28.00	14.00	36.00
1.09	7.00	28.00	14.00	36.00
1.10	7.00	28.00	14.00	36.00
1.18	7.00	28.00	14.00	36.00
1.19	8.00	30.00	16.00	38.00
1.20	8.00	30.00	16.00	38.00
1.30	8.00	30.00	16.00	38.00
1.32	8.00	30.00	16.00	38.00
1.40	9.00	32.00	18.00	40.00
1.50	9.00	32.00	18.00	40.00
1.51	10.00	34.00	20.00	43.00
1.59	10.00	34.00	20.00	43.00
1.60	10.00	34.00	20.00	43.00
1.61	10.00	34.00	20.00	43.00
1.70	10.00	34.00	20.00	43.00
1.78	11.00	36.00	22.00	46.00
1.80	11.00	36.00	22.00	46.00

NOTE : SHANK DIA. (H6)

NOTE: SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

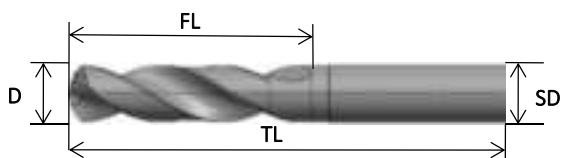


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
1.85	11.00	36.00	22.00	46.00
1.90	11.00	36.00	22.00	46.00
1.93	12.00	38.00	24.00	49.00
1.98	12.00	38.00	24.00	49.00
1.99	12.00	38.00	24.00	49.00
2.00	12.00	38.00	24.00	49.00
2.06	12.00	38.00	24.00	49.00
2.08	12.00	38.00	24.00	49.00
2.10	12.00	38.00	24.00	49.00
2.18	13.00	40.00	27.00	53.00
2.20	13.00	40.00	27.00	53.00
2.25	13.00	40.00	27.00	53.00
2.26	13.00	40.00	27.00	53.00
2.30	13.00	40.00	27.00	53.00
2.37	14.00	43.00	30.00	57.00
2.38	14.00	43.00	30.00	57.00
2.40	14.00	43.00	30.00	57.00
2.44	14.00	43.00	30.00	57.00
2.49	14.00	43.00	30.00	57.00
2.50	14.00	43.00	30.00	57.00
2.53	14.00	43.00	30.00	57.00
2.58	14.00	43.00	30.00	57.00
2.60	14.00	43.00	30.00	57.00
2.64	14.00	43.00	30.00	57.00
2.70	16.00	46.00	33.00	61.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

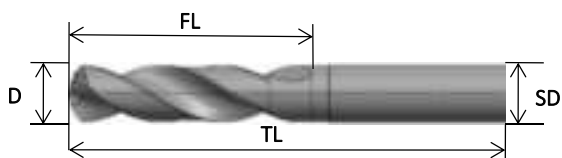


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
2.71	16.00	46.00	33.00	61.00
2.78	16.00	46.00	33.00	61.00
2.79	16.00	46.00	33.00	61.00
2.80	16.00	46.00	33.00	61.00
2.82	16.00	46.00	33.00	61.00
2.87	16.00	46.00	33.00	61.00
2.90	16.00	46.00	33.00	61.00
2.95	16.00	46.00	33.00	61.00
3.00	16.00	46.00	33.00	61.00
3.05	18.00	49.00	36.00	65.00
3.10	18.00	49.00	36.00	65.00
3.17	18.00	49.00	36.00	65.00
3.20	18.00	49.00	36.00	65.00
3.26	18.00	49.00	36.00	65.00
3.30	18.00	49.00	36.00	65.00
3.40	20.00	52.00	39.00	70.00
3.45	20.00	52.00	39.00	70.00
3.50	20.00	52.00	39.00	70.00
3.57	20.00	52.00	39.00	70.00
3.60	20.00	52.00	39.00	70.00
3.66	20.00	52.00	39.00	70.00
3.70	20.00	52.00	39.00	70.00
3.73	20.00	52.00	39.00	70.00
3.80	22.00	55.00	43.00	75.00
3.86	22.00	55.00	43.00	75.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

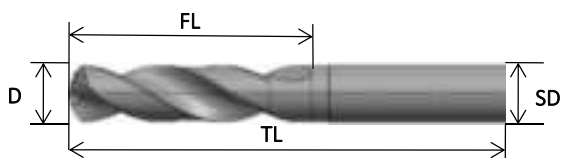


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
3.90	22.00	55.00	43.00	75.00
3.91	22.00	55.00	43.00	75.00
3.97	22.00	55.00	43.00	75.00
3.99	22.00	55.00	43.00	75.00
4.00	22.00	55.00	43.00	75.00
4.04	22.00	55.00	43.00	75.00
4.09	22.00	55.00	43.00	75.00
4.10	22.00	55.00	43.00	75.00
4.20	22.00	55.00	43.00	75.00
4.22	22.00	55.00	43.00	75.00
4.30	24.00	58.00	47.00	80.00
4.37	24.00	58.00	47.00	80.00
4.39	24.00	58.00	47.00	80.00
4.40	24.00	58.00	47.00	80.00
4.30	24.00	58.00	47.00	80.00
4.37	24.00	58.00	47.00	80.00
4.39	24.00	58.00	47.00	80.00
4.40	24.00	58.00	47.00	80.00
4.50	24.00	58.00	47.00	80.00
4.57	24.00	58.00	47.00	80.00
4.60	24.00	58.00	47.00	80.00
4.62	24.00	58.00	47.00	80.00
4.70	24.00	58.00	47.00	80.00
4.76	26.00	62.00	52.00	86.00
4.80	26.00	62.00	52.00	86.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

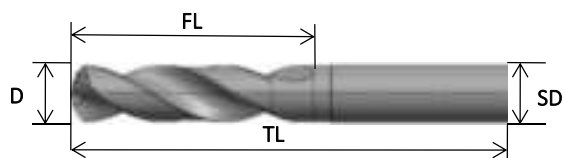


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
4.85	26.00	62.00	52.00	86.00
4.90	26.00	62.00	52.00	86.00
4.92	26.00	62.00	52.00	86.00
4.98	26.00	62.00	52.00	86.00
5.00	26.00	62.00	52.00	86.00
5.06	26.00	62.00	52.00	86.00
5.10	26.00	62.00	52.00	86.00
5.11	26.00	62.00	52.00	86.00
5.16	26.00	62.00	52.00	86.00
5.18	26.00	62.00	52.00	86.00
5.20	26.00	62.00	52.00	86.00
5.22	26.00	62.00	52.00	86.00
5.30	26.00	62.00	52.00	86.00
5.31	28.00	66.00	57.00	93.00
5.40	28.00	66.00	57.00	93.00
5.41	28.00	66.00	57.00	93.00
5.50	28.00	66.00	57.00	93.00
5.56	28.00	66.00	57.00	93.00
5.60	28.00	66.00	57.00	93.00
5.70	28.00	66.00	57.00	93.00
5.79	28.00	66.00	57.00	93.00
5.80	28.00	66.00	57.00	93.00
5.90	28.00	66.00	57.00	93.00
5.94	28.00	66.00	57.00	93.00
5.95	28.00	66.00	57.00	93.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

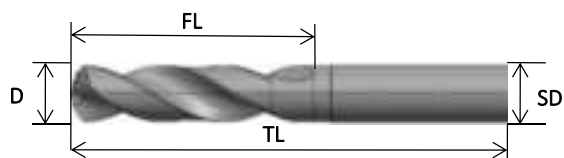


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
6.00	28.00	66.00	57.00	93.00
6.04	31.00	70.00	63.00	101.00
6.10	31.00	70.00	63.00	101.00
6.15	31.00	70.00	63.00	101.00
6.20	31.00	70.00	63.00	101.00
6.25	31.00	70.00	63.00	101.00
6.30	31.00	70.00	63.00	101.00
6.35	31.00	70.00	63.00	101.00
6.40	31.00	70.00	63.00	101.00
6.50	31.00	70.00	63.00	101.00
6.53	31.00	70.00	63.00	101.00
6.60	31.00	70.00	63.00	101.00
6.63	31.00	70.00	63.00	101.00
6.70	31.00	70.00	63.00	101.00
6.75	34.00	74.00	69.00	109.00
6.80	34.00	74.00	69.00	109.00
6.90	34.00	74.00	69.00	109.00
7.00	34.00	74.00	69.00	109.00
7.10	34.00	74.00	69.00	109.00
7.14	34.00	74.00	69.00	109.00
7.20	34.00	74.00	69.00	109.00
7.30	34.00	74.00	69.00	109.00
7.37	34.00	74.00	69.00	109.00
7.40	34.00	74.00	69.00	109.00
7.50	34.00	74.00	109.00	69.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

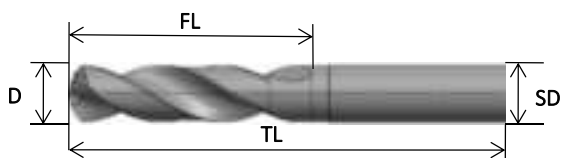


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
7.54	37.00	79.00	75.00	117.00
7.60	37.00	79.00	75.00	117.00
7.67	37.00	79.00	75.00	117.00
7.70	37.00	79.00	75.00	117.00
7.80	37.00	79.00	75.00	117.00
7.90	37.00	79.00	75.00	117.00
7.94	37.00	79.00	75.00	117.00
8.00	37.00	79.00	75.00	117.00
8.03	37.00	79.00	75.00	117.00
8.10	37.00	79.00	75.00	117.00
8.20	37.00	79.00	75.00	117.00
8.30	37.00	79.00	75.00	117.00
8.33	37.00	79.00	75.00	117.00
8.40	37.00	79.00	75.00	117.00
8.43	37.00	79.00	75.00	117.00
8.50	37.00	79.00	75.00	117.00
8.60	40.00	84.00	81.00	125.00
8.61	40.00	84.00	81.00	125.00
8.70	40.00	84.00	81.00	125.00
8.73	40.00	84.00	81.00	125.00
8.80	40.00	84.00	81.00	125.00
8.84	40.00	84.00	81.00	125.00
8.90	40.00	84.00	81.00	125.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL

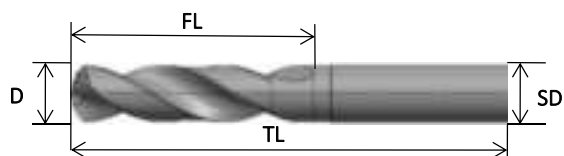


D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
9.00	40.00	84.00	81.00	125.00
9.09	40.00	84.00	81.00	125.00
9.10	40.00	84.00	81.00	125.00
9.13	40.00	84.00	81.00	125.00
9.20	40.00	84.00	81.00	125.00
9.30	40.00	84.00	81.00	125.00
9.34	40.00	84.00	81.00	125.00
9.40	40.00	84.00	81.00	125.00
9.50	40.00	84.00	81.00	125.00
9.52	43.00	89.00	87.00	133.00
9.58	43.00	89.00	87.00	133.00
9.60	43.00	89.00	87.00	133.00
9.70	43.00	89.00	87.00	133.00
9.80	43.00	89.00	87.00	133.00
9.90	43.00	89.00	87.00	133.00
9.92	43.00	89.00	87.00	133.00
10.00	43.00	89.00	87.00	133.00
10.08	43.00	89.00	87.00	133.00
10.20	43.00	89.00	87.00	133.00
10.26	43.00	89.00	87.00	133.00
10.30	43.00	89.00	87.00	133.00
10.32	43.00	89.00	87.00	133.00
10.49	43.00	89.00	87.00	133.00
10.50	43.00	89.00	87.00	133.00
10.72	47.00	95.00	94.00	142.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

PS STUB & JOBBER DRILL



D(mm)	PS STUB DRILL DIMENSION		PS JOBBER DRILL DIMENSION	
	FL(mm)	TL(mm)	FL(mm)	TL(mm)
11.00	47.00	95.00	94.00	142.00
11.11	47.00	95.00	94.00	142.00
11.50	47.00	95.00	94.00	142.00
11.51	47.00	95.00	94.00	142.00
11.91	51.00	102.00	101.00	151.00
12.00	51.00	102.00	101.00	151.00
12.70	51.00	102.00	101.00	151.00
12.80	51.00	102.00	101.00	151.00
12.90	51.00	102.00	101.00	151.00
13.00	51.00	102.00	101.00	151.00
13.10	54.00	107.00	101.00	151.00
13.20	54.00	107.00	101.00	151.00
13.30	54.00	107.00	108.00	160.00
13.40	54.00	107.00	108.00	160.00
13.50	54.00	107.00	108.00	160.00
13.60	54.00	107.00	108.00	160.00
13.70	54.00	107.00	108.00	160.00
13.80	54.00	107.00	108.00	160.00
13.90	54.00	107.00	108.00	160.00
14.00	54.00	107.00	108.00	160.00
14.50	56.00	111.00	114.00	169.00
15.00	56.00	111.00	114.00	169.00
15.50	58.00	115.00	120.00	178.00
16.00	58.00	115.00	120.00	178.00

NOTE : SHANK DIA. (H6)

SD = D , PS= Parallel Shank

FORMULA FOR DRILLING

Cutting speed (Vc)

$$v_c = \frac{\pi \cdot DC \cdot n}{1000} \text{ (m/min)}$$

vc (m/min) : Cutting Speed
DC (mm) : Drill Diameter
 π : (3.14)
n (min⁻¹) : Spindle Speed RPM

Question

What is the cutting speed when main axis spindle speed is 1350min⁻¹ and drill diameter is 12mm ?

Answer:

Substitute $\pi=3.14$, DC=12, n=1350 into the formula

$$\begin{aligned} v_c &= \pi \times DC \times n \div 1000 \\ &= 3.14 \times 12 \times 1350 \div 1000 \\ &= 50.9 \text{ m/min (The cutting speed is 50.9m/min.)} \end{aligned}$$

Feed of the main spindle (Vf)

$$v_f = f_r \cdot n \text{ (mm/min)}$$

vf(mm/min): Feed Speed of the Main Spindle (Z axis)
fr(mm/rev): Feed per Revolution
n(min⁻¹) : Spindle Speed RPM

Question

What is the spindle feed (vf) when the feed per revolution is 0.2mm/rev and main axis spindle speed is 1350min⁻¹ ?

Answer:

Substitute fr=0.2,n=1350 into the formula

$$\begin{aligned} v_f &= f_r \times n \\ &= 0.2 \times 1350 = 270 \text{ mm/min (The spindle feed is 270mm/min.)} \end{aligned}$$

Drilling time (Tc)

$$T_c = \frac{L_d \cdot i}{n \cdot f_r}$$

Tc (min) : Drilling Time
n (min⁻¹) : Spindle Speed RPM
Ld (mm) : Hole Depth
fr (mm/rev): Feed per Revolution
i : Number of Holes

Question:

What is the drilling time required for drilling a 30mm length hole in alloy steel at a cutting speed of 50m/min and a feed 0.15mm/rev ?

Answer:

$$\begin{aligned} n &= (50 \times 1000) \div (15 \times 3.14) = 1061.57 \text{ min}^{-1} \\ T_c &= (30 \times 1) \div (1061.57 \times 0.15) = 0.188 \text{ min} \\ &= 0.188 \times 60 \\ &\approx 11.3 \text{ sec} \end{aligned}$$

TROUBLE SHOOTING FOR DRILLING

Solution Trouble Factors			Cutting Conditions									Style and Design of the Tool						Machine, Installation of Tool					
			Cutting speed	Feed	Lower feed at initial cutting	Lower feed when breaking through	Step feed	Increase accuracy of prep-hole and depth	Coolant			Chisel width	Honing width	Core thickness	Shorten flute length	Decrease lip height	Use internal coolant type drill	Change to a drill with X type thinning	Increase tool installation accuracy	Shorten tool overhang	Flat workpiece face	Increase work clamping rigidity	Reduce machine backlash and increase rigidity
									Increase oil ratio	Increase volume	Increase coolant pressure												
			Up ↗	Down ↘									Up ↗	Down ↘									
Deterioration of Tool Life	Drill breakage	Lack of drill rigidity Improper cutting conditions Large deflection of the tool holder Workpiece face is inclined		•									•	•				•				•	
	Large wear at the peripheral cutting edge and along the land	Improper cutting conditions An increase in temperature at the cutting point Poor run-out accuracy	•					•	•						•			•					
	Chipping of the peripheral cutting edge	Improper cutting conditions Large deflection of the tool holder chattering, vibration		•			•						•					•			•	•	
	Chisel edge chipping	The chisel edge width is too wide Poor entry Chattering, vibration				•						•	•						•		•	•	
Deterioration of Hole Accuracy	Hole diameter increases	Lack of drill rigidity Improper drill geometry											•	•		•							
	Hole diameter becomes smaller	An increase in temperature at the cutting point Improper cutting conditions Improper drill geometry	•					•	•							•							
	Poor straightness	Lack of drill rigidity Large deflection of the tool holder Poor guiding properties							•				•	•				•				•	
	Poor hole positioning accuracy, roundness and surface finish	Lack of drill rigidity Poor entry											•	•									
		Improper cutting conditions Large deflection of the tool holder			•														•			•	
Burrs	Burrs at the hole exit	Improper drill geometry Improper cutting conditions				•							•										
Poor Chip Disposal	Long chips	Improper cutting conditions Poor chip disposal		•			•			•	•			•		•							
	Chip jamming	Improper cutting conditions Poor chip disposal	•	•			•			•	•		•			•							

Notes

[illegible]

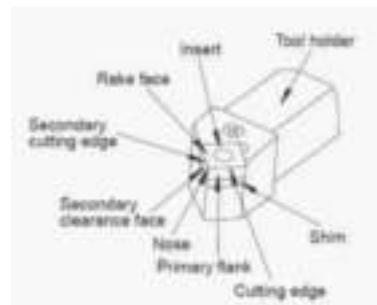
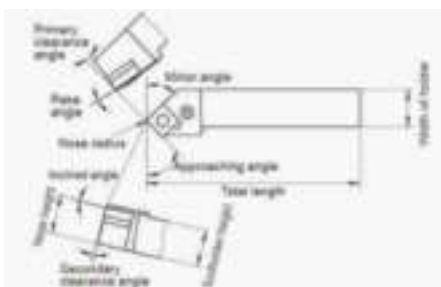
TECHNICAL INFORMATION

Technical Information

Part one: General Technical Information for Turning Machining

The Functions of Each Part of Turning Tools

1 The Names Of Each Part Of Turning Tools



2 Effects of Rake Angle

Larger rake angle makes cutting edge sharper, reduces resistant forces of chip flow, diminishes friction and prevents deformation, leading to smaller, less abrasion and higher surface quality. However, too large rake angle would reduce the rigidity and strength of tool. Heat can't be diffused easily, serious breakage and abrasion on tool would occur, reducing tool life. Please choose rake angle according to machining conditions.

Value selection	Situations
Small rake angle	- When machining brittle and hard materials; - When roughing and interrupted cutting
Big rake angle	- When machining Plastic or soft materials; - When finishing;

3 Effects of Clearance Angle

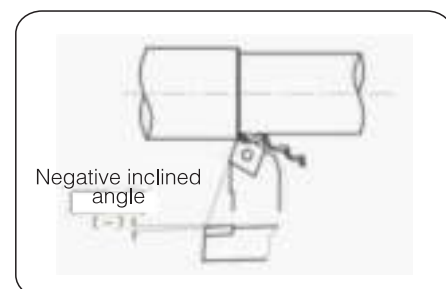
The main function of clearance angle is to reduce the friction between the clearance face of tool and the surface of workpiece. When the rake angle is fixed, larger clearance angle can increase and achieve higher surface quality. However, if clearance angle is too large, the strength of cutting edge would decrease. Also, heat can't be diffused easily and serious abrasion would occur, reducing tool life. The principle of choosing clearance angle: Choose small clearance angle if friction is not serious.

Value selection	Situations
Small clearance angle	- In order to increase nose strength when roughing - When machining brittle and hard materials
Large clearance angle	- In order to reduce friction when finishing - When machining materials easy to be hardened;

4 Effects of Inclined Angle

Positive or negative inclined angle determines the direction of chip flow, and also affects the strength and impact resistance of insert nose.

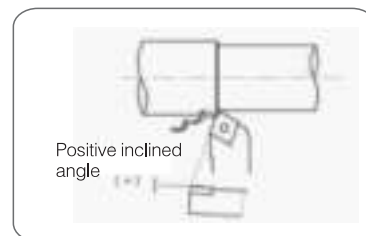
◆ As diagram(1) shows, when the inclined angle is negative, namely nose is in the lowest point as apposed to the bottom of tool, chips flow to the machined surface of workpiece.



Technical Information

◆ As diagram(2)shows ,when inclined angle is positive,namely the nose is in the highest point as apposed to the bottom of the tool,chips flow to the areas of workpiece surface that haven' t been machined.

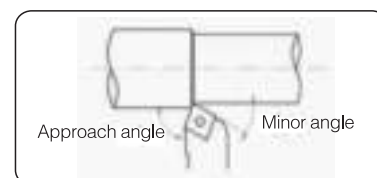
◆ The change of inclined angle also affects insert nose strength and impact resistance.When the inclined angle is negative.the nose is in the lowest point of cutting edge.When the cutting edge enters the workpiece,the contacting point is on the cutting edge or rake face,protecting the nose from impact and increase the strength of the nose.Normally,negative inclined angle should be chosen for tools with big rake angle.This can not only increase nose strength.But also prevent the impact of entry.



5 Effects of Approach Angle

Reduces approaching angle increases the strength of tools and enable heat to diffuse easily,improving surface quality.This is because when the approach angle is small,cutting edge width is large,and then the unit width of cutting edge bears less cutting force.Meanwhile, tool life can be improved.

Normally,select 90° approach angle for turning of slender and step shaft; select 45° approach angle for external turning.End surface machining and chamfering.When approach angle is larger,radial force is reduced,cutting is stable ,cutting thickness is increased,and chip breaking is excellent.



Value selection	Situations
Small approach	For those materials with high intensity,high hardness and hardened layer on the surface
Big approach angle	When rigidity of the machine is not enough

6 Effects of Minor Angle

Minor angle is the main angle that can affect surface quality,and it can also affect tool strength.If the approach angle is too small, the friction between the secondary flank and machined surface of workpiece will increase,causing vibration.The principle of selecting minor angle:Select small minor angle when roughing or when the friction is unaffected and is on vibration.Select large minor angle when finishing.

7 Effects of Cutting Edge Grinding

According to different use occasions, choose a cutting edge method from the table below

Shape of the cutting edge	shape
sharp edge	
comer	
chamfer	

Technical Information

Cutting edge grinding is a processing method used to maintain the cutting edge strength. The grinding amount is large, the cutting edge strength is high, not easy to damage, the tool life is improved, but the excessive grinding amount will cause the edge sharpness is not enough, the cutting force will be large, but also may produce vibration.

Value selection	Situations
Small regrinding amount	• Finishing machining – small A_p & F_n • For processing soft materials • When the machine or workpiece is not rigid enough
Large regrinding amount	• Rough machining • When machining hard materials and intermittent cutting • When machine rigidity is good

⑧ Nose Radius

Nose radius significantly affects nose strength and surface quality.

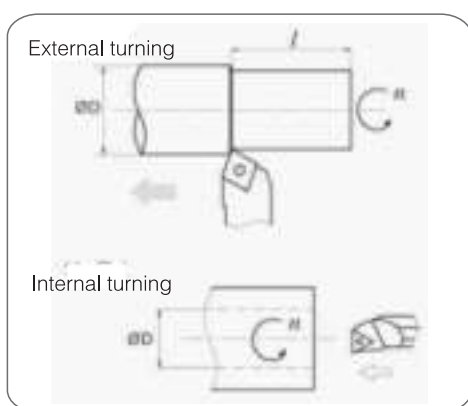
Large nose radius means higher cutting edge strength, and the abrasion on the rake face and clearance face can be reduced to some extent. However, if the nose radius is too large, radial force will increase, and vibration is easy to occur, affecting machining precision and surface quality

Value selection	Situations
Small nose radius	● Finishing at small cutting depth ● Machining parts such as slender shaft ● When the rigidity of the machine is not enough
Large nose radius	● When roughing ● When machining hard materials (intermittent cutting) ● When the rigidity of the machine is good enough

Technical Information

Calculation Method of Turning Parameters

1 Calculation of Cutting Speed



$$V_c = \frac{\pi \times D \times n}{1000} (m/min)$$

In the formula:

V_c : Cutting speed(m/min)

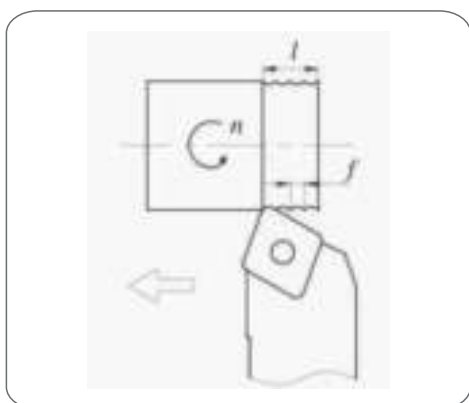
n : Rotating speed of main axle (rev/min)

D : Diameter of workpiece(mm)

For example: When the rotating speed is 500ev/min and the diameter of workpiece is 80mm, the cutting

$$V_c = \frac{\pi \times D \times n}{1000} = \frac{3.14 \times 80 \times 500}{1000} = 125.6(m/min)$$

2 Calculation of Feed Rate



$$f = \frac{l}{n} (mm/rev)$$

In the formula:

f : Feed rate per rotation(mm/rev)

L : Cutting length per minute(mm/min)

N : Rotating speed of main axle(rev/min)

For example: When the rotating speed of main axle is 600ev/min, and the cutting length per minute is 150mm/min, the feed rate per rotating should be:

$$f = \frac{l}{n} = \frac{150}{600} = 0.25(mm/rev)$$

Technical Information

③ Cutting Time Calculation of External and Internal Turning

$$T = \frac{l}{f \times n} (\text{min})$$

In the formula: T: Cutting time(min)

L: length of machined areas(mm)

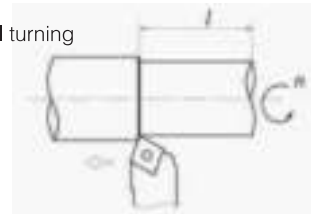
F: Feed rate(mm/rev)

N: Rotating speed of main axle(rev/min) For

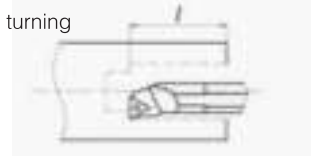
example: When the rotating speed of main axle is 300rev/min, and the feed rate is 0.15mm/rev.the time needed for a cutting length of 180mm should be:

$$T = \frac{l}{f \times n} = \frac{180}{0.15 \times 300} = 4 \text{ min}$$

External turning



Internal turning



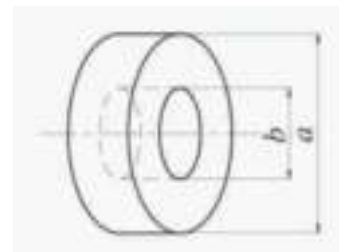
④ Time Calculation End Surface Turning (Constant Linear Speed)

$$T = \frac{\pi \times (a^2 - b^2)}{4000 \times V_c \times f} (\text{min})$$

In the formula: T: Cutting time(min)

Vc: length of machined areas(mm)

F: Cutting speed For end surface without hole, b =0,the formula is still Valid.



⑤ The Oretical Value Calculation of Machined Surface Roughness

$$R = \frac{f^2}{8r_c} \times 1000 (\mu m)$$

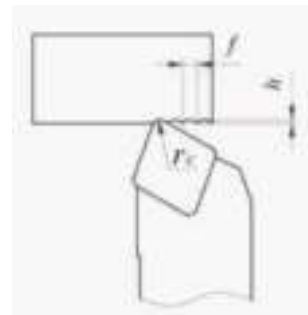
In the formula: R: Theoretical roughness value of machined surface

F: Feed rate(mm/rev)

Rc: Nose radius(mm)

For example: When the feed rate is 0.25mm/rev, and the nose radius is 0.8mm. the theoretical roughness value of machined surface should be:

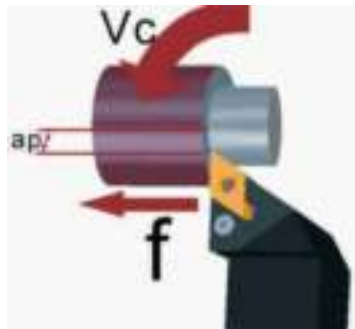
$$R = \frac{f^2}{8r_c} \times 1000 = \frac{0.25^2}{8 \times 0.8} \times 1000 = 9.76 (\mu m)$$



Technical Information

The Influence of Three Elements of Turning on Machining

Normally, short machining time, long tool life and high machining precision are expected in machining, so the material quality, hardness, and shape of the workpiece, and properties of machine should be fully considered and then we can select suitable tools and adopt high-efficiency cutting parameters, namely three parameters.



① Cutting Speed(v_c)

(1) Definition of cutting speed

When the workpiece is rotating on the machine, the number of its rotation per minute is defined as Rotating speed of main axle(n). Because of its rotation, the cutting speed measured on the contacting point of diameter is defined as linear speed. m/min. Normally, linear speed is considered to measure the effect of cutting speed on machining.

(2) Effect of Cutting Speed

Cutting speed has significant effect in tool life. When the cutting speed is increased, cutting temperature will increase and tool life will be shortened. Cutting speed varies according to the different types and hardness of work-piece. The below conclusions are reached after many cutting experiments:

- Normally tool life would be reduced to half when the cutting speed is increased by 20%. Tool life would be 20% of the original life if the cutting speed is raised by 50%.
- Low speed (20–40 m/min) cutting could easily cause vibration and shorten tool life.

② Feed Rate(f_n)

(1) Definition of feed rate

Feed rate is defined as the moving distance of tool after workpiece rotates for one circle, measured by mm/rotation.

(2) The influence of feed rate

Feed rate is a key factor that determines surface quality. Meanwhile it also affects the range of chip forming and the thickness of chips during machining.

In terms of the effect on tool life, small feed rate leads to serious abrasion on clearance face, reducing tool life.

Technical Information

③ Cutting Depth(a_p)

(1) Definition of cutting depth

Cutting depth is defined as the difference between machined surface and unmachined surface. Measured by mm, it is half the difference value between the original diameter and machined diameter.

(2) Effect of Cutting Depth

Cutting depth should be determined by the machining allowance and shape of workpiece, power and rigidity of machine, and tool rigidity.

The change of cutting depth has little effect on tool life. If the cutting depth is too low, the cutting nose only scrapes the hardened layer on the workpiece surface, reducing tool life. When there is a hardened oxide layer on the workpiece surface, higher cutting depth should be adopted within the possible range of machine's power to avoid cutting nose just cutting the hardened layer of workpiece.

Blade Wear and Solution

(1) Flank Wear



Problem:

Higher cutting resistance. Notch wear on flank. Poor roughness of surface or deterioration of accuracy

Reason :

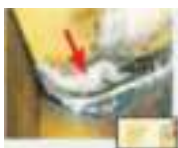
Soft grades. Excessive cutting speed. Small flank angle. Low feed

Solutions:

Select a higher wear-resistant grade. Reduce cutting speed. Increase flank angle. Increase feed



(2) Crater Wear



Problem:

Uncontrolled chip. Poor surface quality when finishing. High speed processing carbon steel

Reason:

Soft grades. Excessive cutting speed. Excessive feed. The strength of chip breaker insufficient

Solutions:

Change to a higher wear-resistant grade. Reduce cutting speed. Reduce feed. Select a higher strength chip breaker

(3) Plastic Deformation



Problem:

Variation of dimension. Nose wear, cutting edge draping or passivating, when processing alloy steel. Poor surface roughness

Reason:

Soft grade. Excessive cutting speed. Excessive cutting depth and feed rate. Overheat on cutting edge

Solutions:

Select a higher hardness cutting material. Decrease cutting speed. Decrease cutting depth and feed rate. Select a higher thermal conductivity cutting material (CVD + sufficient coolant)

Technical Information

(4) Build-Up-Edge



Problem:

Workpiece dissolve with Cutting edge Poor surface roughness when finishing Cutting resistance increased Cutting soft materials

Reason:

Cutting speed too low Cutting edge obtuse Unsuitable tool material

Solutions:

Increase cutting speed Increase rake angle Select small sticking force

(5) Chip Hammering



Problem:

Part of the cutting edge that does not participate in cutting is damaged by chip hammering, the upper and support of the insert may be damaged.

Reason:

Chip folds back to the cutting edge

Solutions: Change the feed rate and choose another type of chip breaker

(6) Insert Fracture



Problem:

Cutting resistance increased Poor surface Roughness

Reason:

Toughness insufficient Excessive feed rate Strength of cutting edge insufficient Instability of the tool

Solutions:

Select a tougher grade Decrease feed rate Increase honing of cutting edge (chamfering to rounding) Increase the stability and setting angle

(7) Thermal Crack



Problem:

Crack by heat cycle (often happen in milling and interrupted cutting)

Reason :

Toughness of tool grade insufficient Swell and shrink by cutting heat (cold-thermocycling)

Solutions:

Cutting without coolant/Sufficient coolant Select a tougher and more thermal shock resistance grade

(8) Chipping



Problem:

Sudden fracture of cutting edge (rake face and flank) Instability insert life

Reason :

Toughness insufficient Excessive feed rate Strength of cutting edge insufficient Instability of the tool

Solutions:

Select a tougher grade Decrease feed rate Increase honing of cutting edge (chamfering to rounding) Increase the stability and setting angle

Technical Information

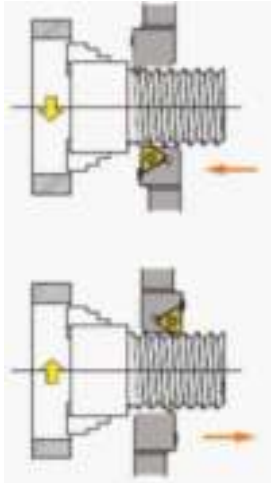
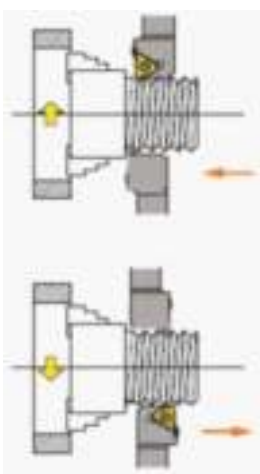
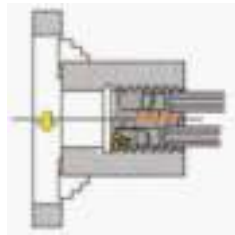
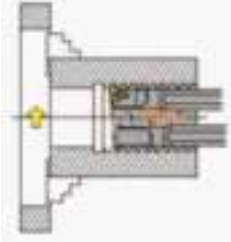
Application Information of Threading

① Threading inserts cutting method selection

Please follow the following steps to get the best threading result:

1. Select proper thread machining method.
2. Define helical angle and select shim.
3. Select proper insert and tool holder size.
4. By checking reference table of standard threading programs, select feasible cutting parameters.
5. Select feed way.

② Machining method of threading tools

	Right thread	Left thread
Internal threading machining		
External threading machining		

Technical Information

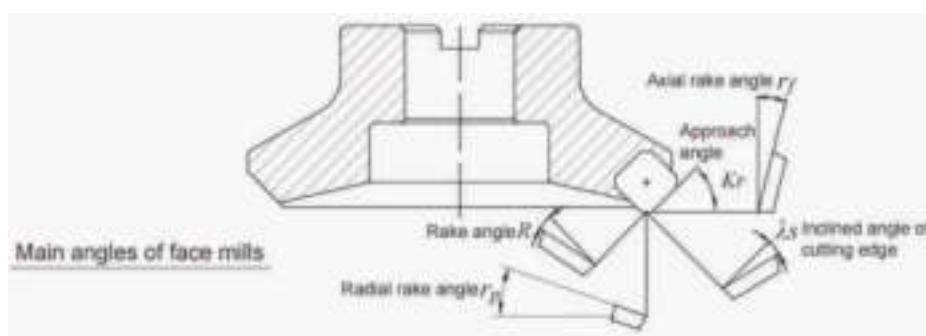
③ In-feed way of threading tools

Cutting thread method	Feature
Radial in-feed 	• Easy operating, high general. • V-shape chip caused by long chip steel workpiece will produce big bend stress on cutting edge. • It requires low cutting depth, sharp cutting edge and good tough material. • Big quantity of heat when cutting, V-shape chip is hard to control. • Because the interface of cutting chips on the right and left side is long, so it is easy to cause vibration and make the cutting edge suffer more overloading.
Flank in-feed 	• Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth. • There are enough space to leave chips flow when flank in-feed. • Big abrasion on right flank.
Modified flank in-feed 	• Right Cutting Edge also engage on cutting depth to a certain extent, it can reduce the abrasion on right side of clearance face. • Cutting edge suffer small bend stress, stable estate, it is easy for chips formation in deep cutting depth. • Good Cutting Performance.
Alternate flank in-feed 	• Cutting edge trade off when machining, equality abrasion on left and right side of clearance face on cutting edge, it can improve the life of tools. • Chips are flowing from both of right and left side, good chips flowing. • Recommend using in big screw-pitch thread cutting.

Technical Information

Second part: Technical Information About Indexable Milling Tools

Function of Each Part in Face Milling



Designation	Function	Effect		
Axial rake angle γ_f	Determining the chip direction	Negative, excellent capability of chip removal		
Radial rake angle γ_p	Determining whether the cutting is easy and fast or not	Positive angle: good cutting performance		
Approach angle K_r	Determining the chip thickness	$K_r \uparrow$, chip thickness $\uparrow$; $K_r \downarrow$ chip thickness $\downarrow$		
Rake angle R_o	Determining whether easy and fast the cutting is or not	Poor cutting performance, High– Poor cutting strength cutting edge	$(-) \leftarrow 0 \rightarrow (+)$	Good cutting performance, Low strength cutting edge
Inclined angle λ_s	Determining the chip flow direction	Poor capability of chip removal, High–strength cutting edge	$(-) \leftarrow 0 \rightarrow (+)$	Good performance of chip removal, Low–strength cutting edge

1 Milling cutter parameters selection

• Characteristics of Different Rake Angles Combined

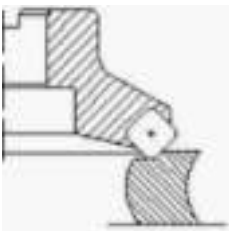
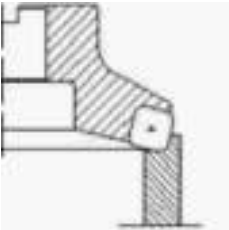
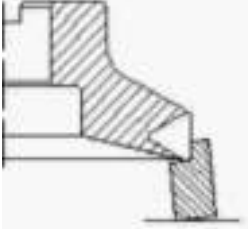
		Double positive rake angle	Double negative rake angle	Positive and negative negative rake angle
Negative rake angle				
0° rake angle				
Positive rake angle				
Axial rake angle γ_f		+	-	+
Radial rake angle γ_p		+	-	-

Technical Information

Applicable material machined	P	✓		✓
	M	✓		✓
	K		✓	✓
	N	✓		
	S	✓		✓

2 Selection of Approach Angle

• Selection Method of Cutting Tools

Designation	Schematic diagram	Instruction
45°		Axial force is the largest, it will bend when machining thin-wall workpiece, reducing the precision of workpiece. It can help avoid fringe breakage of workpiece when machining cast iron.
75°		The main force is radial cutting force, it is often used in general face milling.
90°		The main force is radial cutting force, it is often used in general face milling.

Technical Information

③ Selection of Approach Angle:

The approach angle is formed by insert and tool body. It affects chip thickness, cutting forces and tool-life. Decreasing the approach angle reduces chip thickness and expands the cutting area between cutting edge and workpiece at a given feed rate. A smaller approach angle also ensures stable entry into or exiting workpiece, protecting the cutting edge and extending tool life. However, this will increase axial cutting forces on the workpiece, thus is not suitable for machining thin workpiece such as thin plate.

Approach angle	Feed rate per tooth f_z	Maximum chip stickiness h_{ex}
90°	f_z	$h_{ex} = f_z \times \sin K_r$
75°	f_z	$h_{ex} = 0.96 \times f_z$
60°	f_z	$h_{ex} = 0.86 \times f_z$
45°	f_z	$h_{ex} = 0.707 \times f_z$
Circular Blade	f_z	$h_{ex} = \frac{\sqrt{f_z^2 \times (C-2a_p)^2}}{f_z} \times f_z$

④ Pitch Selection

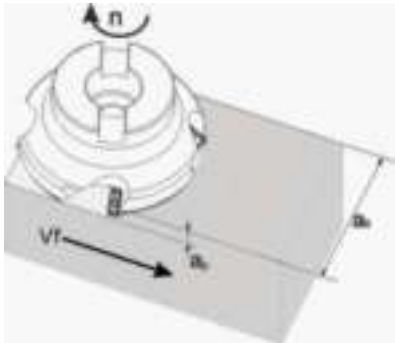
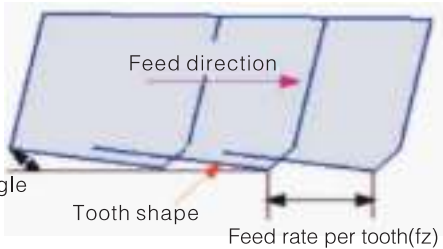
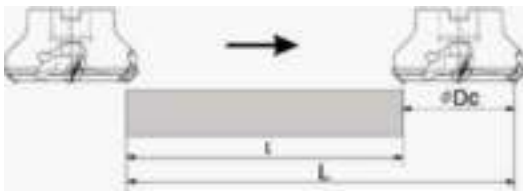
Pitch is the distance between one point on one cutting edge and the same point on the next edge.

Optimized stability		
L (Low)	M (Medium)	H (High)
Coarse pitch 	Close pitch 	Extra close pitch 
When the milling width is equal to diameter of cutter, the machining system is stable and main power of machine is sufficient, the use of coarse pitch can achieve high productive efficiency.	Used in general milling and multiple mixed productions.	When the milling width is less than diameter of cutter, cutting by maximum edges can achieve high productive efficiency.

Technical Information

Milling calculation

① General Formula

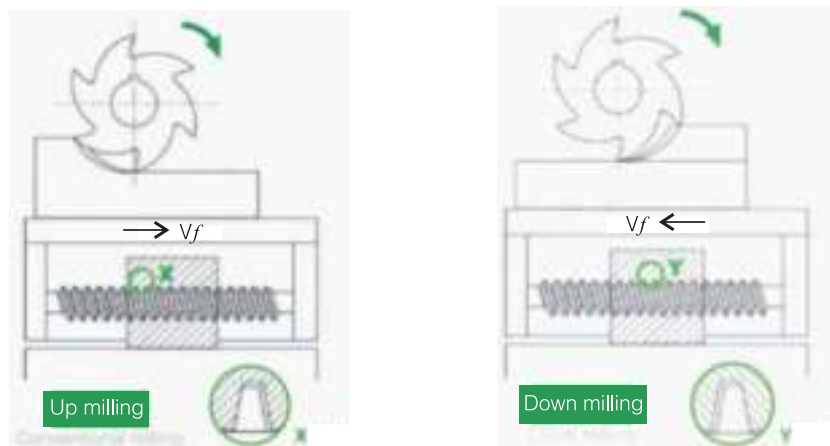
V_C : cutting speed (m/min) D_C : nominal diameter of milling tool (mm) n : spindle speed (rev/min) z_n : number of teeth Q : metal removal rate (cm ³ /min)	V_f : feed rate of worktable (feed speed) (mm/min) f_z : feed rate per tooth (mm/z) π : circumference ratio=3.14 T_c : machining time (min) f_n : feed rate per revolution (mm/rev) L : Actual working distance (mm)
●Cutting speed $V_C = \frac{\pi \times D_C \times n}{1000} \text{ (m/min)}$	  
●Spindle speed $n = \frac{1000 \times V_C}{\pi \times D_C} \text{ (rev/min)}$	
●Feed rate of worktable(feed speed) $V_f = f_z \times n \times z_n \text{ (mm/min)}$	
●Feed rate per tooth $f_z = \frac{V_f}{n \times z_n} \text{ (mm/z)}$	
●Feed rate per revolution $f_n = \frac{V_f}{n} \text{ (mm/rev)}$	
●Machining time $T_c = \frac{L}{v_f} \text{ (min)}$	
●Metal removal rate $Q = \frac{a_p \times a_e \times V_f}{1000} \text{ cm}^3 / \text{min}$	

Technical Information

Difference and Selection Between Down Milling and Up Milling

Climb milling (also called down milling): the feed direction of workpiece is the same as that of the milling rotation at the connecting position.

Conventional milling (also called up milling): the feed direction of workpiece is opposite to that of the milling rotation at the connecting position.



In down milling, the major force of cutting edge is the compressive stress, while in up milling is the tensile stress. The compressive strength of cemented carbide material is much larger than its tensile strength. In down milling, as chips become thin from thick gradually, cutting edge and workpiece press against each other. The friction between edge and workpiece is small, thus reducing the abrasion of edge, the hardening of workpiece surface and the surface roughness (Ra). In up milling, chips become thick from thin gradually. When the insert is cutting into the workpiece, it produces strong friction and more heat than in down milling, and make workpiece surface hardened.

In up milling, because horizontal direction of cutting force milling cutter conducting on workpiece is opposite to the feed direction of workpiece, the lead screw of worktable joints closely with one side of the screw nut. In down milling, the direction of cutting force is the same as the feed direction. When edge's radial force on workpiece is large enough, the worktable will bounce left and right, thus make the gap fall behind. The gap will return to the front side with the continuing rotation of lead screw. At this moment the worktable stops motion, however, it will bounce left and right again when the radial cutting force is large enough again. The periodical bounce of worktable will cause poor surface quality of workpiece and tool breakage.

When using end mills for down milling, the edges always starts cutting at the workpiece surface, therefore end mills are not suitable for machining workpiece with hardened surface

Up milling is recommended for milling thin-wall components or square milling with high requirement for precision.

Notes

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Notes

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