

From the desk of Director

Dear Customers,

Ever since the inception of *BLOOD*[®] tools in 2007, venturing into Carbide Indexable Insert market has been my Dream Project.

As a matter of fact, a perfectly engineered tool along with excellent customer support will definitely demand a better price. 24x7 assistance is not Service, but **Attitude**.

At this juncture, I assure you all consistent better quality and services all the time from my *Team BLOOD*[®].

I take this opportunity to sincerely thank my valued customers for their undaunted support and patronage, without which, our success wouldn't be possible.



Samir Vora
Director





History

The senior director of our Company Mr. Samir Vora pursued his degree of B.E. Mechanical in 2004. Further to strengthen his engineering knowledge, he joined Indo German Tool Room. He then took total responsibility of the existing HSS Metal Cutting Tool mfg. with latest machinery & Heat Treatment shop at Rajkot.

After rich & exclusive experience in the field of Metal Cutting Tools Technology, in 2006 with the team of qualified family members, he decided to go for mfg. Solid Carbide Tools & CNC Toolings in a newly established hi-tech plant & machinery namely Robin Precision Products Pvt. Ltd.

After learning the positive market response and having gained enough experience to add a new product to our existing products, Robin Precision Products Pvt. Ltd. now introduces Carbide Inserts for Turning, Milling, Threading and Grooving along with its holders to efficiently cater all CNC/VMC users with all their requirements under our brand **BLOOD**[®].



www.bloodtools.com

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TECHNICAL INTRODUCTION:

1. WORKPIECE MATERIAL



STEEL
Reference material:
Low alloy steel, CMC02.1/HB 180.



ALUMINIUM ALLOYS
Reference material:
Cast, non-ageing, CMC 30.21/HB 75.



STAINLESS STEEL
Reference material:
Austenitic stainless steel,
CMC 05.21HB 180.



HEAT RESISTANT ALLOYS
Reference material:
Ni-based, CMC 20.22/Hb 350.



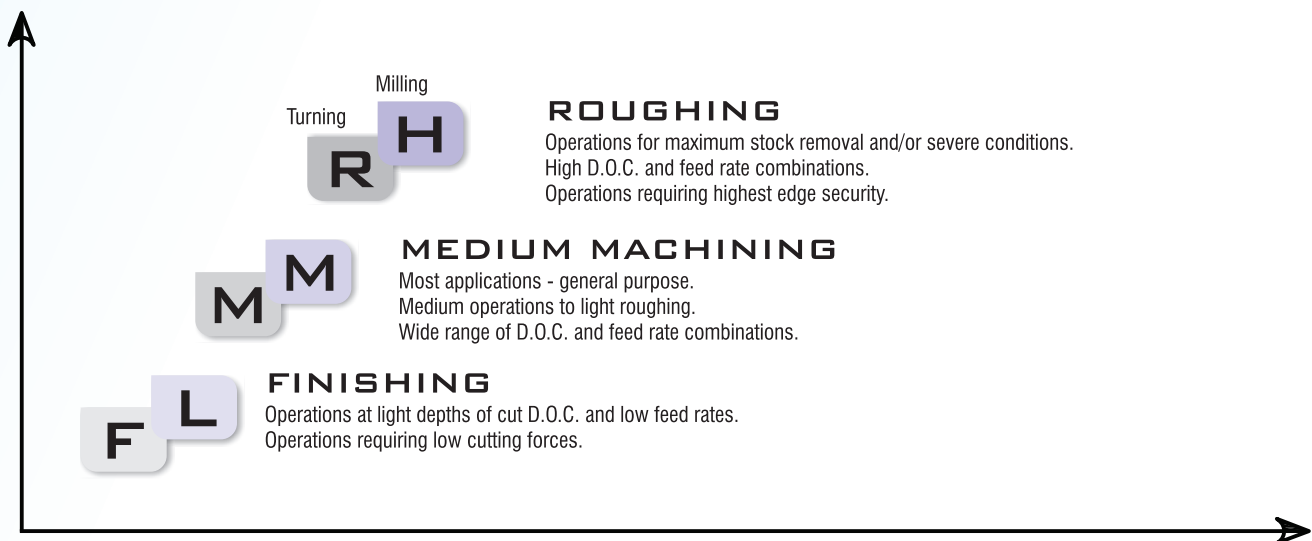
CAST IRON
Reference material:
Grey cast iron, CMC 08.2/HB 220
Nodular cast iron, CMC 09.2/HB 250.



HARDENED STEEL
Reference material:
Hardened and tempered,
CMC 04.1/HRC 60.

2. TYPE OF APPLICATION (TURNING/MILLING)

a_p Depth of cut, mm

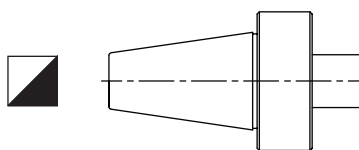


3. MACHINING CONDITIONS



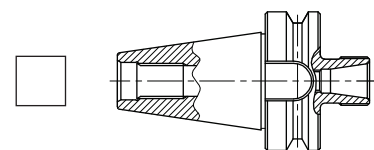
GOOD CONDITIONS

- Continuous cuts. High speeds.
- Pre-machined work piece.
- Excellent component clamping.
- Small overhangs.



AVERAGE CONDITIONS

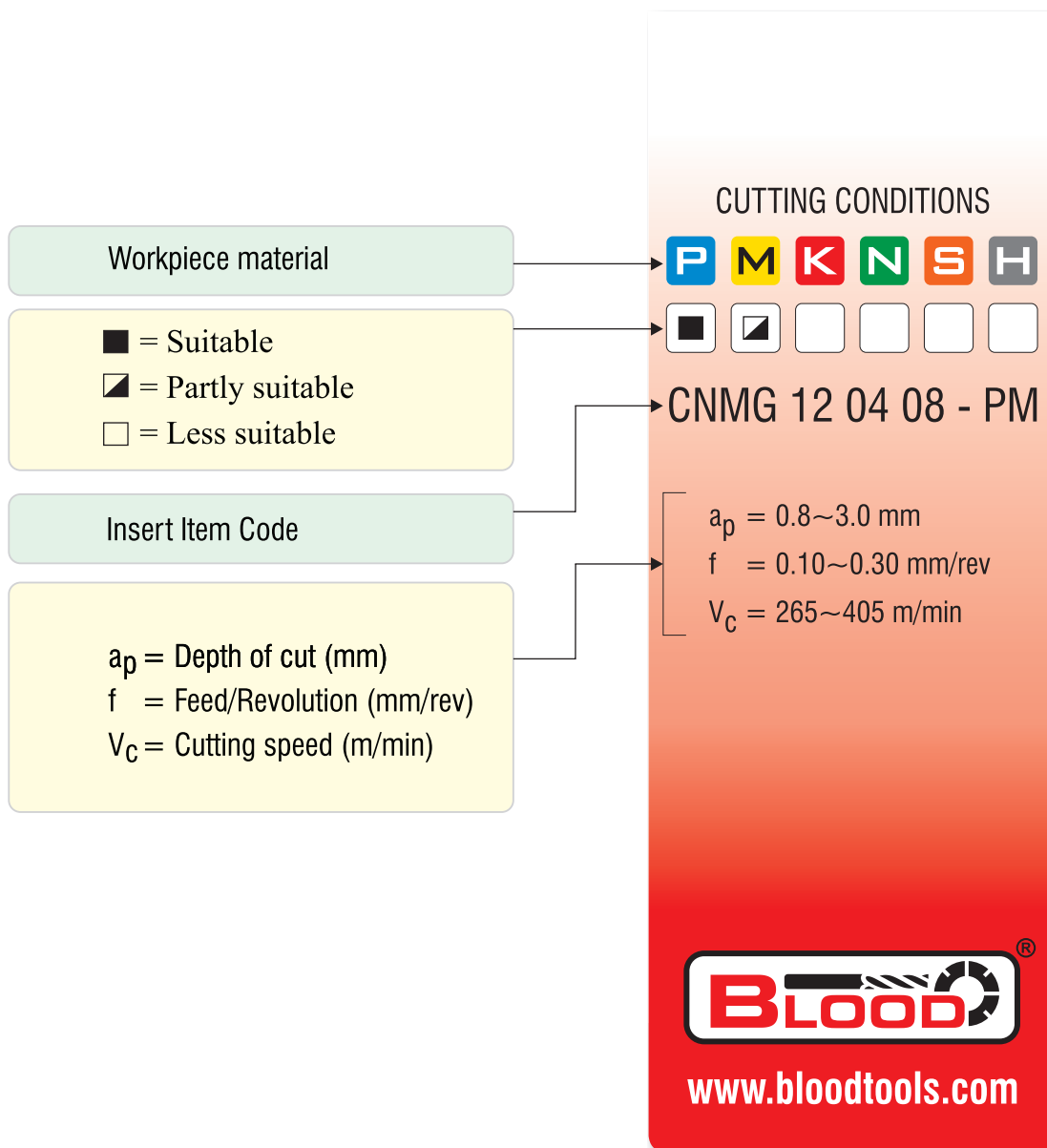
- Profiling cuts. Moderate speeds.
- Forged or cast workpiece.
- Good component clamping.



DIFFICULT CONDITIONS

- Interrupted cuts.
- Low speeds.
- Heavy cast or forged skin on workpiece.
- Poor component clamping.

The starting values of speed and feed, together with the working range (min. - max.) are given on the insert sticker which makes it quick and easy to start machining.



GENERAL INFORMATION:

HARDNESS CONVERSION TABLE

Many different systems are used in industry for measuring material hardness. The table below compares three of the most common systems.

BLOOD cutting data recommendations are given in Hardness Brinell (HB).

- HB 180 for Steel
- HB 180 for Stainless steel
- HB 220 for grey cast iron
- HB 250 for Nodular cast iron
- HB 75 for Aluminium and non-ferrous materials
- HB 350 for Heat resistant super alloys
- HRC 60 for Hardened materials

Tensile strength	Vickers	Brinell	Rockwell	
			HRC	HRB
N/mm ²	HV	HB		
255	80	76.0	-	-
270	85	80.7	-	41.0
285	90	85.5	-	48.0
305	95	90.2	-	52.0
320	100	95.0	-	56.2
350	110	105	-	62.3
385	120	114	-	66.7
415	130	124	-	71.2
450	140	133	-	75.5
480	150	143	-	78.7
510	160	152	-	81.7
545	170	162	-	85.0
575	180	171	-	87.5
610	190	181	-	89.5
640	200	190	-	91.5
660	205	195	-	92.5
675	210	199	-	93.5
690	215	204	-	94.0
705	220	209	-	95.0
720	225	214	-	96.0
740	230	219	-	96.7
770	240	228	20.3	98.1
800	250	238	22.2	99.5
820	255	242	23.1	-
835	260	247	24.0	(101)
850	265	252	24.8	-
865	270	257	25.6	(102)
900	280	266	27.1	-
930	290	275	28.5	(105)
950	295	280	29.2	-
965	300	285	29.8	-
955	310	295	31.0	-

Tensile strength	Vickers	Brinell	Rockwell
			HRC
N/mm ²	HV	HB	
1030	320	304	32.2
1060	330	314	33.3
1095	340	323	34.4
1125	350	333	35.5
1155	360	342	36.6
1190	370	352	37.7
1220	280	361	38.8
1255	390	371	39.8
1290	400	380	40.8
1320	410	390	41.8
1350	420	399	42.7
1385	430	409	43.6
1420	440	418	44.5
1485	460	437	46.1
1555	480	-	47.7
1595	490	-	48.4
1630	500	-	49.1
1665	510	-	49.8
1700	520	-	50.5
1740	530	-	51.1
1775	540	-	51.7
1810	550	-	52.3
1845	560	-	53.0
1880	570	-	53.6
1920	280	-	54.1
1955	590	-	54.7
1995	600	-	55.2
2030	610	-	55.7
2070	620	-	56.3
2105	630	-	56.8
2145	640	-	57.3
2180	650	-	57.8

CONVERSION CHART CUTTING SPEED (V_C) - RPM

Component / cutter Ø mm	Cutting speed (V _C) - m/min										
	30	40	50	100	150	200	300	400	500	600	700
12	795	1060	1326	2652	3979	5305	7957	10610	13262	0	0
16	297	795	995	1989	2984	3978	5968	7957	9947	11936	0
20	477	637	796	1691	2387	3183	4774	6366	7957	9549	11140
25	382	509	637	1273	1910	2546	3819	5092	6366	7639	8912
32	298	398	497	994	1492	1989	2984	3978	4973	5968	6963
40	239	318	398	795	1194	1591	2387	3183	3978	4774	5570
50	191	255	318	636	955	1272	1909	2546	3183	3819	4456
63	151	202	253	505	758	1010	1515	2021	2526	3031	3536
80	119	159	199	397	597	795	1193	1591	1989	2387	2785
100	95	127	159	318	477	636	952	1273	1591	1909	2228
125	76	109	124	255	382	509	764	1018	1237	1527	1782
160	60	80	99	198	298	397	596	795	994	1193	1392
175	55	71	91	182	273	363	544	727	909	1091	1273
200	48	64	80	160	239	318	476	636	795	954	1114

Example: You are using an 80 mm diameter cutter. The cutting speed start value (V_C) on the insert box is 200 m/min. find the cutter size in the left column, and cutting speed in the top row and read the spindle RPM at the intersection: 795 revolution per minute.

Formula:

Cutting speed, m/min

$$V_C = \frac{\pi \times D_C \times n}{1000}$$

V_C = cutting speed, m/min
n = revolution/min
D_C = diameter, mm

Spindle speed, rpm

$$n = \frac{V_C \times 1000}{\pi \times D_C}$$

n = revolution/min
V_C = cutting speed, m/min
D_C = diameter, mm

Table feed, mm/min

$$V_f = n \times z \times f_z$$

V_f = table feed, mm/min
n = revolution/min
z = number of teeth
f_z = feed, mm/tooth

RECOMMENDED GRADES FOR TURNING

	ISO	Coating		Material	Chipbreaker
		CVD	PVD	Cemented Carbide	
Steel	P01				PF - Steel Finish Machining PM - Steel Medium Machining PR - Steel Rough Machining
	P10	BPC101  BPC102	BPP101	BPU101	
	P20	BPC201  BPC202		BPU201	
	P30	BPC301 BPC302	BPP301	BPU301	
	P40	BPC401 			
Stainless Steel	M01				MF - Stainless Steel Finish Machining MM - Stainless Steel Medium Machining MR - Stainless Steel Rough Machining
	M10		BMP101 BMP102	BMU101	
	M20	BMP201 	BMP202	BMU201 BMU202	
	M30		BMP301 BMP302		
	M40	BMC401			
Cast Iron	K01				KM - Cast Iron Medium Machining KR - Cast Iron Rough Machining
	K10			BKU101 BKU102 BKU103	
	K20	BKC 201 		BKU201 BKU202	
	K30			BKU301 BKU302	
Non-Ferrous Metal	N01				NM - Non Ferrous Metal Medium Machining
	N10			BNU101 BNU102	
	N20			BNU201  BNU202	
	N30				
Heat Resistant Alloy	S01				
	S10				
	S20				
	S30				
Hardened Steel	H01				HM - Hardened Steel Medium Machining
	H10				
	H20				
	H30				

RECOMMENDED GRADES FOR MILLING

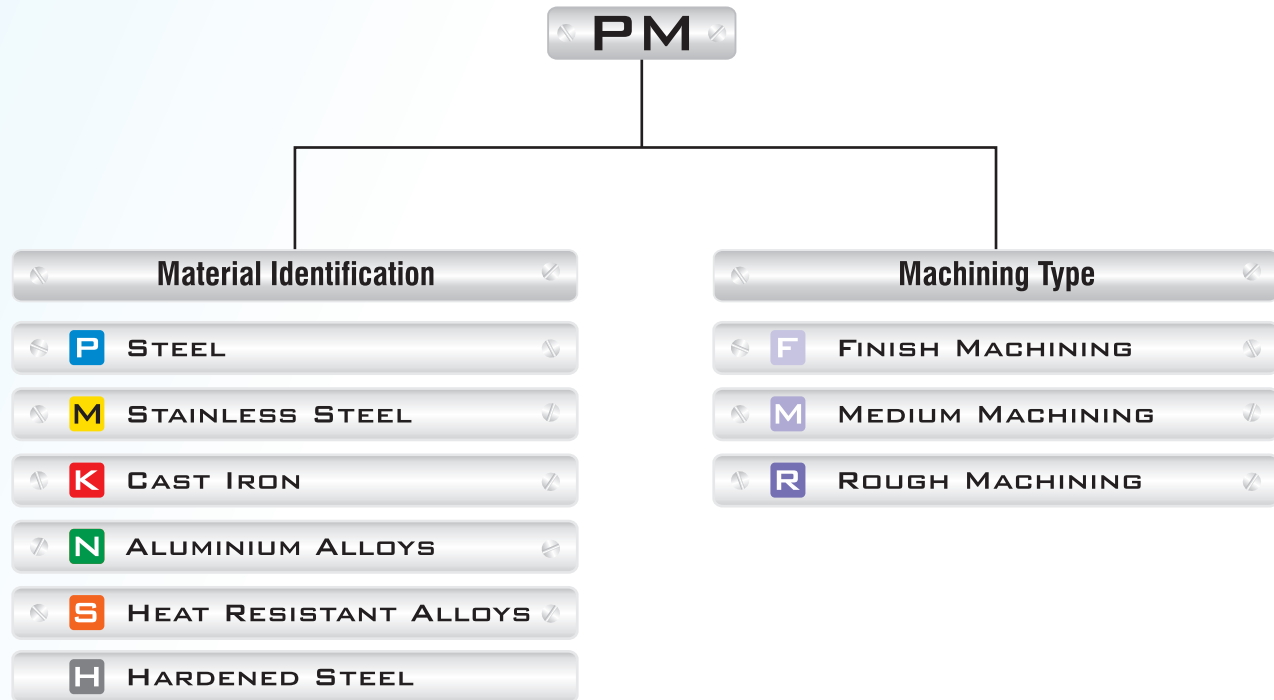
	ISO	Coating		Material
		CVD	PVD	Cemented Carbide
Steel	P01			
	P10	132 		
	P20	21019 		
	P30	2014 	451 	
	P40			
Stainless Steel	M01			
	M10			
	M20	8200 2413 1019 		
	M30			
	M40			
Cast Iron	K01			
	K10			
	K20			
	K30			
Non-Ferrous Metal	N01			
	N10			128
	N20			1110 
	N30			72
Heat Resistant Alloy	S01	451		
	S10			
	S20			
	S30			
Hardened Steel	H01			
	H10	JT 7370 		
	H20			
	H30			

RECOMMENDED GRADES FOR TURNING

ISO	Coating				Material			
	CVD		PVD		Cemented Carbide			
Steel	P01						BPU101	
	P10	BPC101	BPC102		BPP101			
	P20	BPC101	BPC102	BPC201		BPC301		BPU201
	P30	BPC301	BPC302	BPC201	BPC202			BPU301
	P40	BPC301	BPC302					BPU301
Stainless Steel	M01						BMU201	
	M10				BMP101	BMP102		BMU202
	M20				BMP201	BMP202		BMU202
	M30				BMP201	BMP202		
	M40							
Cast Iron	K01	BKC101					BKU103	BKU202
	K10	BKC101	BKC201		BKC102			BKU302
	K20		BKC201		BKC102			BKU302
	K30							
Non-Ferrous Metal	N01		BNC102				BNU101	
	N10		BNC102				BNU101	
	N20							BNU201
	N30							BNU201
Heat Resistant Alloy	S01							
	S10							
	S20							
	S30							
Hardened Steel	H01							
	H10							
	H20							
	H30							

CHIP BREAKER IDENTIFICATION

T N M G 16 04 08 - PM



Note: If you want to use TNMG 16 04 08 insert on Steel material for roughing purpose, the CHIP BREAKER code will be P (for Steel) & Rough Machining Operation = R. i.e. PR (Full Code **TNMG 16 04 08 - PR**)

● Chip Breaking Theory

A chip breaker is the mechanical means used to force a ductile material to bend to the breaking point. The extensive use of CNC turning machinery has increased the need for reliable chip control to maintain efficient production. In those cases where highly ductile work pieces are machined and poor chip control exists, long continuous strands of metal are created which wrap around tools and the part. This leads to premature failure due to chipping of the tool and excessive number of times to change parts, ultimately reducing the capacity of the machine tool by wasting precious production hours. Most of the turning inserts used in production situations have pressed and sintered or ground chip grooves.

Negative Inserts			
For Finish Machining	P	F	<ul style="list-style-type: none"> For finish machining Steel Optimal chip control
	M	F	<ul style="list-style-type: none"> For finish machining Stainless Steel Performs well in high-speed finishing of Stainless Steel
	K	F	<ul style="list-style-type: none"> For finish machining Cast iron Effectively used for machining non-ferrous metals such as aluminum alloys and copper alloys
	Z	F	<ul style="list-style-type: none"> For finish machining Non-ferrous metal Effectively used for machining non-ferrous metals such as aluminum alloys and copper alloys
For Medium Machining	P	M	<ul style="list-style-type: none"> For medium machining Steel Reduce the contact-area between tool and chip, prevent the insert from raising temperature during cutting
	M	M	<ul style="list-style-type: none"> For medium machining Stainless steel, Steel Provides excellent chip evacuation
	K	M	<ul style="list-style-type: none"> For medium machining Cast iron, Steel Excellent chip control on medium turning applications
	Z	M	<ul style="list-style-type: none"> For medium machining Aluminum Very high positive rake geometry to minimize built-up-edge and cutting force
	S	M	<ul style="list-style-type: none"> For medium machining Heat resistant alloys Optimal chip control
	H	M	<ul style="list-style-type: none"> For medium machining Hardened steel Perform well in medium finishing of hardened steel
For Rough Machining	P	R	<ul style="list-style-type: none"> For rough machining Steel, Stainless steel, Cast iron Very strong rake geometry
	M	R	<ul style="list-style-type: none"> For rough machining Stainless steel Stable cutting and low cutting forces with high feed rate
	K	R	<ul style="list-style-type: none"> For rough machining Cast iron Strong rake geometry

Positive Inserts			
For Finish Machining	P	F	<ul style="list-style-type: none"> For finish machining Steel Designed to control the direction of chip flow and used for precision-finish turning
	M	F	<ul style="list-style-type: none"> For finish machining Stainless steel Optimal chip control due to pre-positioned chipbreaker element
	K	F	<ul style="list-style-type: none"> For finish machining Cast iron, Steel Performs well in high-speed finishing of cast iron
	Z	F	<ul style="list-style-type: none"> For finish machining Non-ferrous metal A strong but free cutting chip breaker for non-ferrous metal
For Medium Machining	P	M	<ul style="list-style-type: none"> For medium machining Steel Smooth and easy chip flow on finishing steel
	M	M	<ul style="list-style-type: none"> For medium machining Stainless steel, Steel Chipbreaker with strong rake angle reduces cutting forces, which gives a very high edge strength
	K	M	<ul style="list-style-type: none"> For medium machining Cast iron, Steel Excellent chip control on medium turning applications
	Z	M	<ul style="list-style-type: none"> For medium machining Aluminum Very high positive rake geometry to minimize built-up-edge and cutting force
	S	M	<ul style="list-style-type: none"> For medium machining Heat resistant alloys Optimal chip control
	H	M	<ul style="list-style-type: none"> For medium machining Hardened steel Perform well in medium finishing of hardened steel
For Rough Machining	P	R	<ul style="list-style-type: none"> For rough machining Steel, Stainless steel, Cast iron Very strong rake geometry
	M	R	<ul style="list-style-type: none"> For rough machining Stainless steel Stable cutting and low cutting forces with high feed rate
	K	R	<ul style="list-style-type: none"> For rough machining Cast iron Strong rake geometry



PM KNSH

TURNING INSERT



NOMENCLATURE

TURNING INSERT



1. INSERT SHAPE

A 85°	B 82°	C 80°	D 55°
E 55°	H 	K 55°	L
M 86°	O 	P 55°	R
S 	T 60°	V 35°	W 80°

2. CLEARANCE ANGLE

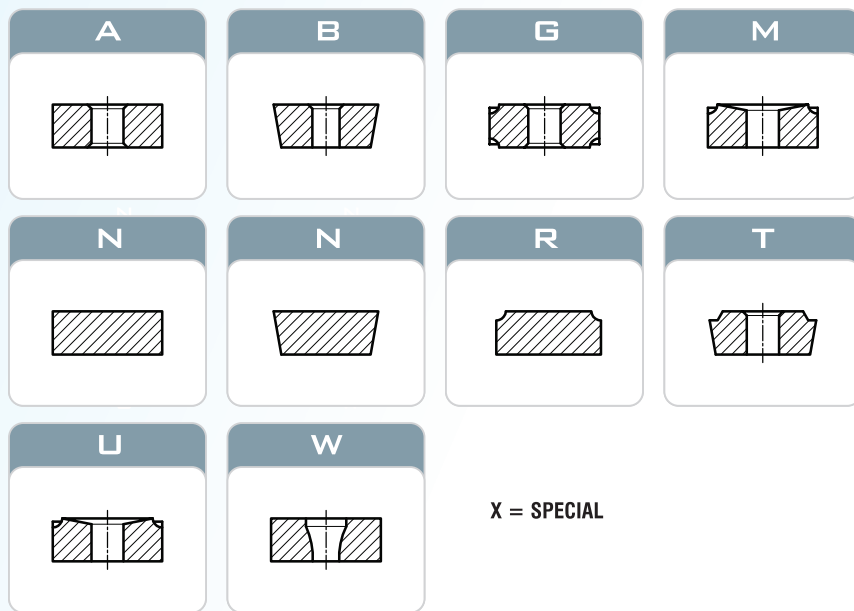
A 3°	B 5°	C 7°
D 15°	E 20°	F 25°
G 30°	N 0°	P 11°

O = SPECIAL

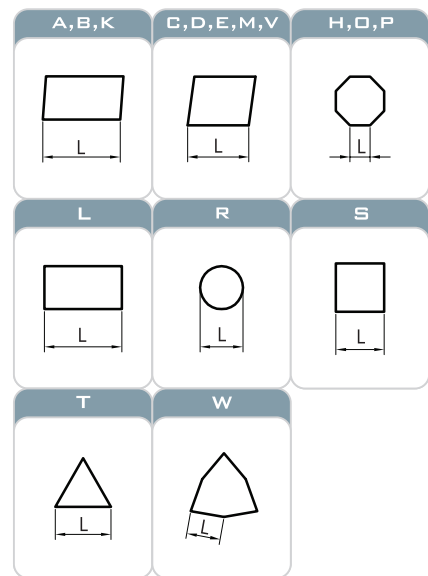
3. TOLERANCES

Tol. class	Tolerance +/-			For d, Dimension mm											
	m	s	d	3.175	3.369	4.064	4.670	6.350	9.525	12.700	15.875	19.050	25.400	31.750	38.100
A	0.005	0.025	0.025	•		•	•	•	•	•	•	•	•	•	•
C	0.013	0.025	0.025	•	•	•	•	•	•	•	•	•	•	•	•
E	0.025	0.025	0.025	•			•	•	•	•	•	•	•	•	•
F	0.005	0.025	0.013	•			•	•	•	•	•	•	•	•	•
G	0.025	0.130	0.025	•			•	•	•	•	•	•	•	•	•
H	0.013	0.025	0.013	•			•	•	•	•	•	•	•	•	•
J	0.005	0.025	0.050	•			•	•	•						
	0.005	0.025	0.080							•					
	0.005	0.025	0.100								•	•			
	0.005	0.025	0.130										•		
K	0.013	0.025	0.050	•			•	•	•						
	0.013	0.025	0.080							•					
	0.013	0.025	0.100								•	•			
	0.013	0.025	0.130										•		
M	0.013	0.025	0.150											•	•
	0.080	0.130	0.050	•			•	•	•						
	0.130	0.130	0.080							•					
	0.150	0.130	0.100								•	•			
U	0.180	0.130	0.130										•		
	0.200	0.130	0.150											•	•
	0.130	0.130	0.080	•			•	•	•						
	0.200	0.130	0.130							•					
U	0.270	0.130	0.180								•	•			
	0.380	0.130	0.250										•	•	•

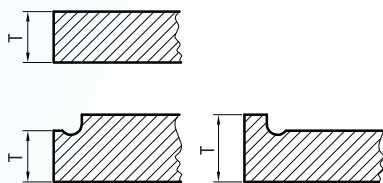
4. CLAMPING TYPE



5. CUTTING EDGE LENGTH

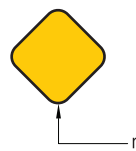


6. THICKNESS



01 = 1.59 mm	04 = 4.76 mm
T1 = 1.98 mm	05 = 5.56 mm
02 = 2.38 mm	06 = 6.35 mm
03 = 3.18 mm	07 = 7.94 mm
T3 = 3.97 mm	08 = 8.00 mm

7. CORNER RADIUS



Nose Radius
*Metric Version

MO* = Round Inserts	04 = 0.4 mm
00 = Sharp	08 = 0.8 mm
01 = 0.1 mm	12 = 1.2 mm
02 = 0.2 mm	16 = 1.6 mm

8. CHIP BREAKER CODE

1st Letter

P	= STEEL
M	= STAINLESS STEEL
K	= CAST IRON
N	= ALUMINIUM ALLOYS
S	= HEAT RESISTANT ALLOYS
H	= HARDENED STEEL

2nd Letter

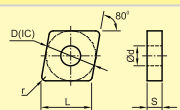
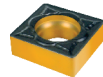
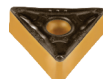
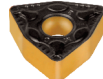

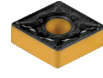

F	= FINISH MACHINING
M	= MEDIUM MACHINING
R	= ROUGH MACHINING
X	= SPECIAL GRADE

TURNING

NEGATIVE INSERT

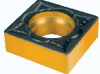


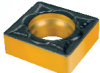
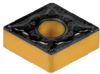
P		Work Material: Steel								P M K N S H		
F		Finish Machining of Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed	Cutting speed		
							a_p mm	mm / Rev.	V_c m/min			
	CNMG	09 03 04 - PF	9.7	9.525	3.18	3.81	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		09 03 08 - PF	9.7	9.525	3.18	3.81	0.8	0.36 (0.3-1.5)	0.14 (0.1-0.3)	464		
		12 04 04 - PF	12.9	12.7	4.76	5.16	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		12 04 08 - PF	12.9	12.7	4.76	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
	TNMG	16 04 04 - PF	16.5	9.525	4.76	3.81	0.4	0.36 (0.35-1.5)	0.14 (0.07-0.3)	464		
		16 04 08 - PF	16.5	9.525	4.76	3.81	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		22 04 04 - PF	22	12.7	4.76	5.16	0.4	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		22 04 08 - PF	22	12.7	4.76	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		22 04 12 - PF	22	12.7	4.76	5.16	1.2	0.72 (0.35-1.5)	0.23 (0.15-0.5)	401		
	WNMG	06 04 04 - PF	6.5	9.525	4.76	3.81	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		06 04 08 - PF	6.5	9.525	4.76	3.81	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		08 04 04 - PF	8.7	12.7	4.76	5.16	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		08 04 08 - PF	8.7	12.7	4.76	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
	DNMG	11 04 04 - PF	11.6	9.525	4.76	3.81	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		11 04 08 - PF	11.6	9.525	4.76	3.81	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		15 04 04 - PF	15.5	12.7	4.76	5.16	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		15 04 08 - PF	15.5	12.7	4.76	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		15 06 04 - PF	15.5	12.7	6.35	5.16	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		15 06 08 - PF	15.5	12.7	6.35	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
	SNMG	12 04 04 - PF	12.7	12.7	4.76	5.16	0.4	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		12 04 08 - PF	12.7	12.7	4.76	5.16	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		
		12 04 12 - PF	12.7	12.7	4.76	5.16	1.2	0.72 (0.35-1.5)	0.23 (0.15-0.5)	401		
	VNMG	16 04 04 - PF	16.6	9.525	4.76	3.81	0.4	0.36 (0.25-1.5)	0.14 (0.07-0.3)	464		
		16 04 08 - PF	16.6	9.525	4.76	3.81	0.8	0.36 (0.3-1.5)	0.18 (0.1-0.4)	428		

NEGATIVE INSERT

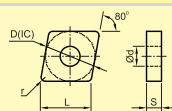
P		Work Material: Steel								P M K N S H		
M		Medium Machining of Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ød	r	Cutting depth	Feed	Cutting speed			
							a_p , mm	mm / Rev.	V_c m/min			
	CNMG	09 03 04 - PM	9.7	9.525	3.18	3.81	0.4	1.80 (0.4-4)	0.18 (0.1-0.3)	356		
		09 03 08 - PM	9.7	9.525	3.18	3.81	0.8	1.80 (0.5-4)	0.27 (0.15-0.5)	311		
		12 04 04 - PM	12.9	12.7	4.76	5.16	0.4	2.70 (0.4-5.5)	0.18 (0.1-0.3)	356		
		12 04 08 - PM	12.9	12.7	4.76	5.16	0.8	2.70 (0.5-5.5)	0.27 (0.15-0.5)	311		
		12 04 12 - PM	12.9	12.7	4.76	5.16	1.2	2.70 (0.8-5.5)	0.32 (0.18-0.6)	293		
	TNMG	16 04 04 - PM	16.5	9.525	4.76	3.81	0.4	2.70 (0.4-5)	0.27 (0.4-0.5)	356		
		16 04 08 - PM	16.5	9.525	4.76	3.81	0.8	2.70 (0.5-5)	0.27 (0.15-0.5)	311		
		16 04 12 - PM	16.5	9.525	4.76	3.81	1.2	2.70 (0.8-5)	0.32 (0.18-0.6)	293		
		22 04 04 - PM	22	12.7	4.76	5.16	0.4	3.60 (0.4-6.6)	0.18 (0.1-0.3)	356		
		22 04 08 - PM	22	12.7	4.76	5.16	0.8	3.60 (0.5-6.6)	0.27 (0.15-0.5)	311		
		22 04 12 - PM	22	12.7	4.76	5.16	1.2	3.60 (0.8-6.6)	0.32 (0.18-0.6)	293		
	WNMG	06 04 08 - PM	6.5	9.525	4.76	3.81	0.8	1.80 (0.5-3)	0.27 (0.15-0.5)	311		
		06 04 12 - PM	6.5	9.525	4.76	3.81	1.2	1.80 (0.8-3)	0.32 (0.18-0.6)	293		
		08 04 08 - PM	8.7	12.7	4.76	5.16	0.8	2.25 (0.5-4)	0.27 (0.15-0.5)	311		
		08 04 12 - PM	8.7	12.7	4.76	5.16	1.2	2.25 (0.8-4)	0.32 (0.18-0.6)	293		
	DNMG	11 04 08 - PM	11.6	9.525	4.76	3.81	0.8	1.8 (0.5-5)	0.27 (0.15-0.5)	311		
		11 04 12 - PM	11.6	9.525	4.76	3.81	1.2	1.8 (0.8-5)	0.32 (0.18-0.5)	293		
		15 04 04 - PM	15.5	12.7	4.76	5.16	0.4	2.70 (0.4-6)	0.36 (0.1-0.8)	275		
		15 04 08 - PM	15.5	12.7	4.76	5.16	0.8	2.70 (0.5-6)	0.27 (0.15-0.5)	275		
		15 04 12 - PM	15.5	12.7	4.76	5.16	1.2	2.70 (0.8-6)	0.32 (0.18-0.6)	275		
		15 06 04 - PM	15.5	12.7	6.35	5.16	0.4	2.70 (0.4-6)	0.18 (0.1-0.3)	356		
		15 06 08 - PM	15.5	12.7	6.35	5.16	0.8	2.70 (0.5-6)	0.27 (0.15-0.5)	311		
		15 06 12 - PM	15.5	12.7	6.35	5.16	1.2	2.70 (0.8-6)	0.32 (0.18-0.6)	293		
	SNMG	09 03 04 - PM	9.525	9.525	3.18	3.81	0.4	1.80 (0.4-4.5)	0.18 (0.1-0.3)	356		
		09 03 08 - PM	9.525	9.525	3.18	3.81	0.8	1.80 (0.5-4.5)	0.27 (0.15-0.5)	311		
		12 04 04 - PM	12.7	12.7	4.76	5.16	0.4	2.70 (0.4-6)	0.18 (0.1-0.3)	356		
		12 04 08 - PM	12.7	12.7	4.76	5.16	0.8	2.70 (0.5-6)	0.27 (0.15-0.5)	311		
		12 04 12 - PM	12.7	12.7	4.76	5.16	1.2	2.70 (0.8-6)	0.32 (0.18-0.6)	293		
		15 04 08 - PM	15.875	15.875	4.76	5.16	0.8	3.5 (0.7-4)	0.36 (0.25-0.7)	293		
		15 04 12 - PM	15.875	15.875	4.76	5.16	1.2	3.5 (0.7-4)	0.36 (0.25-0.7)	293		
	VNMG	16 04 08 - PM	16.6	9.525	4.76	3.81	0.8	1.80 (0.5-4)	0.27 (0.15-0.5)	311		
		16 04 12 - PM	16.6	9.525	4.76	3.81	1.2	1.80 (0.8-4)	0.32 (0.18-0.6)	293		

TURNING

NEGATIVE INSERT

P		Work Material: Steel							P M K N S H		
R		Rough Machining of Steel							<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA				
		L	D (IC)	S	Ø d	r	Cutting depth	Feed	Cutting speed		
							a_p mm	mm / Rev.	V_c m/min		
	CNMG	12 04 08 - PR	12.9	12.7	4.76	5.16	0.8	3.60 (0.7-7)	0.32 (0.2-0.5)	293	
	CNMG	12 04 12 - PR	12.9	12.7	4.76	5.16	1.2	3.60 (1-7)	0.36 (0.25-0.7)	275	
	CNMG	12 04 16 - PR	12.9	12.7	4.76	5.16	1.6	3.60 (1.5-7)	0.45 (0.32-0.75)	248	
	CNMG	16 06 12 - PR	16.1	15.875	6.35	6.35	1.2	4.50 (1-8)	0.36 (0.25-0.7)	275	
	CNMG	16 06 16 - PR	16.1	15.875	6.35	6.35	1.6	4.50 (1.5-8)	0.45 (0.3-0.8)	248	
	CNMG	19 06 12 - PR	19.3	19.05	6.35	7.94	1.2	4.50 (1-10)	0.36 (0.25-0.7)	275	
	TNMG	16 04 08 - PR	16.5	9.525	4.76	3.81	0.8	2.70 (0.7-6)	0.32 (0.2-0.55)	293	
	TNMG	16 04 12 - PR	16.5	9.525	4.76	3.81	1.2	2.70 (1-6)	0.36 (0.25-0.65)	275	
	TNMG	22 04 08 - PR	22	12.7	4.76	5.16	0.8	3.60 (0.7-7)	0.32 (0.2-0.55)	293	
	TNMG	22 04 12 - PR	22	12.7	4.76	5.16	1.2	3.60 (1-7)	0.36 (0.25-0.65)	275	
	TNMG	22 04 16 - PR	22	12.7	4.76	5.16	1.6	3.60 (1.5-7)	0.45 (0.32-0.75)	248	
	WNMG	06 04 08 - PR	6.5	9.525	4.76	3.81	0.8	2.70 (0.7-3.5)	0.27 (0.2-0.45)	311	
	WNMG	06 04 12 - PR	6.5	9.525	4.76	3.81	1.2	2.70 (0.8-3.5)	0.32 (0.25-0.55)	293	
	WNMG	08 04 08 - PR	8.7	12.7	4.76	5.16	0.8	3.60 (0.7-5)	0.32 (0.2-0.55)	293	
	WNMG	08 04 12 - PR	8.7	12.7	4.76	5.16	1.2	3.60 (1-5)	0.36 (0.25-0.7)	275	
	WNMG	08 04 16 - PR	8.7	12.7	4.76	5.16	1.6	3.60 (1.5-5)	0.45 (0.32-0.75)	248	
	DNMG	15 04 08 - PR	15.5	12.7	4.76	5.16	0.8	3.60 (0.7-6)	0.36 (0.1-0.8)	275	
	DNMG	15 04 12 - PR	15.5	12.7	4.76	5.16	1.2	3.60 (1-6)	0.36 (0.1-0.8)	275	
	DNMG	15 04 16 - PR	15.5	12.7	4.76	5.16	1.6	3.60 (1.5-6)	0.36 (0.1-0.8)	275	
	DNMG	15 06 08 - PR	15.5	12.7	6.35	5.16	0.8	3.60 (0.7-6)	0.32 (0.2-0.5)	293	
	DNMG	15 06 12 - PR	15.5	12.7	6.35	5.16	1.2	3.60 (1-6)	0.36 (0.25-0.7)	275	
	DNMG	15 06 16 - PR	15.5	12.7	6.35	5.16	1.6	3.60 (1.5-6)	0.45 (0.32-0.75)	248	
	SNMG	12 04 08 - PR	12.7	12.7	4.76	5.16	0.8	3.60 (0.7-7)	0.32 (0.2-0.5)	293	
	SNMG	12 04 12 - PR	12.7	12.7	4.76	5.16	1.2	3.60 (1-7)	0.36 (0.25-0.7)	275	
	SNMG	12 04 16 - PR	12.7	12.7	4.76	5.16	1.6	3.60 (1.5-7)	0.36 (0.1-0.8)	275	
	SNMG	15 06 08 - PR	15.875	15.875	6.35	6.35	0.8	4.50 (1.5-8)	0.32 (0.2-0.5)	293	
	SNMG	15 06 12 - PR	15.875	15.875	6.35	6.35	1.2	4.50 (1-8)	0.36 (0.25-0.7)	275	
	SNMG	15 06 16 - PR	15.875	15.875	6.35	6.35	1.6	4.50 (1.5-8)	0.45 (0.3-0.8)	248	
	SNMG	19 06 08 - PR	19.05	19.05	6.35	7.94	0.8	4.50 (7-10)	0.36 (0.1-0.8)	275	
	SNMG	19 06 12 - PR	19.05	19.05	6.35	7.94	1.2	4.50 (1-10)	0.36 (0.25-0.7)	275	
	SNMG	19 06 16 - PR	19.05	19.05	6.35	7.94	1.6	4.50 (1.5-10)	0.45 (0.3-0.8)	248	

NEGATIVE INSERT

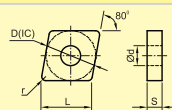
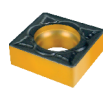

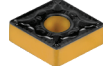
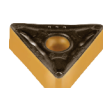

M		Work Material: Stainless Steel								P M K N S H		
F		Finish Machining of Stainless Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed		Cutting speed	
							a _p mm		mm / Rev.		V _c m/min	
CNMG	09 03 04 - MF	9.7	9.525	3.18	3.81	0.4	0.90 (0.5-3)		0.36 (0.2-0.6)		260	
	09 03 08 - MF	9.7	9.525	3.18	3.81	0.8	0.90 (0.5-3)		0.36 (0.2-0.6)		260	
	12 04 04 - MF	12.9	12.7	4.76	5.16	0.4	3.60 (0.1-1.5)		0.09 (0.05-0.2)		260	
	12 04 08 - MF	12.9	12.7	4.76	5.16	0.8	3.60 (0.1-1.5)		0.18 (0.1-0.4)		260	
	12 04 12 - MF	12.9	12.7	4.76	5.16	1.2	0.90 (0.5-4)		0.36 (0.2-0.6)		260	
TNMG	16 04 04 - MF	16.5	9.525	4.76	3.81	0.4	3.60 (0.1-1.5)		0.09 (0.05-0.2)		260	
	16 04 08 - MF	16.5	9.525	4.76	3.81	0.8	3.60 (0.1-1.5)		0.18 (0.1-0.4)		260	
	22 04 04 - MF	22	12.7	4.76	5.16	0.4	0.90 (0.5-4)		0.27 (0.12-0.45)		260	
	22 04 08 - MF	22	12.7	4.76	5.16	0.8	0.90 (0.5-4)		0.27 (0.12-0.45)		260	
WNMG	06 04 04 - MF	6.5	9.525	4.76	3.81	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	06 04 08 - MF	6.5	9.525	4.76	3.81	0.8	0.36 (0.1-1.5)		0.18 (0.1-0.4)		260	
	08 04 04 - MF	8.7	12.7	4.76	5.16	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	08 04 08 - MF	8.7	12.7	4.76	5.16	0.8	0.36 (0.1-1.5)		0.18 (0.1-0.4)		260	
DNMG	11 04 04 - MF	11.6	9.525	4.76	3.81	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	11 04 08 - MF	11.6	9.525	4.76	3.81	0.8	0.36 (0.1-1.5)		0.18 (0.1-0.4)		260	
	15 04 04 - MF	15.5	12.7	4.76	5.16	0.4	0.90 (0.5-3.75)		0.36 (0.2-0.6)		260	
	15 04 08 - MF	15.5	12.7	4.76	5.16	0.8	0.45 (0.15-2)		0.36 (0.2-0.6)		260	
	15 06 04 - MF	15.5	12.7	6.35	5.16	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	15 06 08 - MF	15.5	12.7	6.35	5.16	0.8	0.36 (0.1-1.5)		0.18 (0.1-0.4)		260	
SNMG	09 03 04 - MF	9.525	9.525	3.18	3.81	0.4	0.90 (0.5-3)		0.23 (0.12-0.45)		260	
	09 03 08 - MF	9.525	9.525	3.18	3.81	0.8	0.90 (0.5-3)		0.23 (0.12-0.45)		260	
	12 04 04 - MF	12.7	12.7	4.76	5.16	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	12 04 08 - MF	12.7	12.7	4.76	5.16	0.8	0.36 (0.1-1.5)		0.18 (0.1-0.4)		260	
	12 04 12 - MF	12.7	12.7	4.76	5.16	1.2	0.90 (0.5-4)		0.23 (0.12-0.45)		260	
VNMG	16 04 04 - MF	16.6	9.525	4.76	3.81	0.4	0.36 (0.1-1.5)		0.09 (0.05-0.2)		260	
	16 04 08 - MF	16.6	9.525	4.76	3.81	0.8	0.72 (0.2-2.5)		0.14 (0.08-0.3)		260	

TURNING

NEGATIVE INSERT

M		Work Material: Stainless Steel							P M K N S H		
M		Medium Machining of Stainless Steel							<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA				
		L	D (IC)	S	ød	r	Cutting depth	Feed	Cutting speed		
							a_p mm	mm / Rev.	V_c m/min		
	CNMG	12 04 08 - MM	12.9	12.7	4.76	5.16	0.8	2.70 (0.5-5.7)	0.23 (0.12-0.45)	203	
		12 04 12 - MM	12.9	12.7	4.76	5.16	1.2	2.70 (0.5-5.7)	0.27 (0.15-0.6)	185	
		16 06 08 - MM	16.1	15.875	6.35	6.35	0.8	3.60 (0.5-7.2)	0.23 (0.12-0.45)	203	
		16 06 12 - MM	16.1	15.875	6.35	6.35	1.2	3.60(0.5-7.2)	0.27 (0.15-0.6)	185	
		19 06 08 - MM	19.3	19.05	7.94	6.35	0.8	3.60 (0.5-8.5)	0.36 (0.2-0.6)	158	
		19 06 12 - MM	19.3	19.05	7.94	6.35	1.2	3.60 (0.5-8.5)	0.36 (0.2-0.6)	158	
	TNMG	16 04 08 - MM	16.5	9.525	4.76	3.81	0.8	2.70 (0.5-4.8)	0.23 (0.12-0.45)	203	
		16 04 12 - MM	16.5	9.525	4.76	3.81	1.2	2.70 (0.5-4.8)	0.27 (0.15-0.6)	185	
		22 04 08 - MM	22	12.7	4.76	5.16	0.8	3.60 (0.5-6.6)	0.23 (0.12-0.45)	203	
		22 04 12 - MM	22	12.7	4.76	5.16	1.2	3.60 (0.5-6.6)	0.27 (0.15-0.6)	185	
		22 04 16 - MM	22	12.7	4.76	5.16	1.6	3.60 (0.5-6.6)	0.33 (0.18-0.65)	167	
	WNMG	06 04 08 - MM	6.5	9.525	4.76	3.81	0.8	1.80 (0.5-3)	0.36 (0.2-0.6)	158	
		06 04 12 - MM	6.5	9.525	4.76	3.81	1.2	1.80 (0.5-3)	0.36 (0.2-0.6)	158	
		08 04 08 - MM	8.7	12.7	4.76	5.16	0.8	2.25 (0.5-4)	0.36 (0.2-0.6)	158	
		08 04 12 - MM	8.7	12.7	4.76	5.16	1.2	2.25 (0.5-4)	0.36 (0.2-0.6)	158	
	DNMG	11 04 08 - MM	11.6	9.525	4.76	3.81	0.8	1.80 (0.5-4.4)	0.23 (0.12-0.45)	203	
		11 04 12 - MM	11.6	9.525	4.76	3.81	1.2	1.80 (0.5-4.4)	0.27 (0.15-0.6)	185	
		15 04 08 - MM	15.5	12.7	4.76	5.16	0.8	2.70 (0.5-6.4)	0.36 (0.2-0.6)	158	
		15 04 12 - MM	15.5	12.7	4.76	5.16	1.2	2.70 (0.5-6.4)	0.36 (0.2-0.6)	158	
		15 06 08 - MM	15.5	12.7	6.35	5.16	0.8	2.70 (0.5-6.4)	0.23 (0.12-0.45)	203	
		15 06 12 - MM	15.5	12.7	6.35	5.16	1.2	2.70 (0.5-6.4)	0.27 (0.15-0.6)	185	
	SNMG	12 04 08 - MM	12.7	12.7	4.76	5.16	0.8	2.70 (0.5-6.4)	0.23 (0.12-0.45)	203	
		12 04 12 - MM	12.7	12.7	4.76	5.16	1.2	2.70 (0.5-6.4)	0.27 (0.15-0.6)	185	
		15 06 12 - MM	15.875	15.875	6.35	6.35	1.2	3.60 (0.5-8)	0.27 (0.15-0.6)	185	
		15 06 16 - MM	15.875	15.875	6.35	6.35	1.6	3.60 (0.5-8)	0.33 (0.18-0.65)	167	
	VNMG	16 04 08 - MM	16.6	9.525	4.76	3.81	0.8	1.80 (0.5-4)	0.23 (0.12-0.45)	203	
		16 04 12 - MM	16.6	9.525	4.76	3.81	1.2	1.80 (0.5-4)	0.23 (0.12-0.45)	203	

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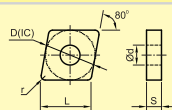


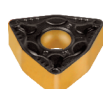

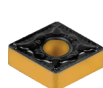

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R		Rough Machining of Stainless Steel							<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA				
		L	D (IC)	S	Ø d	r	Cutting depth		Feed	Cutting speed	
							a _p mm	mm / Rev.	V _c m/min		
	CNMG 12 04 08 - MR	12.9	12.7	4.76	5.16	0.8	2.70 (2-7.6)	0.27 (0.15-0.55)	185		
	CNMG 12 04 12 - MR	12.9	12.7	4.76	5.16	1.2	2.70 (2-7.6)	0.31 (0.2-0.6)	171		
	CNMG 12 04 16 - MR	12.9	12.7	4.76	5.16	1.6	2.70 (2-7.6)	0.36 (0.25-0.7)	158		
	CNMG 16 06 12 - MR	16.1	15.875	6.35	6.35	1.2	3.60 (2-10)	0.31 (0.2-0.6)	171		
	CNMG 16 06 16 - MR	16.1	15.875	6.35	6.35	1.6	3.60 (2-10)	0.36 (0.25-0.7)	158		
	DNMG 15 06 08 - MR	15.5	12.7	6.35	5.16	0.8	2.70 (2-6)	0.27 (0.15-0.55)	185		
	DNMG 15 06 12 - MR	15.5	12.7	6.35	5.16	1.2	2.70 (2-6)	0.31 (0.2-0.6)	171		
	SNMG 12 04 08 - MR	12.5	12.7	4.76	5.16	0.8	2.70 (2-7.6)	0.27 (0.15-0.55)	185		
	SNMG 12 04 12 - MR	12.5	12.7	4.76	5.16	1.2	2.70 (2-7.6)	0.31 (0.2-0.6)	171		
	SNMG 15 06 12 - MR	15.875	15.875	4.76	5.16	1.2	3.60 (2-9.6)	0.31 (0.2-0.6)	171		
	TNMG 16 04 08 - MR	16.5	9.525	4.76	3.81	0.8	2.70 (2-5.6)	0.27 (0.15-0.55)	185		
	TNMG 16 04 12 - MR	16.5	9.525	4.76	3.81	1.2	2.70 (2-5.6)	0.31 (0.2-0.6)	171		
	TNMG 22 04 08 - MR	22	12.7	4.76	5.16	0.8	3.60 (2-7.7)	0.27 (0.15-0.55)	185		
	TNMG 22 04 12 - MR	22	12.7	4.76	5.16	1.2	3.60 (2-7.7)	0.31 (0.2-0.6)	171		
	WNMG 06 04 08 - MR	6.5	9.525	4.76	3.81	0.8	1.80 (1.5-3)	0.27 (0.15-0.55)	185		
	WNMG 06 04 12 - MR	6.5	9.525	4.76	3.81	1.2	1.80 (1.5-3)	0.31 (0.2-0.6)	171		
	WNMG 08 04 08 - MR	8.7	12.7	4.76	5.16	0.8	2.25 (2-4)	0.27 (0.15-0.55)	185		
	WNMG 08 04 12 - MR	8.7	12.7	4.76	5.16	1.2	2.25 (2-4)	0.31 (0.2-0.6)	171		

TURNING

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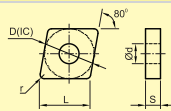
		K		Work Material: Cast iron						P M K N S H		
		F		Finish Machining of Cast iron						<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS						CUTTING DATA				
		L	D (IC)	S	Ød	r	Cutting depth		Feed		Cutting speed	
							a _p mm		mm / Rev.		V _c m/min	
	CNMG	12 04 04 - KF	12.9	12.7	4.76	5.16	0.4	0.45 (0.15-2)		0.14 (0.08-0.25) 203		
		12 04 08 - KF	12.9	12.7	4.76	5.16	0.8	0.45 (0.15-2)		0.18 (0.1-0.3) 194		
		12 04 12 - KF	12.9	12.7	4.76	5.16	1.2	0.90 (0.2-2.5)		0.23 (0.1-0.35) 180		
		16 04 04 - KF	16.1	15.875	4.76	5.16	0.4	1.70 (0.2-3)		0.18 (0.1-0.3) 203		
		16 04 08 - KF	16.1	15.875	4.76	5.16	0.8	1.70 (0.2-3)		0.18 (0.1-0.3) 203		
		16 04 12 - KF	16.1	15.875	4.76	5.16	1.2	1.70 (0.2-3)		0.18 (0.1-0.3) 203		
	TNMG	16 04 04 - KF	16.5	9.525	4.76	3.81	0.4	0.45 (0.15-2)		0.14 (0.08-0.25) 203		
		16 04 08 - KF	16.5	9.525	4.76	3.81	0.8	0.45 (0.15-2)		0.18 (0.1-0.3) 194		
		16 04 12 - KF	16.5	9.525	4.76	3.81	1.2	0.45 (0.15-2)		0.18 (0.1-0.3) 194		
	WNMG	06 04 04 - KF	6.5	9.525	4.76	3.81	0.4	0.45 (0.15-2)		0.14 (0.08-0.25) 203		
		08 04 04 - KF	8.7	12.7	4.76	5.16	0.4	0.45 (0.15-2)		0.14 (0.08-0.25) 203		
		08 04 08 - KF	8.7	12.7	4.76	5.16	0.8	0.45 (0.15-2)		0.18 (0.1-0.3) 194		
		08 04 12 - KF	8.7	12.7	4.76	5.16	1.2	0.90 (0.2-2.5)		0.23 (0.1-0.35) 180		
	DNMG	11 T3 04 - KF	11.6	9.525	3.97	3.81	0.4	0.90 (0.2-2.5)		0.23 (0.1-0.35) 225		
		11 T3 08 - KF	11.6	9.525	3.97	3.81	0.8	0.90 (0.2-2.5)		0.23 (0.1-0.35) 225		
		15 04 04 - KF	15.5	12.7	4.76	5.16	0.4	0.45 (0.15-2)		0.36 (0.2-0.6) 225		
		15 04 08 - KF	15.5	12.7	4.76	5.16	0.8	0.45 (0.15-2)		0.36 (0.2-0.6) 225		
		15 06 04 - KF	15.5	12.7	6.35	5.16	0.4	0.45 (0.15-2)		0.14 (0.08-0.25) 203		
		15 06 08 - KF	15.5	12.7	6.35	5.16	0.8	0.45 (0.15-2)		0.18 (0.1-0.3) 194		
	SNMG	09 03 04 - KF	9.525	9.525	3.18	3.81	0.4	0.70 (0.16-2.5)		0.18 (0.1-0.3) 167		
		09 03 08 - KF	9.525	9.525	3.18	3.81	0.8	0.70 (0.16-2.5)		0.18 (0.1-0.3) 167		
		12 04 04 - KF	12.7	12.7	4.76	5.16	0.4	0.90 (0.16-2.5)		0.36 (0.2-0.6) 293		
		12 04 08 - KF	12.7	12.7	4.76	5.16	0.8	0.90 (0.16-2.5)		0.36 (0.2-0.6) 293		
		15 04 08 - KF	15.875	15.875	4.76	5.16	0.8	0.90 (0.16-2.5)		0.36 (0.2-0.6) 293		
		15 04 12 - KF	15.875	15.875	4.76	5.16	1.2	0.90 (0.16-2.5)		0.36 (0.2-0.6) 293		

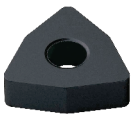
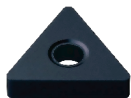
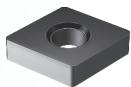
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M		Medium Machining of Cast iron		<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>						
ORDERING CODE		DIMENSIONS					CUTTING DATA			
		L	D (IC)	S	ød	r	Cutting depth	Feed	Cutting speed	
							a_p mm	mm / Rev.	V_c m/min	
	CNMG	12 04 04 - KM	12.9	12.7	4.76	5.16	0.4	2.70 (0.2-6)	0.32 (0.15-0.5)	293
		12 04 08 - KM	12.9	12.7	4.76	5.16	0.8	2.70 (0.2-6)	0.32 (0.15-0.5)	293
		12 04 12 - KM	12.9	12.7	4.76	5.16	1.2	2.70 (0.3-6)	0.36 (0.15-0.6)	279
		16 06 08 - KM	16.1	15.875	6.35	6.35	0.8	3.60 (0.2-8)	0.32 (0.15-0.5)	293
		16 06 12 - KM	16.1	15.875	6.35	6.35	1.2	3.60 (0.3-8)	0.36 (0.15-0.6)	279
		16 06 16 - KM	16.1	15.875	6.35	6.35	1.6	3.60 (0.3-8)	0.41 (0.2-0.7)	266
		19 06 08 - KM	19.3	15.875	6.35	7.94	0.8	4.05 (0.3-9)	0.36 (0.2-0.6)	324
		19 06 12 - KM	19.3	15.875	6.35	7.94	1.2	4.05 (0.3-9)	0.36 (0.2-0.6)	324
	TNMG	16 04 08 - KM	16.5	9.525	4.76	3.81	0.8	2.70 (0.2-5.5)	0.32 (0.15-0.5)	293
		16 04 12 - KM	16.5	9.525	4.76	3.81	1.2	2.70 (0.3-5.5)	0.36 (0.15-0.6)	279
		22 04 08 - KM	22	12.7	4.76	5.16	0.8	3.60 (0.2-8)	0.32 (0.15-0.5)	293
		22 04 12 - KM	22	12.7	4.76	5.16	1.2	3.60 (0.3-8)	0.36 (0.15-0.6)	279
		22 04 16 - KM	22	12.7	4.76	5.16	1.6	3.60 (0.3-8)	0.41 (0.2-0.7)	266
	WNMG	06 04 08 - KM	6.5	9.525	4.76	3.81	0.8	1.80 (0.2-4)	0.32 (0.15-0.5)	167
		06 04 12 - KM	6.5	9.525	4.76	3.81	1.2	1.80 (0.3-4)	0.36 (0.15-0.6)	158
		08 04 08 - KM	8.7	12.7	4.76	5.16	0.8	2.25 (0.2-5)	0.32 (0.15-0.5)	293
		08 04 12 - KM	8.7	12.7	4.76	5.16	1.2	2.25 (0.3-5)	0.36 (0.15-0.6)	279
	DNMG	11 T3 04 - KM	11.6	9.525	3.97	3.81	0.4	1.40 (0.4-4)	0.27 (0.15-0.5)	324
		11 T3 08 - KM	11.6	9.525	3.97	3.81	0.8	1.40 (0.4-4)	0.27 (0.15-0.5)	324
		15 04 04 - KM	15.5	12.7	4.76	5.16	0.4	2.25 (0.2-5)	0.18 (0.1-0.3)	324
		15 04 08 - KM	15.5	12.7	4.76	5.16	0.8	2.25 (0.2-5)	0.18 (0.1-0.3)	324
		15 06 04 - KM	15.5	12.7	6.35	5.16	0.4	2.25 (0.2-5)	0.32 (0.15-0.5)	293
		15 06 08 - KM	15.5	12.7	6.35	5.16	0.8	2.25 (0.2-5)	0.32 (0.15-0.5)	293
	SNMG	09 03 04 - KM	9.525	9.525	3.18	3.81	0.4	2.25 (0.2-4.5)	0.32 (0.15-0.5)	167
		09 03 08 - KM	9.525	9.525	3.18	3.81	0.8	2.25 (0.2-4.5)	0.32 (0.15-0.5)	167
		12 04 04 - KM	12.7	12.7	4.76	5.16	0.4	2.70 (0.2-6)	0.32 (0.15-0.5)	293
		12 04 08 - KM	12.7	12.7	4.76	5.16	0.8	2.70 (0.2-6)	0.32 (0.15-0.5)	293
		12 04 12 - KM	12.7	12.7	4.76	5.16	1.2	2.70 (0.3-6)	0.36 (0.15-0.6)	279
		15 04 08 - KM	15.875	15.875	4.76	5.16	0.8	3.50 (0.7-4)	0.36 (0.25-0.7)	293
		15 04 12 - KM	15.875	15.875	4.76	5.16	1.2	3.50 (0.7-4)	0.36 (0.25-0.7)	293
	VNMG	16 04 04 - KM	16.6	9.525	4.76	3.81	0.4	1.80 (0.2-3.5)	0.27 (0.15-0.4)	306
		16 04 08 - KM	16.6	9.525	4.76	3.81	0.8	1.80 (0.2-3.5)	0.27 (0.15-0.4)	306

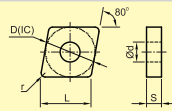

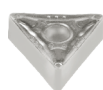
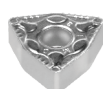



TURNING

NEGATIVE INSERT

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X		Rough Machining of Cast iron							<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA				
		L	D (IC)	S	Ød	r	Cutting depth		Feed	Cutting speed	
							a _p mm		mm / Rev.	V _c m/min	
CNMA	12 04 08 - KX	12.9	12.7	4.76	5.16	0.8	3.15 (0.38-7)		0.34 (0.19-0.53)	234	
	12 04 12 - KX	12.9	12.7	4.76	5.16	1.2	3.15 (0.5-7)		0.45 (0.25-0.7)	212	
	12 04 16 - KX	12.9	12.7	4.76	5.16	1.6	3.15 (0.75-7)		0.55 (0.28-0.85)	194	
	16 06 08 - KX	16.1	15.875	6.35	6.35	0.8	4.23 (0.8-9.3)		0.50 (0.28-0.77)	203	
	16 06 12 - KX	16.1	15.875	6.35	6.35	1.2	4.23 (0.8-9.3)		0.50 (0.28-0.77)	203	
	16 06 16 - KX	16.1	15.875	6.35	6.35	1.6	4.23 (1-9.3)		0.55 (0.3-0.85)	194	
	19 06 12 - KX	19.3	19.05	6.35	7.94	1.2	6.30 (1-14)		0.50 (0.28-0.77)	203	
	19 06 16 - KX	19.3	19.05	6.35	7.94	1.6	6.30 (1.5-14)		0.55 (0.3-0.85)	194	
TNMA	16 04 04 - KX	16.5	9.525	4.76	3.81	0.4	2.88 (0.34-6.2)		0.27 (0.17-0.42)	257	
	16 04 08 - KX	16.5	9.525	4.76	3.81	0.8	2.88 (0.34-6.2)		0.27 (0.17-0.42)	257	
	16 04 12 - KX	16.5	9.525	4.76	3.81	1.2	2.88 (0.45-6.3)		0.36 (0.2-0.56)	230	
	16 04 16 - KX	16.5	9.525	4.76	3.81	1.6	2.88 (0.68-6.2)		0.40 (0.22-0.62)	221	
	22 04 04 - KX	22	12.7	4.76	5.16	0.4	3.15 (0.38-7)		0.34 (0.19-0.53)	234	
	22 04 08 - KX	22	12.7	4.76	5.16	0.8	3.15 (0.38-7)		0.34 (0.19-0.53)	234	
	22 04 12 - KX	22	12.7	4.76	5.16	1.2	3.15 (0.5-7)		0.45 (0.25-0.7)	212	
	22 04 16 - KX	22	12.7	4.76	5.16	1.6	3.15 (0.75-7)		0.50 (0.28-0.77)	140	
WNMA	06 04 08 - KX	6.5	9.525	4.76	3.81	0.8	1.98 (0.24-4.5)		0.27 (0.17-0.42)	167	
	06 04 12 - KX	6.5	9.525	4.76	3.81	1.2	1.98 (0.32-4.5)		0.36 (0.2-0.56)	158	
	08 04 08 - KX	8.7	12.7	4.76	5.16	0.8	2.43 (0.29-5.5)		0.31 (0.17-0.47)	243	
	08 04 12 - KX	8.7	12.7	4.76	5.16	1.2	2.43 (0.39-5.5)		0.41 (0.23-0.63)	221	
	08 04 16 - KX	8.7	12.7	4.76	5.16	1.6	3.60 (0.7-6)		0.36 (0.1-0.8)	221	

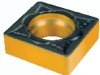



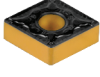



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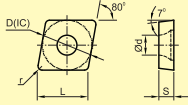
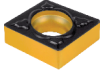
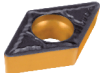
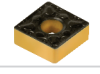
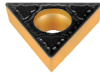
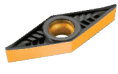
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M		Medium Machining of Aluminium Alloys		<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>						
ORDERING CODE		DIMENSIONS					CUTTING DATA			
		L	D (IC)	S	Ød	r	Cutting depth	Feed	Cutting speed	
							a_p , mm	mm / Rev.	V_c m/min	
	CNMG	12 04 04 - NM	12.9	12.7	4.76	5.16	0.4	2.70 (0.4-5.5)	0.27 (0.1-0.3)	535
		12 04 08 - NM	12.9	12.7	4.76	5.16	0.8	2.70 (0.5-5.5)	0.40 (0.15-0.5)	465
		12 04 12 - NM	12.9	12.7	4.76	5.16	1.2	2.70 (0.8-5.5)	0.48 (0.18-0.6)	440
	TNMG	16 04 04 - NM	16.5	9.525	4.76	3.81	0.4	2.70 (0.4-5)	0.40 (0.4-0.5)	530
		16 04 08 - NM	16.5	9.525	4.76	3.81	0.8	2.70 (0.5-5)	0.40 (0.15-0.5)	465
		16 04 12 - NM	16.5	9.525	4.76	3.81	1.2	2.70 (0.8-5)	0.48 (0.18-0.6)	440
		22 04 08 - NM	22	12.7	4.76	5.16	0.8	3.60 (0.5-6.6)	0.40 (0.15-0.5)	465
	WNMG	22 04 12 - NM	22	12.7	4.76	5.16	1.2	3.60 (0.8-6.6)	0.48 (0.18-0.6)	440
		06 04 04 - NM	6.5	9.525	4.76	3.81	0.4	1.80 (0.5-3)	0.40 (0.15-0.5)	465
		06 04 08 - NM	6.5	9.525	4.76	3.81	0.8	1.80 (0.5-3)	0.40 (0.15-0.5)	465
		08 04 04 - NM	8.7	12.7	4.76	5.16	0.4	2.25 (0.5-4)	0.40 (0.15-0.5)	465
	DNMG	08 04 08 - NM	8.7	12.7	4.76	5.16	0.8	2.25 (0.5-4)	0.40 (0.15-0.5)	465
		15 04 04 - NM	15.5	12.7	4.76	5.16	0.4	2.70 (0.4-6)	0.54 (0.1-0.8)	410
		15 04 08 - NM	15.5	12.7	4.76	5.16	0.8	2.70 (0.5-6)	0.54 (0.1-0.8)	410
		15 06 04 - NM	15.5	12.7	6.35	5.16	0.4	2.70 (0.4-6)	0.27 (0.1-0.3)	530
	SNMG	15 06 08 - NM	15.5	12.7	6.35	5.16	0.8	2.70 (0.5-6)	0.40 (0.15-0.5)	465
		12 04 04 - NM	12.7	12.7	4.76	5.16	0.4	2.70 (0.4-6)	0.27 (0.1-0.3)	530
		12 04 08 - NM	12.7	12.7	4.76	5.16	0.8	2.70 (0.5-6)	0.40 (0.15-0.5)	465
	VNMG	12 04 12 - NM	12.7	12.7	4.76	5.16	1.2	2.70 (0.8-6)	0.48 (0.18-0.6)	440
		16 04 04 - NM	16.6	9.525	4.76	3.81	0.4	1.8 (0.5-4)	0.40 (0.15-0.5)	465
		16 04 08 - NM	16.6	9.525	4.76	3.81	0.8	1.8 (0.5-4)	0.40 (0.15-0.5)	465

TURNING

NEGATIVE INSERT

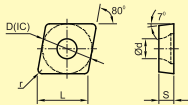
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		M		Medium Machining of Heat Resistant Alloys						<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
		ORDERING CODE		DIMENSIONS					CUTTING DATA			
				L	D (IC)	S	Ø d	r	Cutting depth	Feed	Cutting speed	
									a _p mm	mm / Rev.	V _c m/min	
	CNMG	12 04 04 - SM	12.9	12.7	4.76	5.16	0.4	1.35 (0.18-3.6)	0.12 (0.1-0.18)	72		
		12 04 08 - SM	12.9	12.7	4.76	5.16	0.8	2.16 (0.36-3.6)	0.16 (0.13-0.24)	67.5		
		12 04 12 - SM	12.9	12.7	4.76	5.16	1.2	2.16 (0.43-3.6)	0.19 (0.16-0.29)	58.5		
	TNMG	16 04 04 - SM	16.5	9.525	4.76	3.81	0.4	1.80 (0.15-3)	0.10 (0.08-0.15)	72		
		16 04 08 - SM	16.5	9.525	4.76	3.81	0.8	1.80 (0.3-3)	0.13 (0.11-0.2)	72		
		16 04 12 - SM	16.5	9.525	4.76	3.81	1.2	1.80 (0.36-3)	0.16 (0.13-0.24)	67.5		
		22 04 08 - SM	22	12.7	4.76	3.81	0.8	2.16 (0.36-3.6)	0.16 (0.13-0.24)	67.5		
	WNMG	22 04 12 - SM	22	12.7	4.76	3.81	1.2	2.16 (0.43-3.6)	0.19 (0.16-0.29)	58.5		
		06 04 04 - SM	6.5	9.525	4.76	3.81	0.4	1.80 (0.5-3)	0.13 (0.1-0.3)	72		
		06 04 08 - SM	6.5	9.525	4.76	3.81	0.8	2.25 (0.7-4)	0.22 (0.2-0.35)	54		
		08 04 04 - SM	8.7	12.7	4.76	3.81	0.4	2.25 (0.5-4)	0.13 (0.1-0.3)	72		
	DNMG	08 04 08 - SM	8.7	12.7	4.76	3.81	0.8	2.25 (0.7-4)	0.22 (0.2-0.35)	54		
		15 06 04 - SM	15.5	12.7	6.35	5.16	0.4	1.35 (0.18-3.6)	0.12 (0.1-0.18)	72		
	SNMG	15 06 08 - SM	15.5	12.7	6.35	5.16	0.8	2.16 (0.36-3.6)	0.16 (0.13-0.5)	67.5		
		15 06 12 - SM	15.5	12.7	6.35	5.16	1.2	2.16 (0.43-3.6)	0.19 (0.16-0.29)	58.5		
		12 04 04 - SM	12.7	12.7	4.76	5.16	0.4	1.35 (0.2-3.6)	0.12 (0.1-0.18)	36		
	VNMG	12 04 08 - SM	12.7	12.7	4.76	5.16	0.8	2.16 (0.36-3.6)	0.16 (0.13-0.24)	67.5		
		12 04 12 - SM	12.7	12.7	4.76	5.16	1.2	2.16 (0.43-3.6)	0.19 (0.16-0.29)	58.5		
		16 04 04 - SM	16.6	9.525	4.76	3.81	0.4	1.80 (0.4-4)	0.13 (0.1-0.2)	72		
		16 04 08 - SM	16.6	9.525	4.76	3.81	0.8	2.25 (0.5-4)	0.18 (0.15-0.25)	63		

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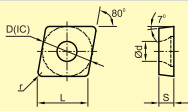
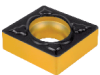

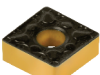
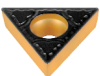
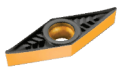
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F		Finish Machining of Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed		Cutting speed	
							a _p mm		mm / Rev.		V _c m/min	
	06 02 02 - PF	6.4	6.35	2.38	2.8	0.2	0.27 (0.06-1.7)		0.05 (0.03-0.11)		432	
	06 02 04 - PF	6.4	6.35	2.38	2.8	0.4	0.27 (0.1-1.7)		0.07 (0.05-0.17)		513	
	09 T3 02 - PF	9.7	9.525	3.97	4.4	0.2	0.32 (0.08-2)		0.07 (0.04-0.15)		423	
	09 T3 04 - PF	9.7	9.525	3.97	4.4	0.4	0.32 (0.11-2)		0.10 (0.06-0.23)		491	
	09 T3 08 - PF	9.7	9.525	3.97	4.4	0.8	0.32 (0.15-2)		0.14 (0.08-0.3)		464	
	12 04 04 - PF	12.9	12.7	4.76	5.56	0.4	0.38 (0.14-2.4)		0.36 (0.1-0.8)		333	
	07 02 02 - PF	7.8	6.35	2.38	2.8	0.2	0.23 (0.06-1.5)		0.05 (0.03-0.11)		432	
	07 02 04 - PF	7.8	6.35	2.38	2.8	0.4	0.23 (0.08-1.5)		0.07 (0.05-0.17)		513	
	11 T3 02 - PF	11.6	9.525	3.97	4.4	0.2	0.32 (0.8-2)		0.07 (0.04-0.15)		423	
	11 T3 04 - PF	11.6	9.525	3.97	4.4	0.4	0.32 (0.11-2)		0.10 (0.06-0.23)		491	
	11 T3 08 - PF	11.6	9.525	3.97	4.4	0.8	0.32 (0.15-2)		0.14 (0.08-0.3)		464	
	09 T3 04 - PF	9.525	9.525	3.97	4.4	0.4	0.32 (0.11-2)		0.10 (0.06-0.23)		491	
	09 T3 08 - PF	9.525	9.525	3.97	4.4	0.8	0.32 (0.15-2)		0.14 (0.08-0.3)		464	
	09 02 02 - PF	9.6	5.56	2.38	2.5	0.2	0.27 (0.06-1.7)		0.05 (0.03-0.13)		432	
	09 02 04 - PF	9.6	5.56	2.38	2.5	0.4	0.27 (0.1-1.7)		0.09 (0.05-0.19)		495	
	11 03 02 - PF	11	6.35	3.18	3.4	0.2	0.27 (0.06-1.7)		0.05 (0.03-0.13)		432	
	11 03 04 - PF	11	6.35	3.18	3.4	0.4	0.27 (0.1-1.7)		0.09 (0.05-0.19)		495	
	11 03 08 - PF	11	6.35	3.18	3.4	0.8	0.27 (0.13-1.7)		0.12 (0.07-0.26)		477	
	16 T3 04 - PF	16.5	9.525	3.97	4.4	0.4	0.32 (0.11-2)		0.10 (0.06-0.23)		491	
	11 03 02 - PF	11	6.35	3.18	2.8	0.2	0.27 (0.06-1.7)		0.05 (0.03-0.13)		432	
	11 03 04 - PF	11	6.35	3.18	2.8	0.4	0.27 (0.1-1.7)		0.09 (0.05-0.19)		495	
	11 03 08 - PF	11	6.35	3.18	2.8	0.8	0.27 (0.13-1.7)		0.12 (0.07-0.26)		477	

TURNING

POSITIVE INSERT

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M		Medium Machining of Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth	Feed	Cutting speed			
							a _p , mm	mm / Rev.	V _c m/min			
CCMT	06 02 04 - PM	6.4	6.35	2.38	2.8	0.4	0.58 (0.2-2.4)	0.10 (0.06-0.17)	491			
	06 02 08 - PM	6.4	6.35	2.38	2.8	0.8	0.58 (0.2-2.4)	0.14 (0.08-0.23)	464			
	09 T3 04 - PM	9.7	9.525	3.97	4.4	0.4	0.58 (0.25-3)	0.14 (0.08-0.23)	383			
	09 T3 08 - PM	9.7	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	356			
	12 04 04 - PM	12.9	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)	0.36 (0.1-0.8)	275			
	12 04 08 - PM	12.9	12.7	4.76	5.56	0.8	0.86 (0.6-3.6)	0.36 (0.1-0.8)	275			
	12 04 12 - PM	12.9	12.7	4.76	5.56	1.2	0.86 (0.72-3.6)	0.36 (0.1-0.8)	275			
DCMT	07 02 04 - PM	7.8	6.35	2.38	2.8	0.4	0.54 (0.19-2.3)	0.10 (0.06-0.17)	405			
	07 02 08 - PM	7.8	6.35	2.38	2.8	0.8	0.54 (0.38-2.3)	0.14 (0.08-0.23)	383			
	11 T3 04 - PM	11.6	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	383			
	11 T3 08 - PM	11.6	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	356			
	11 T3 12 - PM	11.6	9.525	3.97	4.4	1.2	0.72 (0.6-3)	0.22 (0.12-0.36)	333			
SCMT	09 T3 04 - PM	9.525	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	383			
	09 T3 08 - PM	9.525	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	356			
	12 04 04 - PM	12.7	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)	0.36 (0.1-0.8)	275			
	12 04 08 - PM	12.7	12.7	4.76	5.56	0.8	0.86 (0.6-3.6)	0.36 (0.1-0.8)	275			
TCMT	09 02 04 - MF	9.6	5.56	2.38	2.5	0.4	0.54 (0.19-2.3)	0.10 (0.06-0.17)	405			
	09 02 08 - PM	9.6	5.56	2.38	2.5	0.8	0.54 (0.38-2.3)	0.14 (0.08-0.23)	383			
	11 03 04 - PM	11	6.35	3.18	3.4	0.4	0.60 (0.21-2.5)	0.12 (0.06-0.19)	396			
	11 03 08 - PM	11	6.35	3.18	3.4	0.8	0.60 (0.42-2.5)	0.15 (0.09-0.26)	369			
	11 03 12 - PM	11	6.35	3.18	3.4	1.2	0.60 (0.5-2.5)	0.18 (0.1-0.31)	356			
	16 T3 04 - PM	16.5	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	383			
	16 T3 08 - PM	16.5	9.525	3.97	4.4	0.8	0.72 (0.5-3)	1.80 (0.1-0.3)	356			
VBMT	16 T3 12 - PM	16.5	9.525	3.97	4.4	1.2	0.72 (0.6-3)	0.22 (0.12-0.36)	333			
	16 03 04 - PM	16.5	9.525	3.18	3.4	0.4	0.80 (0.6-3)	0.22 (0.12-0.36)	324			
16 03 08 - PM	16.5	9.525	3.18	3.4	0.8	0.80 (0.6-3)	0.22 (0.12-0.36)	324				

POSITIVE INSERT

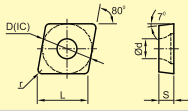





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R		Rough Machining of Steel							<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed		Cutting speed	
							a _p mm		mm / Rev.		V _c m/min	
	CCMT	06 02 04 - PR	6.4	6.35	2.38	2.8	0.4	1.44 (0.8-3.2)		0.17 (0.09-0.26)		221
		06 02 08 - PR	6.4	6.35	2.38	2.8	0.8	1.44 (0.8-3.2)		0.17 (0.09-0.26)		221
		09 T3 08 - PR	9.7	9.525	3.97	4.4	0.8	1.80 (1-4)		0.23 (0.12-0.35)		329
		09 T3 12 - PR	9.7	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		311
		12 04 08 - PR	12.9	12.7	4.76	5.56	0.8	2.16 (1.2-4.8)		0.36 (0.1-0.8)		275
		12 04 12 - PR	12.9	12.7	4.76	5.56	1.2	2.16 (1.44-4.8)		0.36 (0.1-0.8)		275
	DCMT	11 T3 08 - PR	11.6	9.525	3.97	4.4	0.8	1.80 (1-4)		0.23 (0.12-0.35)		329
		11 T3 12 - PR	11.6	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		311
	SCMT	09 T3 08 - PR	9.525	9.525	3.97	4.4	0.8	1.80 (1-4)		0.23 (0.12-0.35)		329
		12 04 08 - PR	12.7	12.7	4.76	5.56	0.8	1.80 (1.2-4)		0.27 (0.14-0.42)		311
	TCMT	11 03 08 - PR	11	6.35	3.18	3.4	0.8	1.35 (0.75-3)		0.19 (0.1-0.3)		351
		11 03 12 - PR	11	6.35	3.18	3.4	1.2	1.35 (0.9-3)		0.23 (0.12-0.35)		324
		16 T3 08 - PR	16.5	9.525	3.97	4.4	0.8	1.80 (1-4)		0.23 (0.12-0.35)		329
		16 T3 12 - PR	16.5	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		311
	VBMT	16 04 04 - PR	16.5	9.525	4.76	4.4	0.4	1.62 (0.9-3.6)		0.21 (0.11-0.32)		342
		16 04 08 - PR	16.5	9.525	4.76	4.4	0.8	1.62 (0.9-3.6)		0.21 (0.11-0.32)		342
		16 04 12 - PR	16.5	9.525	4.76	4.4	1.2	1.62 (1.1-3.6)		0.24 (0.13-0.38)		324

TURNING

POSITIVE INSERT

M		Work Material: Stainless Steel								P M K N S H		
F		Finish Machining of Stainless Steel								<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed	Cutting speed		
							a_p , mm	mm / Rev.	V_c m/min			
	DCMT	07 02 02 - MF	7.8	6.35	2.38	2.8	0.2	0.23 (0.06-1.5)	0.18 (0.1-0.3)	162		
		07 02 04 - MF	7.8	6.35	2.38	2.8	0.4	0.23 (0.08-1.5)	0.07 (0.05-0.17)	261		
		11 T3 02 - MF	11.6	9.525	3.97	4.4	0.2	0.32 (0.08-2)	0.18 (0.1-0.3)	162		
		11 T3 04 - MF	11.6	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	261		
		11 T3 08 - MF	11.6	9.525	3.97	4.4	0.8	0.32 (0.15-2)	0.14 (0.08-0.3)	261		
	SCMT	09 T3 04 - MF	9.525	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	239		
		09 T3 08 - MF	9.525	9.252	3.97	4.4	0.8	0.32 (0.15-2)	0.14 (0.08-0.3)	234		
		12 04 04 - MF	12.7	12.7	4.76	5.56	0.4	0.38 (0.18-2)	0.28 (0.16-0.6)	234		
		12 04 08 - MF	12.7	12.7	4.76	5.56	0.8	0.38 (0.18-2)	0.28 (0.16-0.6)	234		
	TCMT	09 02 02 - MF	9.6	5.56	2.38	2.5	0.2	0.27 (0.06-1.7)	0.09 (0.05-0.19)	261		
		09 02 04 - MF	9.6	5.56	2.38	2.5	0.4	0.27 (0.1-0.17)	0.09 (0.05-0.19)	261		
		11 03 02 - MF	11	6.35	3.18	3.4	0.2	0.27 (0.06-1.7)	0.18 (0.1-0.3)	162		
		11 03 04 - MF	11	6.35	3.18	3.4	0.4	0.27 (0.1-0.17)	0.09 (0.05-0.19)	261		
		11 03 08 - MF	11	6.35	3.18	3.4	0.8	0.27 (0.13-0.17)	0.12 (0.07-0.26)	257		
	VBMT	16 T3 04 - MF	16.5	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	261		
		11 03 02 - MF	11	6.35	3.18	2.8	0.2	0.27 (0.06-1.7)	0.18 (0.1-0.3)	162		
		11 03 04 - MF	11	6.35	3.18	2.8	0.4	0.27 (0.1-0.17)	0.09 (0.05-0.19)	261		
		11 03 08 - MF	16.5	9.525	4.76	4.4	0.8	0.27 (0.13-0.17)	0.12 (0.07-0.26)	257		
		16 03 04 - MF	16.5	9.525	4.76	4.4	0.4	0.65 (0.23-0.27)	0.13 (0.07-0.2)	257		
		16 03 08 - MF	16.5	9.525	4.76	4.4	0.8	0.65 (0.23-0.27)	0.13 (0.07-0.2)	257		

POSITIVE INSERT

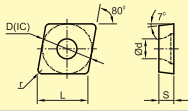
M		Work Material: Stainless Steel								P M K N S H		
M		Medium Machining of Stainless Steel								<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA					
		L	D (IC)	S	Ø d	r	Cutting depth		Feed	Cutting speed		
							a _p , mm	mm / Rev.	V _c m/min			
	CCMT	06 02 04 - MM	6.4	6.35	2.38	2.8	0.4	0.58 (0.2-2.4)	0.10 (0.06-0.17)	261		
		09 T3 02 - MM	9.7	9.525	3.97	4.4	0.2	0.58 (0.25-3)	0.36 (0.2-0.6)	158		
		09 T3 04 - MM	9.7	9.525	3.97	4.4	0.4	0.58 (0.25-3)	0.14 (0.08-0.23)	234		
		09 T3 08 - MM	9.7	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	216		
		12 04 04 - MM	12.9	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)	0.36 (0.2-0.6)	158		
	DCMT	07 02 04 - MM	7.8	6.35	2.38	2.8	0.4	0.54 (0.19-2.3)	0.10 (0.06-0.17)	239		
		07 02 08 - MM	7.8	6.35	2.38	2.8	0.8	0.54 (0.38-2.3)	0.14 (0.08-0.23)	234		
		11 T3 04 - MM	11.6	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	234		
		11 T3 08 - MM	11.6	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	216		
	SCMT	09 T3 04 - MM	9.525	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	234		
		09 T3 08 - MM	9.525	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	216		
		09 T3 12 - MM	9.525	9.525	3.97	4.4	1.2	0.72 (0.5-3)	0.18 (0.1-0.3)	216		
		12 04 04 - MM	12.7	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)	0.36 (0.2-0.6)	158		
		12 04 08 - MM	12.7	12.7	4.76	5.56	0.8	0.86 (0.6-3.6)	0.36 (0.2-0.6)	158		
		12 04 12 - MM	12.7	12.7	4.76	5.56	1.2	0.86 (0.72-3.6)	0.36 (0.2-0.6)	158		
	TCMT	09 02 04 - MM	9.6	5.56	2.38	2.5	0.4	0.54 (0.19-2.3)	0.10 (0.06-0.17)	239		
		09 02 08 - MM	9.6	5.56	2.38	2.5	0.8	0.54 (0.38-2.3)	0.14 (0.08-0.23)	234		
		11 03 04 - MM	11	6.35	3.18	3.4	0.4	0.60 (0.21-2.5)	0.12 (0.06-0.19)	239		
		11 03 08 - MM	11	6.35	3.18	3.4	0.8	0.60 (0.42-2.5)	0.15 (0.09-0.26)	225		
		11 03 12 - MM	11	6.35	3.18	3.4	1.2	0.60 (0.42-2.5)	0.15 (0.09-0.26)	225		
		16 T3 04 - MM	16.5	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	234		
		16 T3 08 - MM	16.5	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	216		
		16 T3 12 - MM	16.5	9.525	3.97	4.4	1.2	0.72 (0.6-3)	0.22 (0.12-0.36)	203		
	VCMT	11 03 04 - MM	11	6.35	3.18	2.8	0.4	0.65 (0.23-2.7)	0.36 (0.2-0.6)	158		
		11 03 08 - MM	11	6.35	3.18	2.8	0.8	0.65 (0.23-2.7)	0.36 (0.2-0.6)	158		
	VBMT	16 04 04 - MM	16.5	9.525	4.76	4.4	0.4	0.65 (0.23-2.7)	0.13 (0.07-0.2)	234		
		16 04 08 - MM	16.5	9.525	4.76	4.4	0.8	0.65 (0.45-2.7)	0.16 (0.09-0.27)	225		

TURNING

POSITIVE INSERT






M		Work Material: Stainless Steel								P	M	K	N	S	H
R		Rough Machining of Stainless Steel								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ORDERING CODE		DIMENSIONS					CUTTING DATA								
		L	D (IC)	S	Ø d	r	Cutting depth		Feed		Cutting speed				
							a _p mm		mm / Rev.		V _c m/min				
CCMT	06 02 08 - MR	6.4	6.35	2.38	2.8	0.8	1.44 (0.8-3.2)		0.17 (0.09-0.26)		153				
	09 T3 08 - MR	9.7	9.525	3.97	4.4	0.8	1.80 (1-4)		0.22 (0.12-0.35)		203				
	09 T3 12 - MR	9.7	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		185				
DCMT	11 T3 08 - MR	11.6	9.525	3.97	4.4	0.8	1.80 (1-4)		0.22 (0.12-0.35)		203				
	11 T3 12 - MR	11.6	12.7	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		185				
SCMT	09 T3 08 - MR	9.525	9.525	3.97	4.4	0.8	1.80 (1-4)		0.22 (0.12-0.35)		203				
	09 T3 12 - MR	9.525	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		144				
TCMT	11 03 08 - MR	11	9.525	3.18	4.4	0.8	1.35 (0.75-3)		0.18 (0.1-0.3)		212				
	16 T3 08 - MR	16.5	9.525	3.97	4.4	0.8	1.80 (1-4)		0.22 (0.12-0.35)		203				
VBMT	16 T3 12 - MR	16.5	9.525	3.97	4.4	1.2	1.80 (1.2-4)		0.27 (0.14-0.42)		185				
	16 04 08 - MR	16.5	9.525	4.76	4.4	0.8	1.62 (0.9-3.6)		0.20 (0.11-0.32)		207				
	16 04 12 - MR	16.5	9.525	4.76	4.4	1.2	1.62 (1.1-3.6)		0.24 (0.13-0.38)		194				

POSITIVE INSERT






K		Work Material: Cast iron							P M K N S H		
F		Finish Machining of Cast iron							<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
ORDERING CODE		DIMENSIONS					CUTTING DATA				
		L	D (IC)	S	Ø d	r	Cutting depth	Feed	Cutting speed		
							a_p mm	mm / Rev.	V_c m/min		
CCMT	06 02 02 - KF	6.4	6.35	2.38	2.8	0.2	0.27 (0.06--1.7)	0.27 (0.1-0.5)	131		
	06 02 04 - KF	6.4	6.35	2.38	2.8	0.4	0.27 (0.1-1.7)	0.07 (0.05-0.17)	225		
	09 T3 02 - KF	9.7	9.525	3.97	4.4	0.2	0.32 (0.08-2)	0.27 (0.1-0.5)	131		
	09 T3 04 - KF	9.7	9.525	3.97	4.4	0.4	0.27 (0.11-2)	0.10 (0.06-0.23)	221		
	12 04 04 - KF	12.9	12.7	4.76	5.56	0.4	0.38 (0.14-2.4)	0.27 (0.1-0.5)	131		
DCMT	07 02 02 - KF	7.8	6.35	2.38	2.8	0.2	0.23 (0.06-1.5)	0.27 (0.1-0.5)	131		
	07 02 04 - KF	7.8	6.35	2.38	2.8	0.4	0.23 (0.08-1.5)	0.07 (0.05-0.17)	225		
	07 02 08 - KF	7.8	6.35	2.38	2.8	0.8	0.23 (0.08-1.5)	0.07 (0.05-0.17)	225		
	11 T3 02 - KF	11.6	9.525	3.97	4.4	0.2	0.32 (0.08-2)	0.27 (0.1-0.5)	131		
	11 T3 04 - KF	11.6	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	221		
	11 T3 08 - KF	11.6	9.525	3.97	4.4	0.8	0.32 (0.11-2)	0.10 (0.06-0.23)	221		
SCMT	09 T3 04 - KF	9.525	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	221		
	09 T3 08 - KF	9.525	9.525	3.97	4.4	0.8	0.32 (0.15-2)	0.14 (0.08-0.3)	216		
	09 T3 12 - KF	9.525	9.525	3.97	4.4	1.2	0.32 (0.15-2)	0.14 (0.08-0.3)	216		
TCMT	09 02 04 - KF	9.6	5.56	2.38	2.5	0.4	0.27 (0.1-1.7)	0.09 (0.05-0.19)	225		
	11 03 02 - KF	11	6.35	3.18	3.4	0.2	0.27 (0.06-1.7)	0.27 (0.1-0.5)	131		
	11 03 04 - KF	11	6.35	3.18	3.4	0.4	0.27 (0.1-1.7)	0.09 (0.05-0.19)	225		
VBMT	16 T3 04 - KF	16.5	9.525	3.97	4.4	0.4	0.32 (0.11-2)	0.10 (0.06-0.23)	221		
	11 03 02 - KF	11	6.35	3.18	2.8	0.2	0.27 (0.06-1.7)	0.27 (0.1-0.5)	131		
	11 03 04 - KF	11	6.35	3.18	2.8	0.4	0.27 (0.1-1.7)	0.09 (0.05-0.19)	225		
	11 03 08 - KF	11	6.35	3.18	2.8	0.8	0.27 (0.13-1.7)	0.12 (0.07-0.26)	216		
	16 04 02 - KF	16.5	9.525	4.76	4.4	0.2	0.29 (0.07-1.8)	0.27 (0.1-0.5)	131		
	16 04 04 - KF	16.5	9.525	4.76	4.4	0.4	0.29 (0.1-1.8)	0.09 (0.05-0.2)	225		
16 04 08 - KF	16.5	9.525	4.76	4.4	0.8	0.29 (0.14-1.8)	0.13 (0.07-0.27)	216			

TURNING

POSITIVE INSERT

		K		Work Material: Cast iron						P M K N S H		
		M		Medium Machining of Cast iron						<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
		ORDERING CODE		DIMENSIONS					CUTTING DATA			
				L	D (IC)	S	Ø d	r	Cutting depth		Feed	Cutting speed
									a _p mm		mm / Rev.	V _c m/min
	CCMT	06 02 04 - KM	6.4	6.35	2.38	2.8	0.4	0.58 (0.2-2.4)	0.10 (0.06-0.17)	212		
		06 02 08 - KM	6.4	6.35	2.38	2.8	0.8	0.58 (0.4-2.4)	0.14 (0.08-0.23)	203		
		09 T3 04 - KM	9.7	9.525	3.97	4.4	0.4	0.58 (0.25-3)	0.14 (0.08-0.23)	203		
		09 T3 08 - KM	9.7	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	194		
		12 04 04 - KM	12.9	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)	0.36 (0.2-0.6)	324		
		12 04 08 - KM	12.9	12.7	4.76	5.56	0.8	0.86 (0.6-3.6)	0.36 (0.2-0.6)	324		
	DCMT	07 02 02 - KM	7.8	6.35	2.38	2.8	0.2	0.54 (0.19-0.23)	0.10 (0.06-0.17)	212		
		07 02 04 - KM	7.8	6.35	2.38	2.8	0.4	0.54 (0.19-0.23)	0.10 (0.06-0.17)	212		
		11 T3 04 - KM	11.6	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	203		
		11 T3 08 - KM	11.6	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	194		
		11 T3 12 - KM	11.6	9.525	3.97	4.4	1.2	0.72 (0.5-3)	0.18 (0.1-0.3)	194		
	SCMT	09 T3 04 - KM	9.525	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	203		
		09 T3 08 - KM	9.525	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	194		
		12 04 04 - KM	12.7	12.7	4.76	5.56	0.4	0.86 (0.6-3.6)	0.36 (0.1-0.8)	324		
		12 04 08 - KM	12.7	12.7	4.76	5.56	0.8	0.86 (0.6-3.6)	0.36 (0.1-0.8)	324		
	TCMT	09 02 04 - KM	9.6	5.56	2.38	2.5	0.4	0.54 (0.19-2.3)	0.10 (0.06-0.17)	212		
		09 02 08 - KM	9.6	5.56	2.38	2.5	0.8	0.54 (0.38-2.3)	0.14 (0.08-0.23)	203		
		11 03 04 - KM	11	6.35	3.18	3.4	0.4	0.60 (0.21-2.5)	0.12 (0.06-0.19)	207		
		11 03 08 - KM	11	6.35	3.18	3.4	0.8	0.60 (0.42-0.25)	0.15 (0.09-0.26)	198		
		16 T3 04 - KM	16.5	9.525	3.97	4.4	0.4	0.72 (0.25-3)	0.14 (0.08-0.23)	203		
		16 T3 08 - KM	16.5	9.525	3.97	4.4	0.8	0.72 (0.5-3)	0.18 (0.1-0.3)	194		
		16 T3 12 - KM	16.5	9.525	3.97	4.4	1.2	0.72 (0.6-3)	0.27 (0.1-0.5)	131		
	VBMT	16 04 04 - KM	16.5	9.525	4.76	4.4	0.4	0.65 (0.23-2.7)	0.13 (0.07-0.2)	207		
		16 04 08 - KM	16.5	9.525	4.76	4.4	0.8	0.65 (0.45-2.7)	0.16 (0.09-0.27)	198		
		16 04 12 - KM	16.5	9.525	4.76	4.4	1.2	0.65 (0.54-2.7)	0.16 (0.09-0.27)	198		

POSITIVE INSERT

		K		Work Material: Cast iron						P M K N S H			
		R		Rough Machining of Cast iron						<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
		ORDERING CODE				DIMENSIONS				CUTTING DATA			
						L	D (IC)	S	Ø d	r	Cutting depth	Feed	Cutting speed
											a _p mm	mm / Rev.	V _c m/min
	CCMT	06 02 08 - KR	6.4	6.35	2.38	2.8	0.8	1.44 (0.8-3.2)	0.17 (0.09-0.26)	194			
		09 T3 08 - KR	9.7	9.525	3.97	4.4	0.8	1.80 (1-4)	0.22 (0.12-0.35)	180			
		09 T3 12 - KR	9.7	9.525	3.97	4.4	1.2	1.80 (1.2-4)	0.27 (0.14-0.42)	171			
	DCMT	11 T3 08 - KR	11.6	9.525	3.97	4.4	0.8	1.80 (1-4)	0.22 (0.12-0.35)	270			
		11 T3 12 - KR	11.6	9.525	3.97	4.4	1.2	1.80 (1.2-4)	0.27 (0.14-0.42)	257			
	SCMT	09 T3 08 - KR	9.525	9.525	3.97	4.4	0.8	1.80 (1-4)	0.22 (0.12-0.35)	180			
		09 T3 12 - KR	9.525	9.525	3.97	4.4	1.2	1.80 (1.2-4)	0.27 (0.14-0.42)	171			
	TCMT	11 03 08 - KR	11	6.35	3.18	3.4	0.8	1.35 (0.75-3)	0.18 (0.1-0.3)	189			
		11 03 12 - KR	11	6.35	3.18	3.4	1.2	1.35 (0.9-3)	0.23 (0.12-0.36)	180			
		16 T3 08 - KR	16.5	9.525	3.97	4.4	0.8	1.80 (1-4)	0.22 (0.12-0.35)	270			
	VBMT	16 T3 12 - KR	16.5	9.525	3.97	4.4	1.2	1.80 (1.2-4)	0.27 (0.14-0.42)	257			
		16 04 08 - KR	16.5	9.525	4.76	4.4	0.8	1.62 (0.9-3.6)	0.20 (0.11-0.32)	275			
		16 04 12 - KR	16.5	9.525	4.76	4.4	1.2	1.62 (1.1-3.6)	0.24 (0.13-0.38)	261			

TURNING

POSITIVE INSERT

N		Work Material: Aluminium Alloys								P M K N S H			
M		Medium Machining of Aluminium Alloys								<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
ORDERING CODE		DIMENSIONS						CUTTING DATA					
		L	D (IC)	S	ød	r	Cutting depth		Feed	Cutting speed			
							a _p mm		mm / Rev.	V _c m/min			
	CCGT	06 02 02 - NM	6.4	6.35	2.38	2.8	0.2	0.58 (0.2-2.4)		0.15 (0.06-0.17)	735		
		06 02 04 - NM	6.4	6.35	2.38	2.8	0.4	0.58 (0.2-2.4)		0.15 (0.06-0.17)	735		
		06 02 08 - NM	6.4	6.35	2.38	2.8	0.8	0.58 (0.2-2.4)		0.21 (0.08-0.23)	695		
		09 T3 02 - NM	9.7	9.525	3.97	4.4	0.2	0.58 (0.2-3)		0.21 (0.08-0.23)	575		
		09 T3 04 - NM	9.7	9.525	3.97	4.4	0.4	0.58 (0.2-3)		0.21 (0.08-0.23)	575		
		09 T3 08 - NM	9.7	9.525	3.97	4.4	0.8	0.72 (0.5-3)		0.27 (0.1-0.3)	530		
		12 04 02 - NM	12.9	12.7	4.76	5.56	0.2	0.86 (0.3-3.6)		0.54 (0.10-0.80)	410		
		12 04 04 - NM	12.9	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)		0.54 (0.10-0.80)	410		
12 04 08 - NM	12.9	12.7	4.76	5.56	0.8	0.86 (0.3-3.6)		0.54 (0.10-0.80)	410				
	DCGT	07 02 02 - NM	7.8	6.35	2.38	2.8	0.2	0.54 (0.19-2.3)		0.15 (0.06-0.17)	605		
		07 02 04 - NM	7.8	6.35	2.38	2.8	0.4	0.54 (0.19-2.3)		0.15 (0.06-0.17)	605		
		07 02 08 - NM	7.8	6.35	2.38	2.8	0.8	0.54 (0.38-2.3)		0.21 (0.8-0.23)	575		
		11 T3 02 - NM	11.6	9.525	3.97	4.4	0.2	0.72 (0.25-3)		0.21 (0.8-0.23)	575		
		11 T3 04 - NM	11.6	9.525	3.97	4.4	0.4	0.72 (0.25-3)		0.21 (0.8-0.23)	575		
11 T3 08 - NM	11.6	9.525	3.97	4.4	0.8	0.72 (0.5-3)		0.27 (0.1-0.3)	530				
	SCGT	09 T3 02 - NM	9.525	9.525	3.97	4.4	0.2	0.72 (0.25-3)		0.21 (0.08-0.23)	575		
		09 T3 04 - NM	9.525	9.525	3.97	4.4	0.4	0.72 (0.25-3)		0.21 (0.08-0.23)	575		
		09 T3 08 - NM	9.525	9.525	3.97	4.4	0.8	0.72 (0.5-3)		0.27 (0.1-0.3)	530		
		12 04 04 - NM	12.7	12.7	4.76	5.56	0.4	0.86 (0.3-3.6)		0.54 (0.10-0.80)	410		
		12 04 08 - NM	12.7	12.7	4.76	5.56	0.8	0.86 (0.3-3.6)		0.54 (0.10-0.80)	410		
12 04 12 - NM	12.7	12.7	4.76	5.56	1.2	0.86 (0.72-3.6)		0.54 (0.10-0.80)	410				
	TCGT	09 02 02 - NM	9.6	5.56	2.38	2.5	0.2	0.54 (0.19-2.3)		0.15 (0.06-0.17)	605		
		09 02 04 - NM	9.6	5.56	2.38	2.5	0.4	0.54 (0.19-2.3)		0.15 (0.06-0.17)	605		
		11 02 02 - NM	11	6.35	3.18	2.8	0.2	0.60 (0.21-2.5)		0.18 (0.06-0.19)	590		
		11 02 04 - NM	11	6.35	3.18	2.8	0.4	0.60 (0.21-2.5)		0.18 (0.06-0.19)	590		
		11 02 08 - NM	11	6.35	3.18	2.8	0.8	0.60 (0.42-2.5)		0.22 (0.09-0.26)	555		
		16 T3 02 - NM	16.5	9.525	3.97	4.4	0.2	0.72 (0.25-3)		0.21 (0.08-0.23)	570		
		16 T3 04 - NM	16.5	9.525	3.97	4.4	0.4	0.72 (0.25-3)		0.21 (0.08-0.23)	570		
16 T3 08 - NM	16.5	9.525	3.97	4.4	0.8	0.72 (0.5-3)		0.27 (0.1-0.3)	530				
	VCGT	11 03 02 - NM	11	6.35	3.18	2.8	0.2	0.90 (0.05-2)		0.18 (0.05-0.3)	500		
		11 03 04 - NM	11	6.35	3.18	2.8	0.4	0.90 (0.05-2)		0.18 (0.05-0.3)	500		
		16 04 02 - NM	16.5	9.525	4.76	2.8	0.2	0.90 (0.05-2)		0.18 (0.05-0.3)	500		
		16 04 04 - NM	16.5	9.525	4.76	2.8	0.4	0.90 (0.05-2)		0.18 (0.05-0.3)	500		
		16 04 08 - NM	16.5	9.525	4.76	2.8	0.8	0.90 (0.05-2)		0.18 (0.05-0.3)	500		



TURNING HOLDER EXTERNAL

NOMENCLATURE

TURNING HOLDER - EXTERNAL



M	T	J	N	L	25	25	M	16
1	2	3	4	5	6	7	8	9

1. INSERT CLAMPING

P

P/ Lever Lock

S

S/ Screw Clamp

M

M/ Multi Lock

C

C/ Top Clamp

2. INSERT SHAPE

A	B	C	D
85°	82°	80°	55°
E	H	K	L
		55°	
M	O	P	R
86°		55°	
S	T	V	W
	60°	35°	80°

3. APPROACH ANGLE

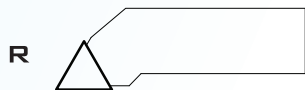
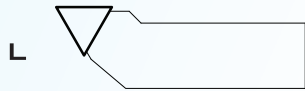
A	B	D	F	G
90°	75°	45°	90°	90°
H	J	K	L	E
107.5°	93°	75°	95°	60°
P	R	S	T	V
117.5°	75°	45°	60°	73.5°

4. INSERT CLEARANCE ANGLE

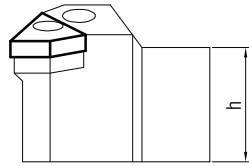
A	B	C
3°	5°	7°
D	E	F
15°	20°	25°
G	N	P
30°	0°	11°

0 = Special

5. CUTTING DIRECTION



6. SHANK HEIGHT

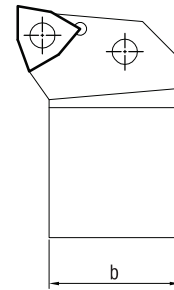


12 = 12 mm

25 = 25 mm

32 = 32 mm

7. SHANK WIDTH

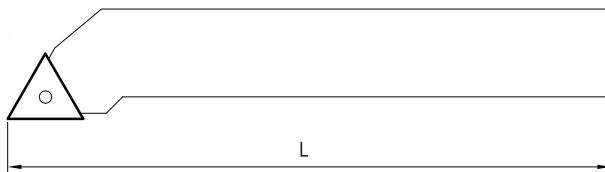


12 = 12 mm

25 = 25 mm

32 = 32 mm

8. TOOL LENGTH



A = 32 mm

C = 50 mm

D = 60 mm

E = 70 mm

F = 80 mm

H = 100 mm

K = 125 mm

M = 150 mm

P = 170 mm

R = 200 mm

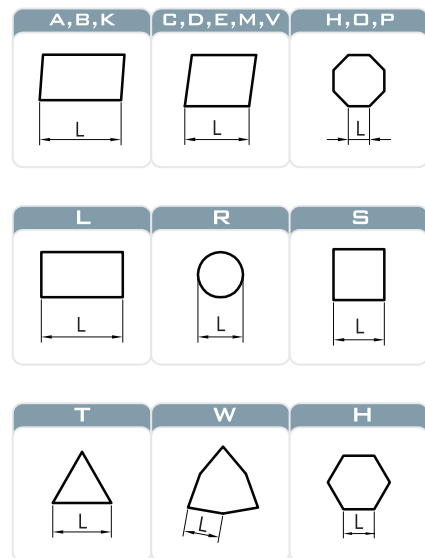
S = 250 mm

T = 300 mm

V = 400 mm

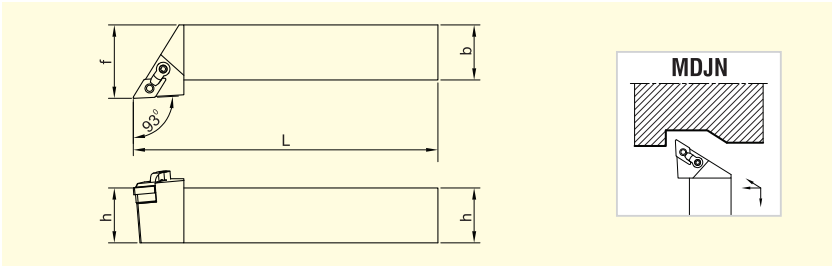
STANDARD LENGTH AS ABOVE

9. CUTTING EDGE LENGTH

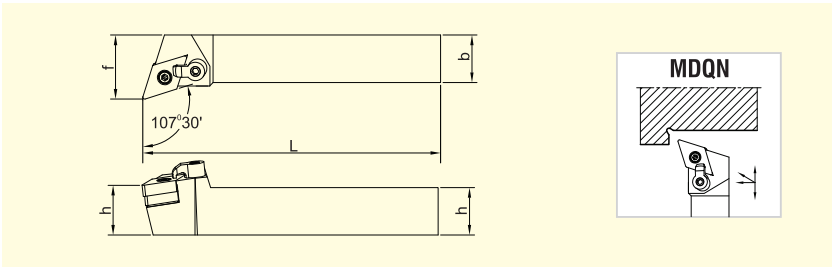


TURNING HOLDER (EXTERNAL)

M SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MDJN R/L 2020 K15	20	20	125	25	DN □□ 15 04 □□
MDJN R/L 2525 M15	25	25	150	32	DN □□ 15 06 □□
MDJN R/L 3232 P15	32	32	170	40	

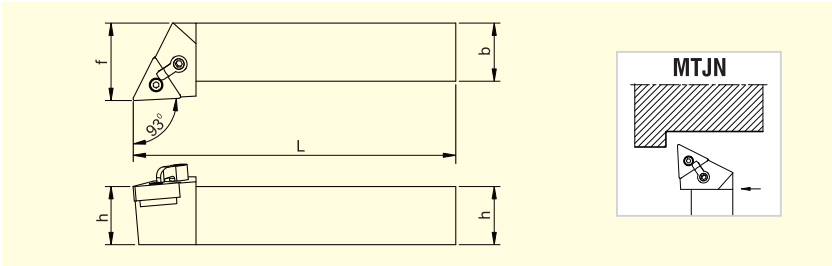
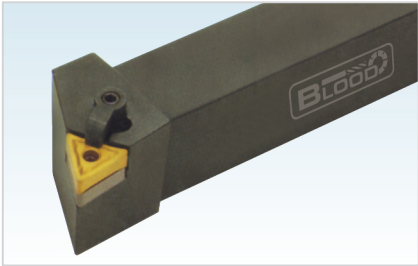


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MDQN R/L 2020 K15	20	20	125	25	DN □□ 15 04 □□
MDQN R/L 2525 M15	25	25	150	32	
MDQN R/L 3232 P15	32	32	150	32	DN □□ 15 06 □□

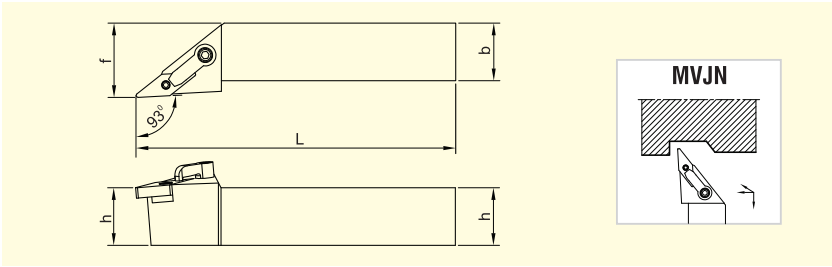
TURNING HOLDER (EXTERNAL)



M SERIES



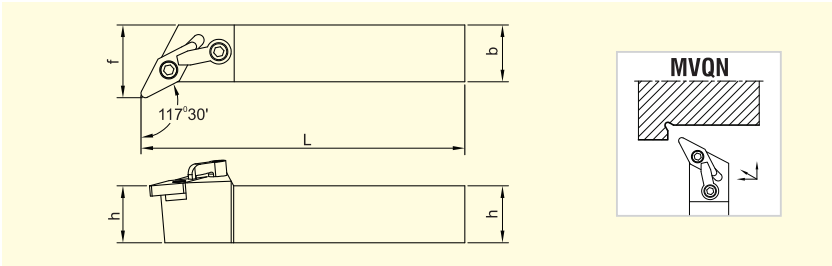
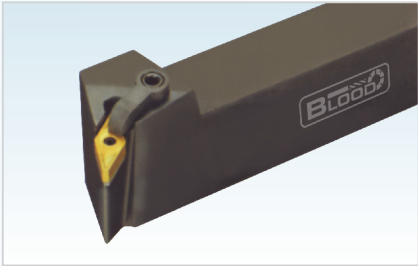
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MTJN R/L 2020 K16	20	20	125	25	TN □□ 16 04 □□
MTJN R/L 2525 M16	25	25	150	32	
MTJN R/L 3232 P16	32	32	170	32	



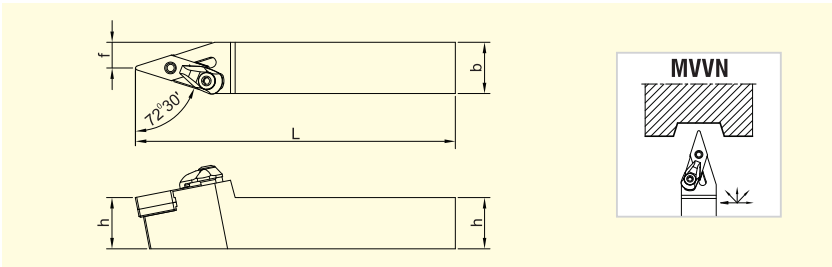
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MVJN R/L 2020 K16	20	20	125	25	VN □□ 16 04 □□
MVJN R/L 2525 M16	25	25	150	32	
MVJN R/L 3232 P16	32	32	170	40	

TURNING HOLDER (EXTERNAL)

M SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MVQN R/L 2020 K16	20	20	125	25	VN □ □ 16 04 □ □
MVQN R/L 2525 M16	25	25	150	32	
MVQN R/L 3232 P16	32	32	170	40	

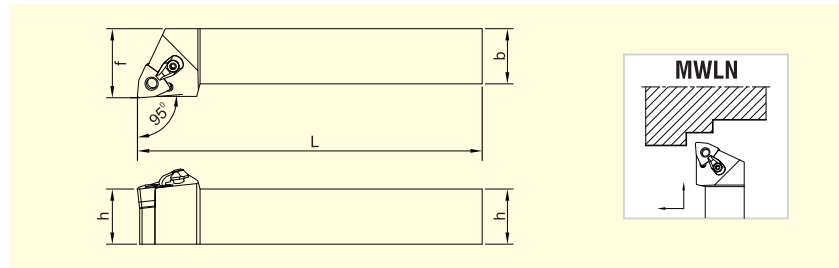
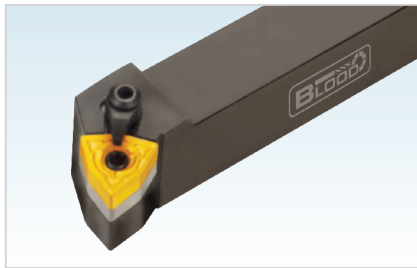


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MVVN N 2020 K16	20	20	125	10	VN □ □ 16 04 □ □
MVVN N 2525 M16	25	25	150	12.5	

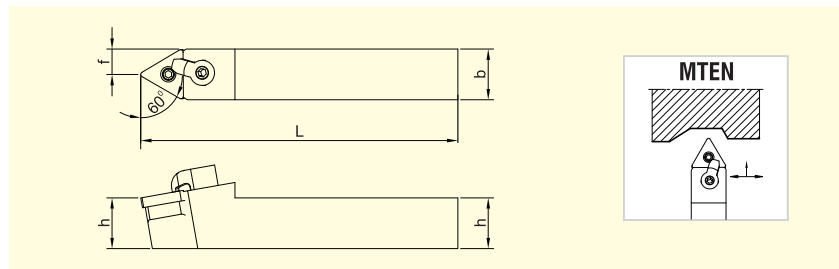
TURNING HOLDER (EXTERNAL)



M SERIES



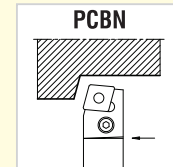
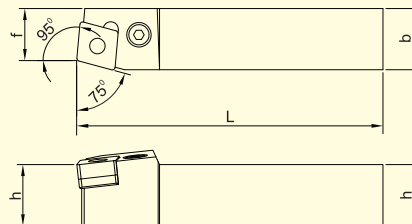
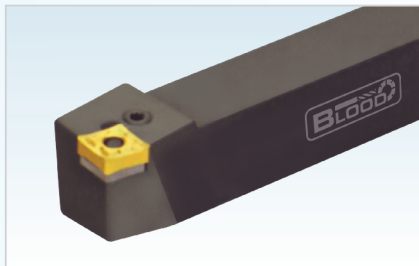
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MWLN R/L 1616 H06	16	16	100	16	WN □ □ 06 04 □ □
MWLN R/L 2020 K08	20	20	125	25	WN □ □ 08 04 □ □
MWLN R/L 2525 M08	25	25	150	32	
MWLN R/L 3232 P08	32	32	170	40	WN □ □ 08 04 □ □



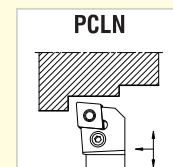
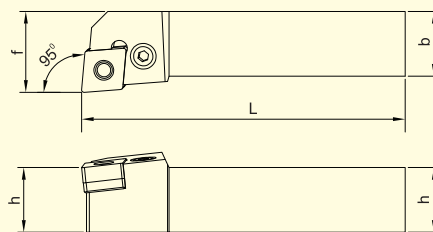
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
MTEN R/L 2020 K16	20	20	125	10	TN □ □ 16 04 □ □
MTEN R/L 2525 M16	25	25	150	12.5	
MTEN R/L 3232 P16	32	32	170	16	
MTEN R/L 2525 M22	25	25	150	12.5	TN □ □ 22 04 □ □
MTEN R/L 3232 P22	32	32	170	16	

TURNING HOLDER (EXTERNAL)

P SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PCBN R/L 2020 K12	20	20	125	17.5	CN □□ 12 04 □□
PCBN R/L 2525 M12	25	25	150	22.5	
PCBN R/L 3232 P12	32	32	170	22.5	
PCBN R/L 2525 M16	25	25	150	22	CN □□ 16 06 □□
PCBN R/L 3232 P16	32	32	170	27	
PCBN R/L 3232 P19	32	32	170	27	CN □□ 19 06 □□
PCBN R/L 4040 S19	40	40	250	37	
PCBN R/L 4040 S25	40	40	250	37	CN □□ 25 09 □□

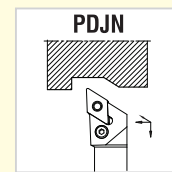
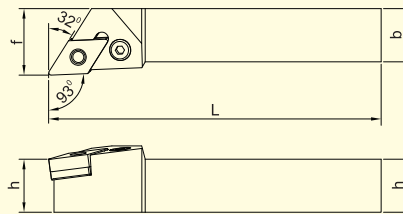
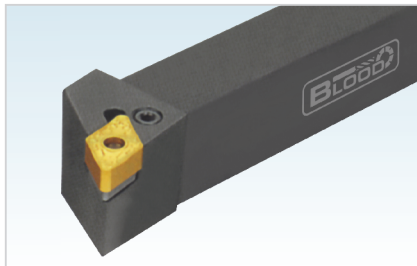


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PCLN R/L 1616 H9	16	16	100	20	CN □□ 09 03 □□
PCLN R/L 2020 K9	20	20	125	25	
PCLN R/L 2525 M9	25	25	150	32	
PCLN R/L 2020 K12	20	20	125	25	CN □□ 12 04 □□
PCLN R/L 2525 M12	25	25	150	32	
PCLN R/L 3232 P12	32	32	170	40	
PCLN R/L 2525 M16	25	25	150	32	CN □□ 16 06 □□
PCLN R/L 3232 P16	32	32	170	40	
PCLN R/L 3232 P19	32	32	170	40	CN □□ 19 06 □□
PCLN R/L 4040 S19	40	40	250	50	
PCLN R/L 4040 S25	40	40	250	50	CN □□ 25 09 □□

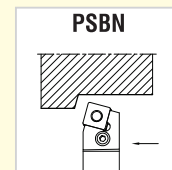
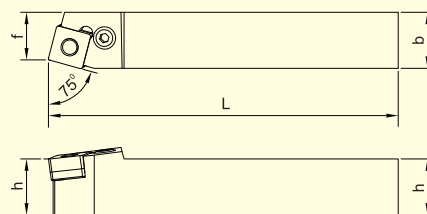
TURNING HOLDER (EXTERNAL)



P SERIES



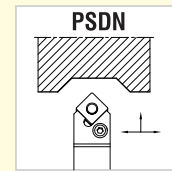
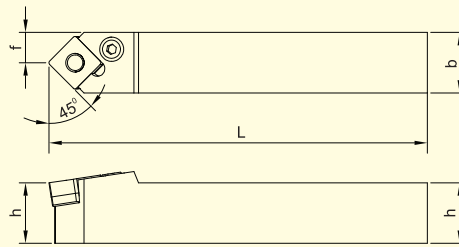
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PDJN R/L 1616 H11	16	16	100	20	DN □□ 11 04 □□
PDJN R/L 2020 K11	20	20	125	25	
PDJN R/L 2525 M11	25	25	150	32	
PDJN R/L 2020 K15	20	20	125	25	DN □□ 15 06 □□
PDJN R/L 2525 M15	25	25	150	32	
PDJN R/L 3232 P15	32	32	170	40	



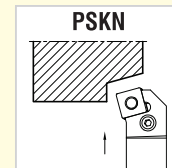
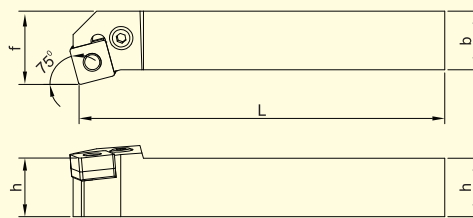
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PSBN R/L 1616 H9	16	16	100	13	SN □□ 09 03 □□
PSBN R/L 2020 K9	20	20	125	17	SN □□ 12 04 □□
PSBN R/L 2020 K12	20	20	125	17	
PSBN R/L 2525 M12	25	25	150	22	
PSBN R/L 3232 P12	32	32	170	22	SN □□ 15 06 □□
PSBN R/L 2525 M15	25	25	150	22	SN □□ 19 06 □□
PSBN R/L 3232 P19	32	32	170	27	SN □□ 25 07 □□
PSBN R/L 4040 S25	40	40	250	35	

TURNING HOLDER (EXTERNAL)

P SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PSDN N 1616 H09	16	16	100	8	SN □□ 09 03 □□
PSDN N 2020 K12	20	20	125	10	SN □□ 12 04 □□
PSDN N 2525 M12	25	25	150	12.5	
PSDN N 3232 P12	32	32	170	12.5	SN □□ 15 06 □□
PSDN N 2525 M15	25	25	150	12.5	
PSDN N 3232 P19	32	32	170	16	SN □□ 19 06 □□
PSDN N 4040 S19	40	40	250	20	
PSDN N 5050 S19	50	50	250	25	

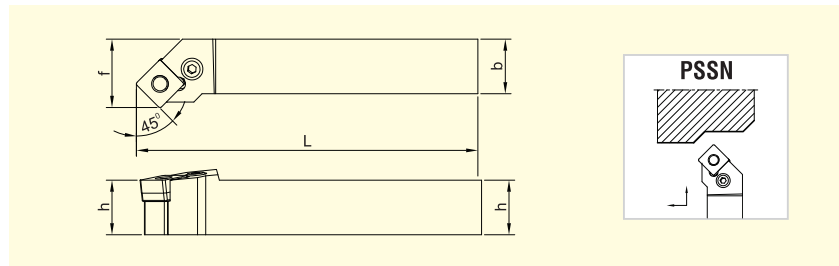
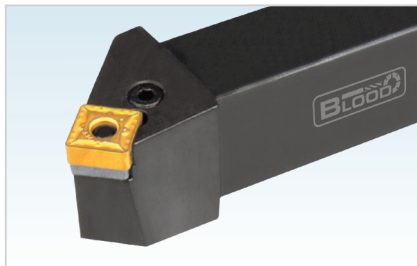


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PSKN R/L 2020 K9	20	20	125	25	SN □□ 09 03 □□
PSKN R/L 2020 K12	20	20	125	25	SN □□ 12 04 □□
PSKN R/L 2525 M12	25	25	150	32	
PSKN R/L 3232 P12	32	32	170	32	SN □□ 15 06 □□
PSKN R/L 2525 M15	25	25	150	32	
PSKN R/L 3232 P15	32	32	170	40	SN □□ 19 06 □□
PSKN R/L 3232 P19	32	32	170	40	
PSKN R/L 4040 S19	40	40	250	50	

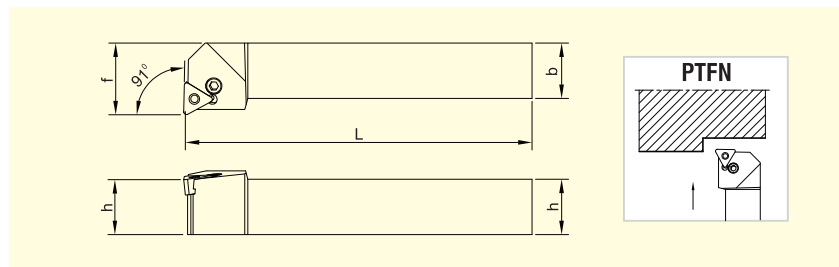
TURNING HOLDER (EXTERNAL)



P SERIES



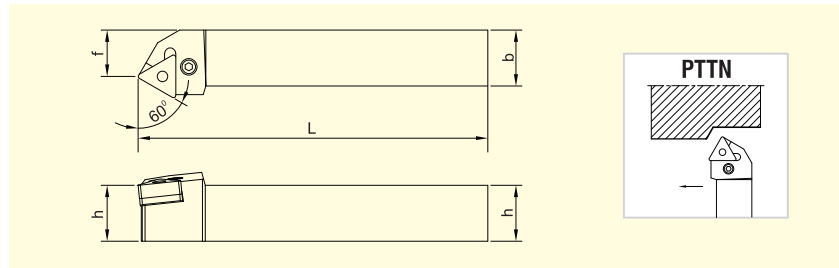
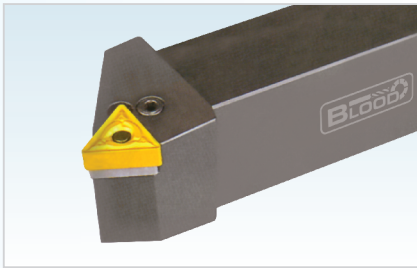
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PSSN R/L 1616 H09	16	16	100	20	SN □□ 09 03 □□
PSSN R/L 2020 K12	20	20	125	25	SN □□ 12 04 □□
PSSN R/L 2525 M12	25	25	150	32	
PSSN R/L 3232 P12	32	32	170	40	
PSSN R/L 3232 P15	32	32	170	40	SN □□ 15 06 □□
PSSN R/L 3232 P19	32	32	170	40	SN □□ 19 06 □□
PSSN R/L 4040 S25	40	40	250	50	SN □□ 25 07 □□



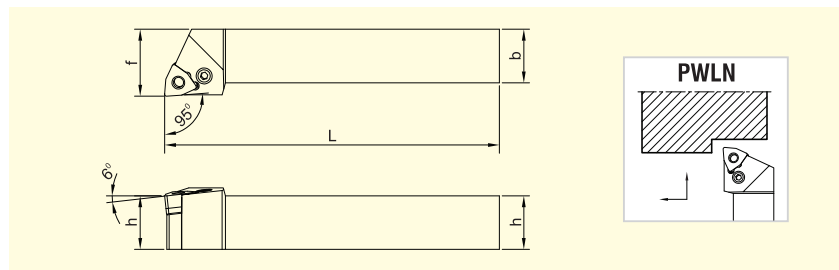
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PTFN R/L 1616 H16	16	16	100	20	TN □□ 16 04 □□
PTFN R/L 2020 K16	20	20	125	25	
PTFN R/L 2525 M16	25	25	150	32	
PTFN R/L 2525 M22	32	32	150	32	TN □□ 22 04 □□
PTFN R/L 3232 P22	32	32	170	40	
PTFN R/L 4040 S27	40	40	250	50	TN □□ 27 06 □□

TURNING HOLDER (EXTERNAL)

P SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PTTN R/L 1616 H16	16	16	100	13	TN □□ 16 04 □□
PTTN R/L 2020 K16	20	20	125	17	
PTTN R/L 2525 M22	25	25	150	22	TN □□ 22 04 □□

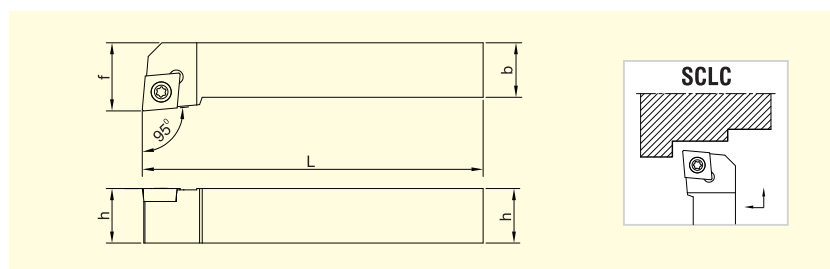
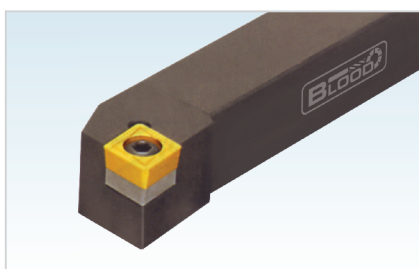


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
PWLN R/L 1616 H06	16	16	100	20	WN □□ 06 04 □□
PWLN R/L 2020 K06	20	20	125	25	
PWLN R/L 2525 M06	25	25	150	32	
PWLN R/L 2020 K08	20	20	125	25	WN □□ 08 04 □□
PWLN R/L 2525 M08	25	25	150	32	

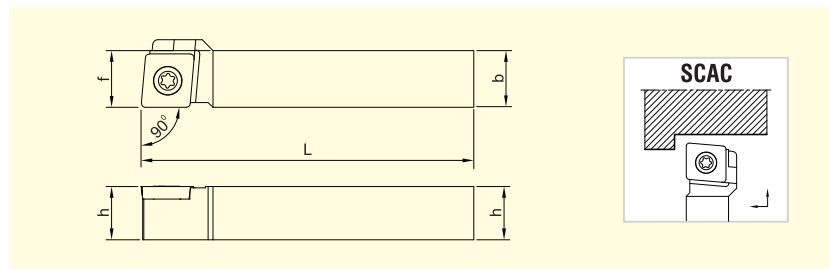
TURNING HOLDER (EXTERNAL)



S SERIES



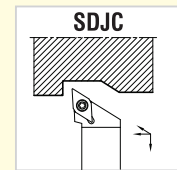
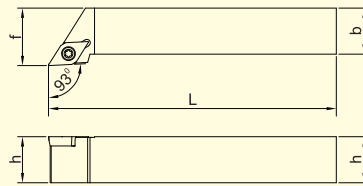
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SCLC R/L 1010 E06	10	10	70	12	CC □□ 06 02 □□
SCLC R/L 1212 F09	12	12	80	16	CC □□ 09 T3 □□
SCLC R/L 1616 H09	16	16	100	20	
SCLC R/L 2020 K12	20	20	125	25	CC □□ 12 04 □□
SCLC R/L 2525 M12	25	25	150	32	



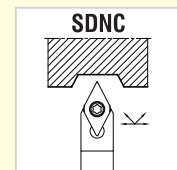
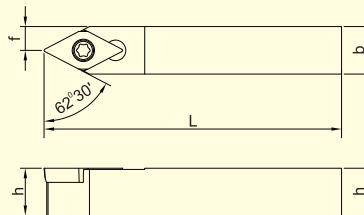
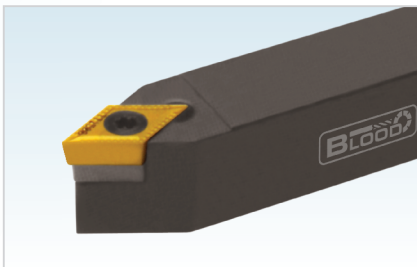
ITEM CODE	Dimension (mm)				Suitable Insert Code
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SCAC R/L 1010 E06	10	10	70	10	CC □□ 06 02 □□
SCAC R/L 1212 F09	12	12	80	12	CC □□ 09 T3 □□
SCAC R/L 1616 H09	16	16	100	16	
SCAC R/L 2525 M12	25	25	150	25	CC □□ 12 04 □□

TURNING HOLDER (EXTERNAL)

S SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SDJC R/L 0808 E07	8	8	70	10	DC □□ 07 02 □□
SDJC R/L 1212 F07	12	12	80	16	
SDJC R/L 1616 H07	16	16	100	20	
SDJC R/L 1616 H11	16	16	100	20	DC □□ 11 T3 □□
SDJC R/L 2020 K11	20	20	125	25	
SDJC R/L 2525 M11	25	25	150	32	

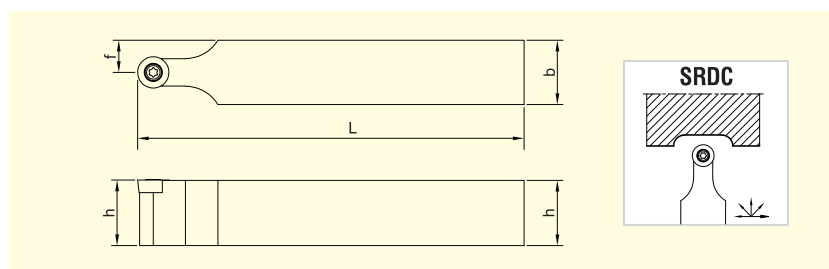


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SDNC N 1010 E07	10	10	70	5	DC □□ 07 02 □□
SDNC N 1616 H11	16	16	100	8	DC □□ 11 T3 □□
SDNC N 2020 K11	20	20	125	10	DC □□ 11 T3 □□
SDNC N 2525 M11	25	25	150	12.5	DC □□ 11 T3 □□

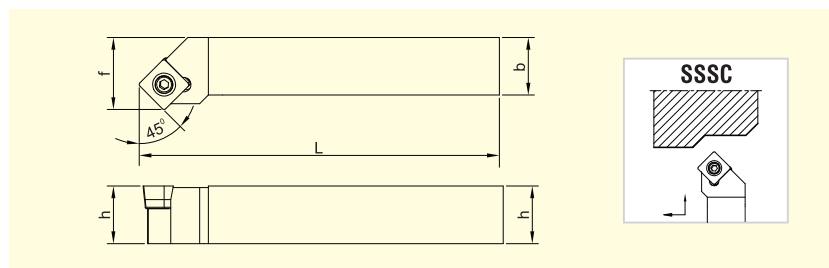
TURNING HOLDER (EXTERNAL)



S SERIES



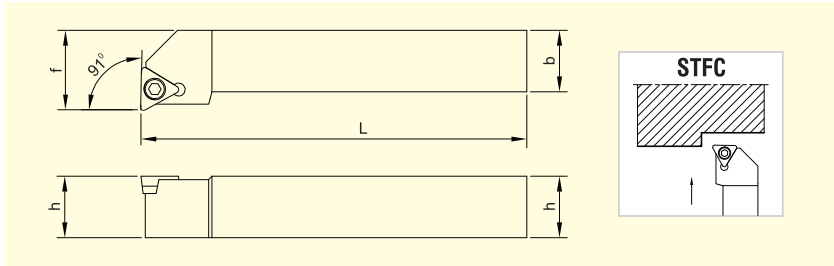
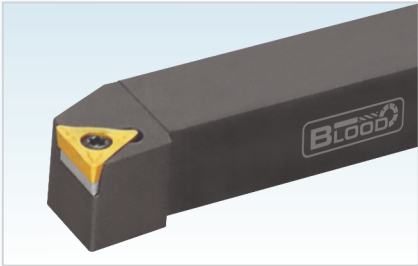
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SRDC N 1616 H10	16	16	100	8	RP □□ 10 03 □□
SRDC N 2020 K10	20	20	125	10	
SRDC N 2525 M10	25	25	150	12.5	RP □□ 12 04 □□
SRDC N 2020 K12	20	20	125	10	
SRDC N 2525 M12	25	25	150	12.5	RP □□ 12 04 □□



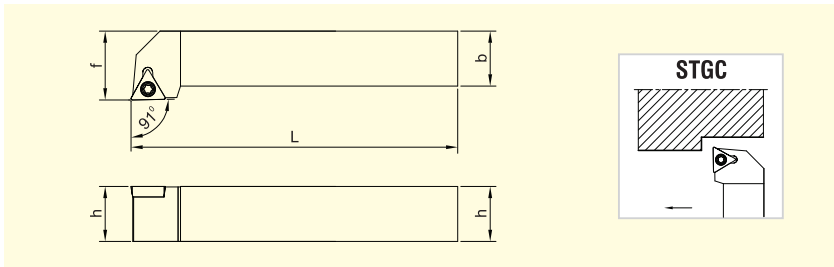
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SSSC R/L 1616 H09	16	16	100	17	SC □□ 09 T3 □□
SSSC R/L 2020 K12	20	20	125	22	SC □□ 12 04 □□
SSSC R/L 2525 M12	25	25	150	27	

TURNING HOLDER (EXTERNAL)

S SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
STFC R/L 1212 F11	12	12	80	16	TC □□ 11 02 □□
STFC R/L 1616 H11	16	16	100	20	
STFC R/L 1616 H16	16	16	100	20	TC □□ 16 T3 □□
STFC R/L 2020 K16L	20	20	125	25	

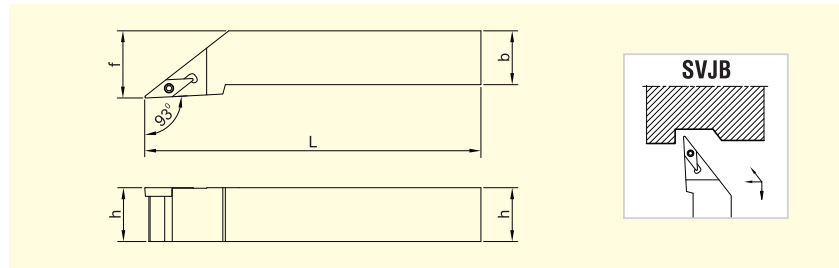


ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
STGC R/L 1010 E09	10	10	70	12	TC □□ 09 02 □□
STGC R/L 1212 F11	12	12	80	16	
STGC R/L 1616 H11	16	16	100	20	TC □□ 11 02 □□
STGC R/L 2020 K16	20	20	125	25	
STGC R/L 2525 M16	25	25	150	32	TC □□ 16 T3 □□

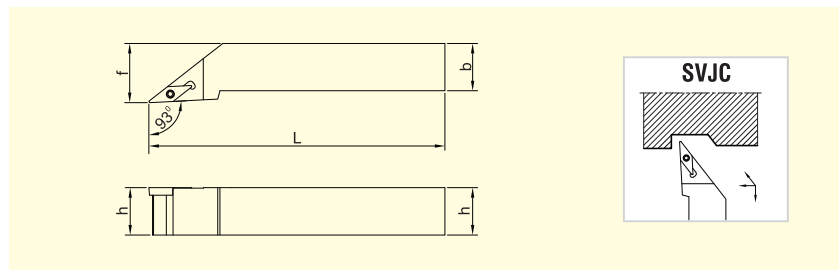
TURNING HOLDER (EXTERNAL)



S SERIES



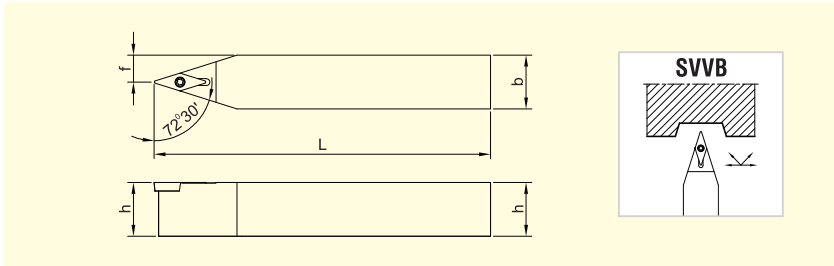
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SVJB R/L 1616 H11	16	16	100	20	VB □ □ 11 02 □ □
SVJB R/L 2020 K16	20	20	125	25	
SVJB R/L 2525 M16	25	25	150	32	
SVJB R/L 3225 P16	32	25	170	32	



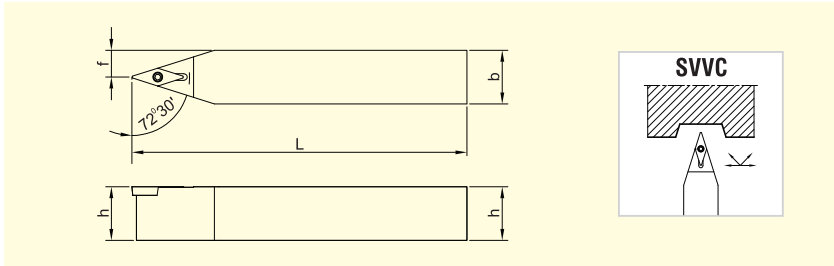
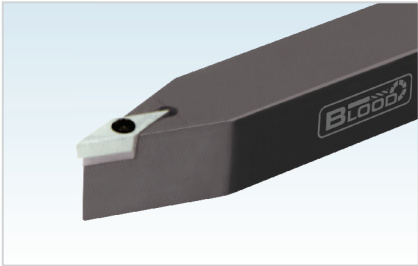
ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SVJC R/L 2020 K11	20	20	125	25	VC □ □ 11 03 □ □
SVJC R/L 1616 H16	16	16	100	20	
SVJC R/L 2020 K16	20	20	125	25	VC □ □ 16 04 □ □
SVJC R/L 2525 M16	25	25	150	32	
SVJC R/L 3232 P16	32	32	170	40	

TURNING HOLDER (EXTERNAL)

S SERIES



ITEM CODE	Dimension (mm)				Suitable Insert Code
	h	b	L	f	
SVVB N 1616 H11	16	16	100	8	VB □ □ 11 02 □ □
SVVB N 2020 K11	20	20	125	10	
SVVB N 2020 K16	20	20	125	10	VB □ □ 16 04 □ □
SVVB N 2525 M16	25	25	150	12.5	



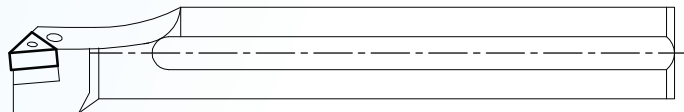
ITEM CODE	Dimension (mm)				Suitable Insert Code
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SVVC N 1212 F11	12	12	80	6	VC □ □ 11 03 □ □
SVVC N 1616 H11	16	16	100	8	
SVVC N 2020 K16	20	20	125	10	VC □ □ 16 04 □ □
SVVC N 2525 M16	25	25	150	12.5	



TURNING HOLDER INTERNAL

NOMENCLATURE

TURNING HOLDER - INTERNAL

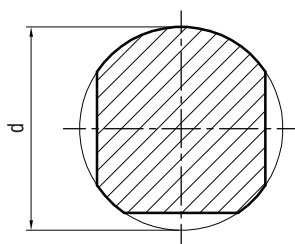


1. TOOL HOLDER TYPE

- A = Steel with coolant passage
- S = Solid Steel
- E = Solid carbide with brazed* cutting head and coolant passage

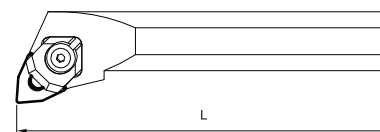
* Brazed or equivalent

2. SHANK DIAMETER



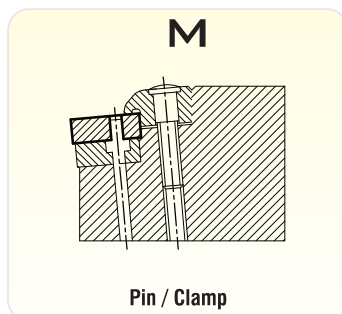
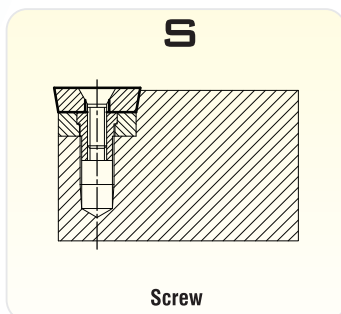
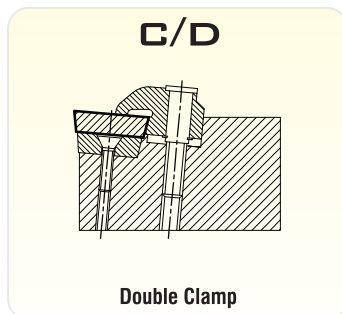
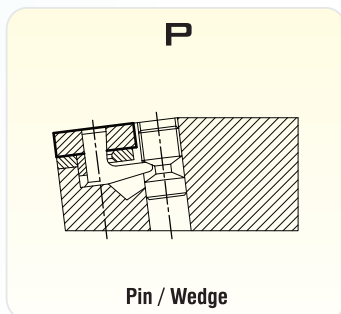
12	= 12 mm
20	= 20 mm
25	= 25 mm
etc.	

3. TOOL LENGTH



K	= 125 mm	R	= 200 mm
L	= 140 mm	S	= 250 mm
M	= 150 mm	T	= 300 mm
N	= 160 mm	U	= 350 mm
P	= 170 mm	V	= 400 mm
Q	= 180 mm		

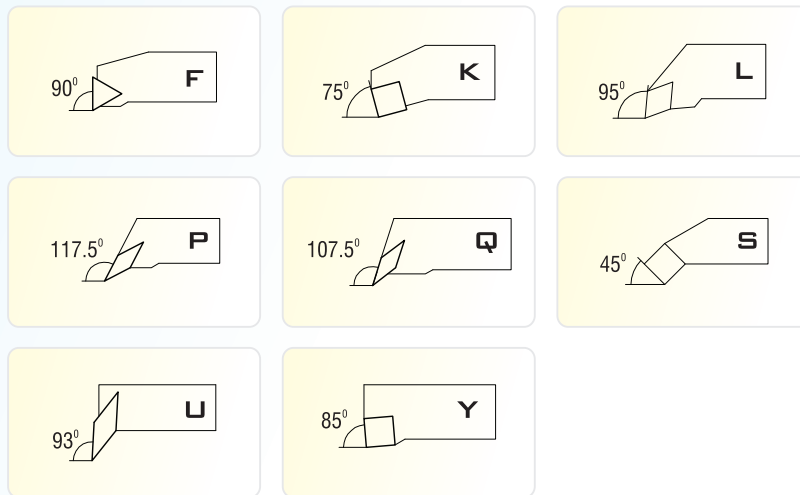
4. INSERT CLAMPING



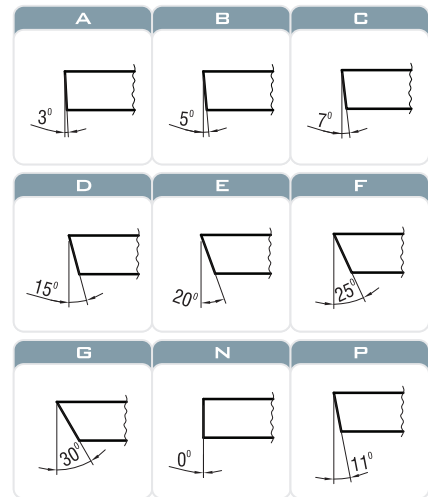
5. INSERT SHAPE

A 85°	B 82°	C 80°	D 55°
E 75°	H 	K 55°	L
M 86°	O 	P 	R
S 	T 60°	V 35°	W 80°

6. TOOL TYPE

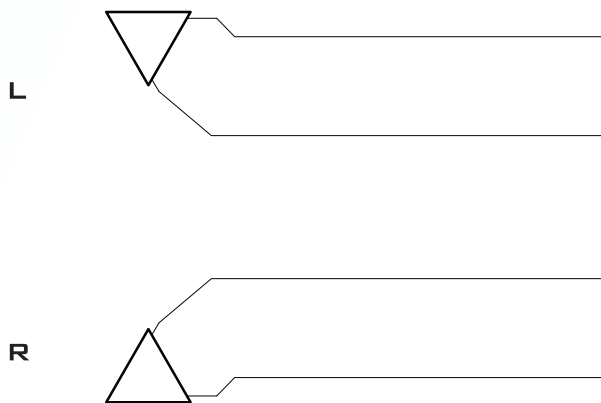


7. INSERT CLEARANCE ANGLE

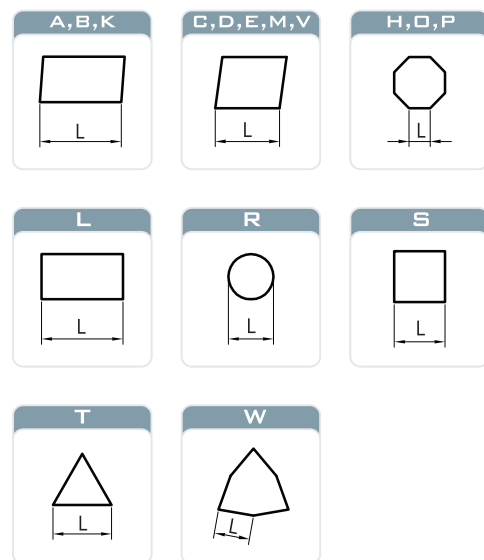


0 = SPECIAL

8. CUTTING DIRECTION

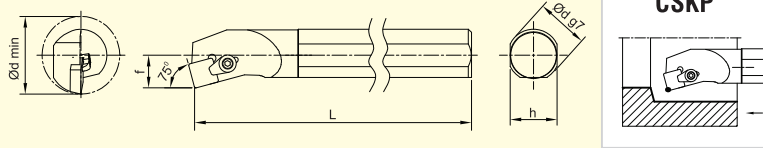
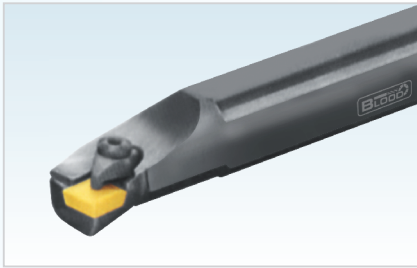


9. CUTTING EDGE LENGTH

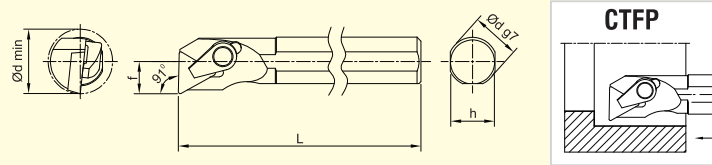


TURNING HOLDER (INTERNAL)

C SERIES



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S16Q CSKPR/L09	15	20	16	180	11	SP □ □ 09 03 □ □
S20R CSKPR/L09	18	25	20	200	13	
S25S CSKPR/L12	23	32	25	250	17	SP □ □ 12 03 □ □
S32T CKSP R/L12	30	40	32	300	22	

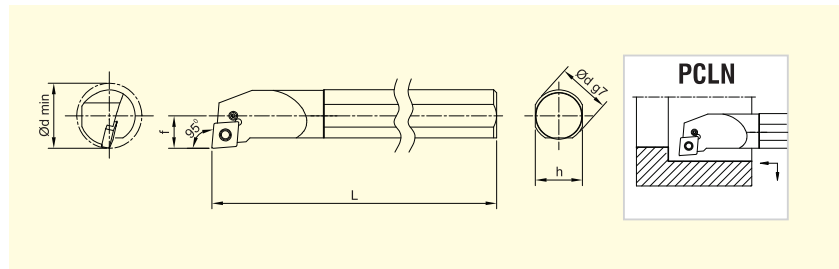
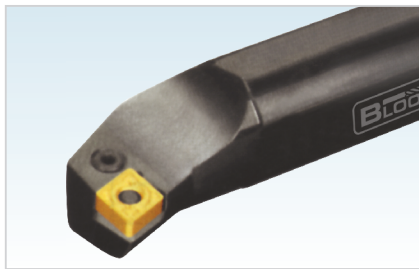


ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S12M CTFPR/L11	11	16	12	150	9	TP □ □ 11 03 □ □
S16Q CTFPR/L11	15	20	16	180	11	
S20R CTFPR/L16	18	25	20	200	13	TP □ □ 16 03 □ □
S25S CTFPR/L16	23	32	25	250	17	
S32T CTFPR/L16	30	40	32	300	22	

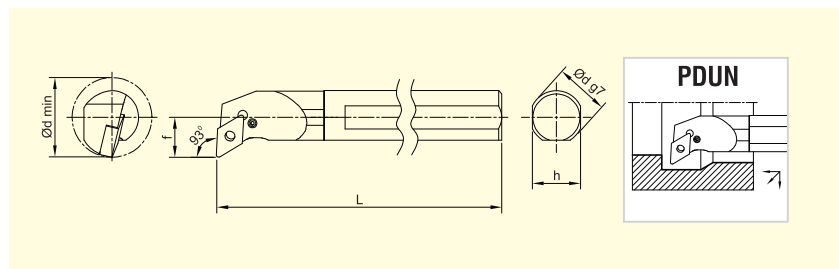
TURNING HOLDER (INTERNAL)



P SERIES



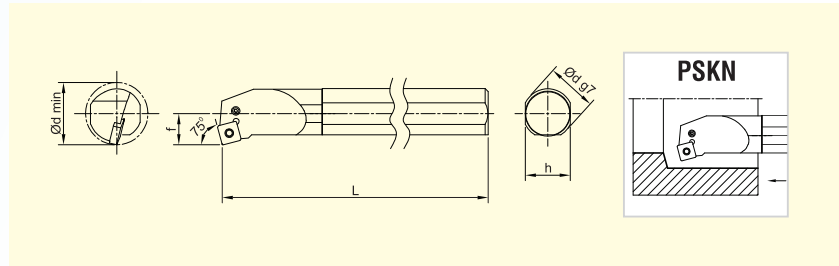
ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S16R PCLNR/L09	15	20	16	200	11	CN □□ 09 03 □□
S20S PCLNR/L09	18	25	20	250	13	
S20T PCLNR/L09	18	25	20	300	13	
S25T PCLNR/L09	23	32	25	300	17	
S25T PCLNR/L12	23	32	25	300	17	CN □□ 12 04 □□
S32S PCLNR/L12	30	40	32	250	22	
S40V PCLNR/L12	37	50	40	400	27	
S50W PCLNR/L12	47	63	50	450	35	



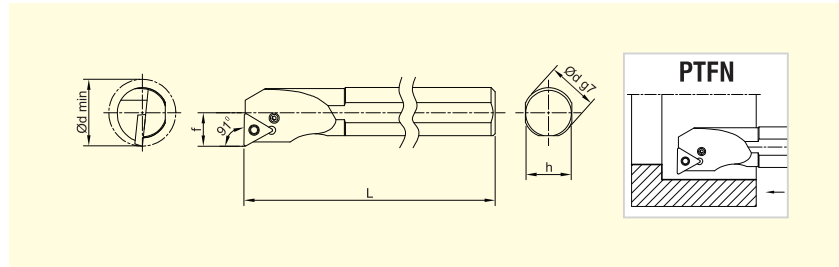
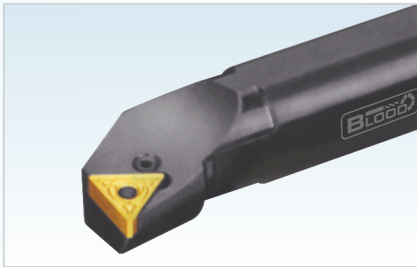
ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S25Q PDUNR/L11	23	32	25	180	17	DN □□ 11 04 □□
S32U PDUNR/L15	30	40	32	350	22	DN □□ 15 06 □□
S40V PDUNR/L15	37	50	40	400	27	
S32R PDUNR/L11	30	40	30	200	22	DN □□ 11 04 □□
S32U PDUNR/L11	30	40	32	350	22	DN □□ 15 06 □□
S40S PDUNR/L15	37	50	40	250	27	

TURNING HOLDER (INTERNAL)

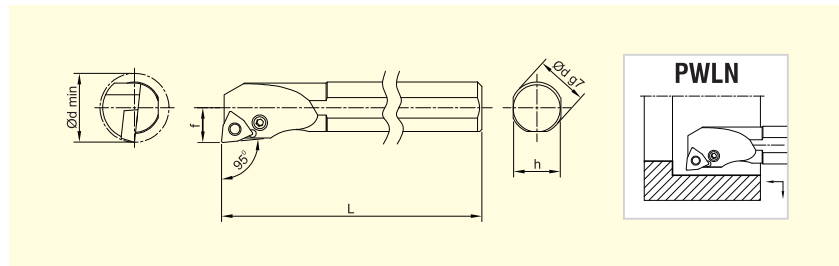
P SERIES



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S25T PSKNR/L12	23	32	25	300	17	SN □ □ 12 04 □ □
S32U PSKNR/L12	30	44	32	350	22	
S40V PSKNR/L12	37	54	40	400	27	



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S20Q PTFNR/L11	18	25	20	180	13	TN □ □ 11 03 □ □
S25T PTFNR/L16	23	32	25	300	17	TN □ □ 16 04 □ □
S32U PTFNR/L16	30	44	32	350	22	
S40V PTFNR/L16	37	54	40	400	27	

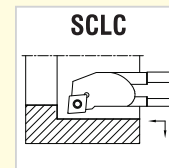
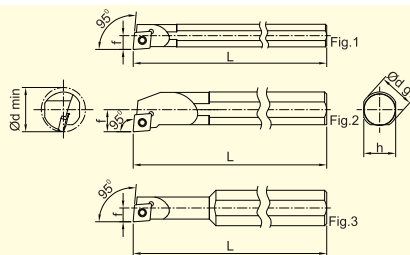


ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S16R PWLNR/L06	15	20	16	200	11	WN □ □ 06 04 □ □
S20R PWLNR/L06	18	25	20	200	13	
S25T PWLNR/L06	23	32	25	300	17	
S20Q PWLNR/L08	18	25	20	180	13	WN □ □ 08 04 □ □
S25Q PWLNR/L08	23	32	25	180	17	
S32R PWLNR/L08	30	40	32	200	22	

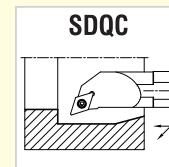
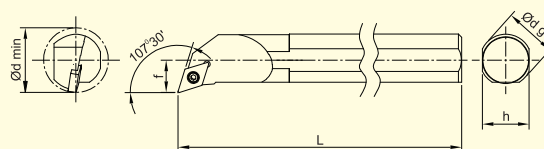
TURNING HOLDER (INTERNAL)



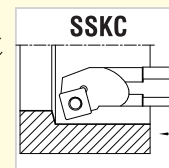
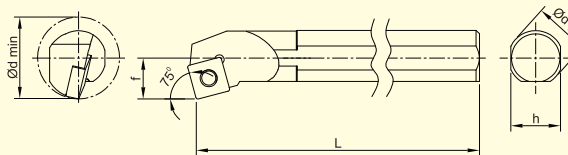
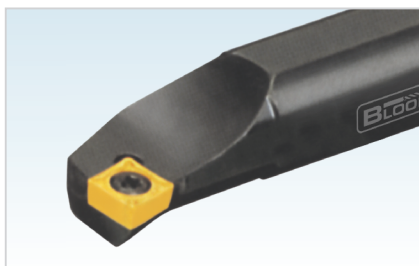
S SERIES



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S08K SCLCR/L06	7	10	8	125	5	CC □ □ 06 02 □ □
S10M SCLCR/L06	9	12	10	150	6	
S12M SCLCR/L06	11	16	12	150	9	
S12M SCLCR/L09	11	16	12	150	9	CC □ □ 09 T3 □ □
S16M SCLCR/L09	15	20	16	150	11	
S20M SCLCR/L09	18	25	20	150	13	
S32S SCLCR/L12	30	40	32	250	22	CC □ □ 12 04 □ □



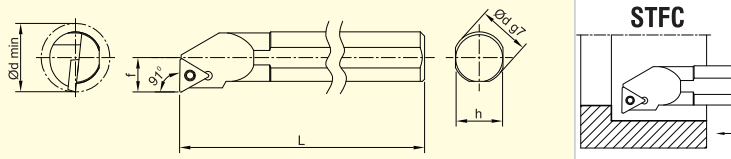
ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S10M SDQCR/L07	9	13	10	150	7	DC □ □ 07 02 □ □
S12M SDQCR/L07	11	16	12	150	9	
S16R SDQCR/L07	15	20	16	200	11	
S20Q SDQCR/L11	18	25	20	180	1	DC □ □ 11 T3 □ □
S25Q SDQCR/L11	23	32	25	180	17	



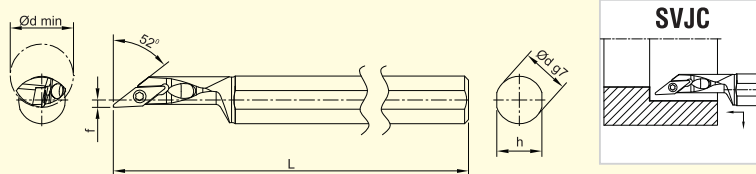
ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S16R SSKCR/L09	15	20	16	200	11	SC □ □ 09 T3 □ □
S20S SSKCR/L09	18	15	20	250	13	
S25T SSKCR/L12	23	32	25	300	17	SC □ □ 12 04 □ □

TURNING HOLDER (INTERNAL)

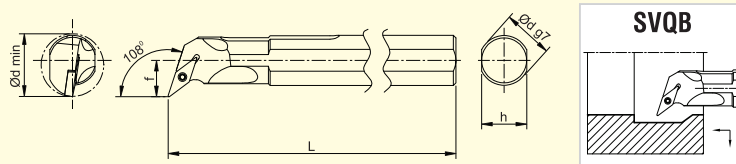
S SERIES



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S12M STFCR/L11	11	16	12	150	9	TC □ □ 11 02 □ □
S16M STFCR/L11	15	20	16	150	11	
S16R STFCR/L11	15	20	16	200	11	
S20S STFCR/L11	18	25	20	250	13	
S20S STFCR/L16	18	25	20	250	13	TC □ □ 16 T3 □ □
S25T STFCR/L16	23	32	25	300	17	
S32U STFCR/L16	30	40	32	350	22	



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S12M SVJCR/L11	11	16	12	150	7	VC □ □ 11 04 □ □
S16Q SVJCR/L11	15	20	16	180	9	
S16Q SVJCR/L16	15	20	16	180	9	VC □ □ 16 04 □ □
S20R SVJCR/L16	18	24	20	200	10.5	
S25R SVJCR/L16	23	31	25	200	13.5	
S32S SVJCR/L16	30	40	32	250	17	

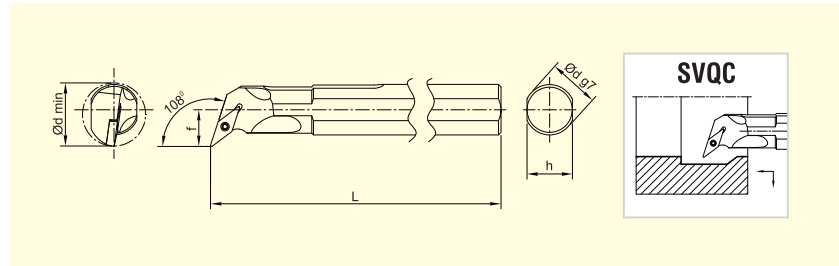


ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S25S SVQBR/L16	23	32	25	250	17	VB □ □ 16 04 □ □
S32T SVQBR/L16	30	40	32	300	22	
S40U SVQBR/L16	37	50	40	350	27	

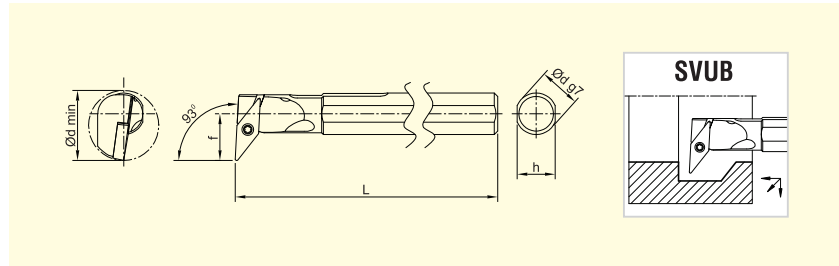
TURNING HOLDER (INTERNAL)



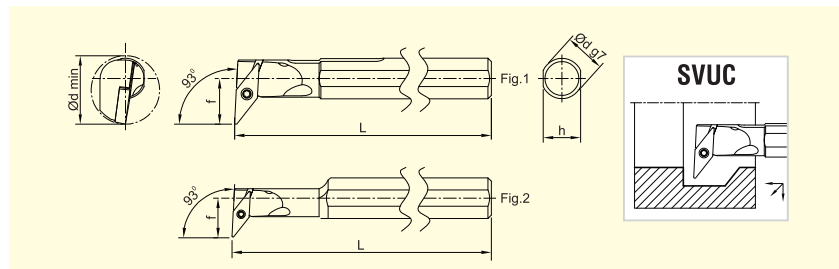
S SERIES



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S25S SVQCR/L16	23	32	25	250	17	VC □ □ 16 04 □ □
S32T SVQCR/L16	30	40	32	300	22	
S40U SVQCR/L16	37	50	40	350	27	



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S32U SVUBR/L16	30	40	32	350	22	VB □ □ 16 04 □ □
S40V SVUBR/L16	37	50	40	400	27	



ITEM CODE	Dimension (mm)					Suitable Insert Code
	h	D min	d	L	f	
S25S SVUCR/L16	23	32	25	250	19	VC □ □ 16 04 □ □
S32T SVUCR/L16	30	40	32	300	22	
S40U SVUCR/L16	37	50	40	350	27	

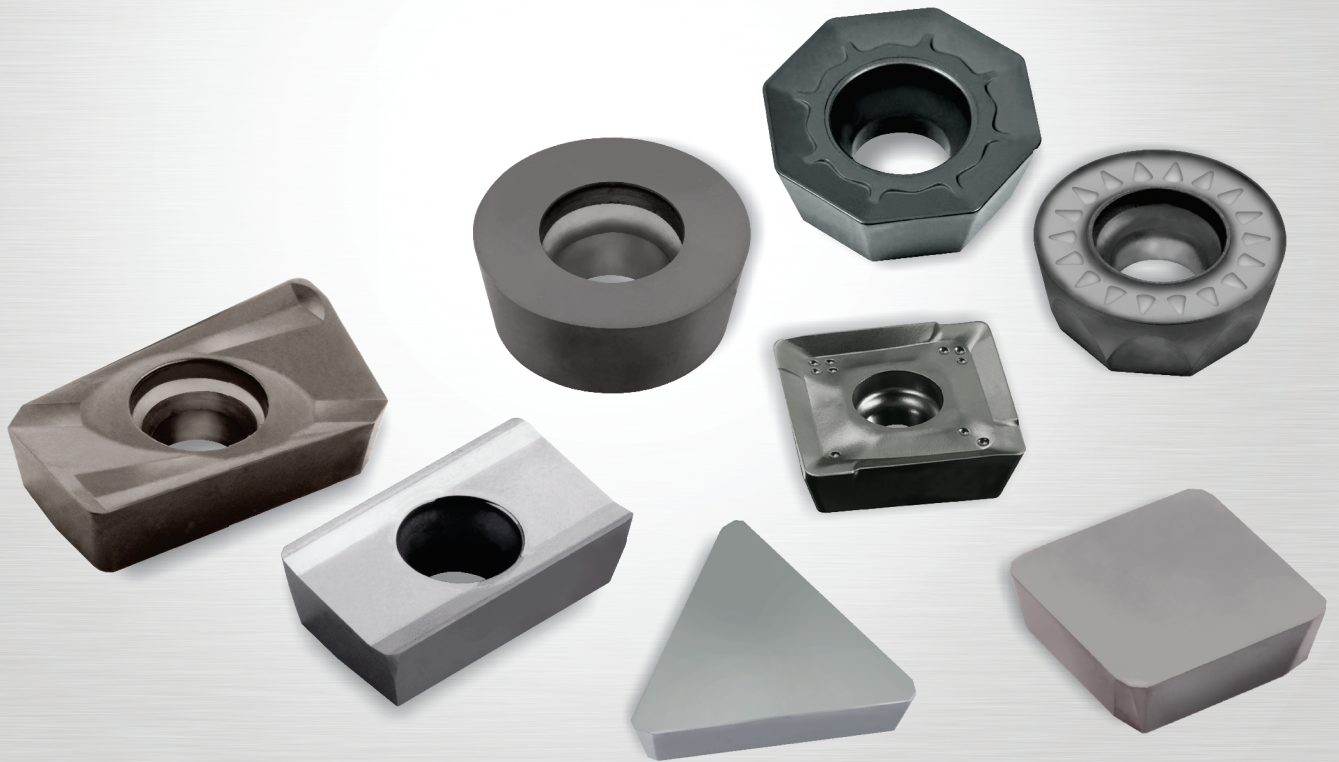
TROUBLESHOOTING - TURNING

	Problem	Cause	Remedy
	Flank wear in insert	improper insert grade	select suitable / harder insert grade
		improper cutting edge geometry	select appropriate chip breaker
		improper cutting parameters	select insert with bigger nose radius
			decrease cutting speed
			increase feed rate
			use appropriate coolant grade
	Crater wear in insert	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	decrease cutting speed
			decrease feed rate
		increase coolant flow pressure	
	Chip welding / Edge built-up	improper cutting edge geometry	use positive insert geometry
		improper cutting parameters	increase cutting speed
	Insert fracture or Insert chipping	improper insert grade	select suitable / harder insert grade
		improper cutting parameters	decrease feed rate
		weak cutting edge	decrease depth of cut
			select appropriate chip breaker
		thermal crack occurrence	select insert with bigger nose radius
			decrease cutting speed
decrease feed rate			
		decrease depth of cut	
		use appropriate coolant grade	
	Plastic deformation in insert	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	decrease cutting speed
			decrease feed rate
		increase coolant flow pressure	
	Notch wear in insert	improper cutting conditions	decrease cutting speed
			decrease feed rate
			increase coolant flow pressure
	Poor surface finish	chip welding	increase cutting speed
		improper cutting edge geometry	use appropriate coolant grade
			select appropriate chip breaker
		chattering	use insert with bigger nose radius
			decrease cutting speed
			decrease feed rate
			decrease depth of cut
improve tool holder rigidity			
		increase clamping rigidity of tool & workpiece	
		minimize holder overhang	
		eliminate workpiece run-out	
	Dimensional inaccuracy	poor insert accuracy	select suitable insert grade
		large cutting edge wear	select appropriate chip breaker
			select insert with smaller nose radius
			improve tool holder rigidity
			increase clamping rigidity of tool & workpiece
		minimize holder overhang	
	Long chips	improper cutting parameters	decrease cutting speed
			increase feed rate
			increase depth of cut
		improper cutting edge geometry	use positive insert geometry
			select insert with smaller nose radius



PM KNSH

MILLING INSERT

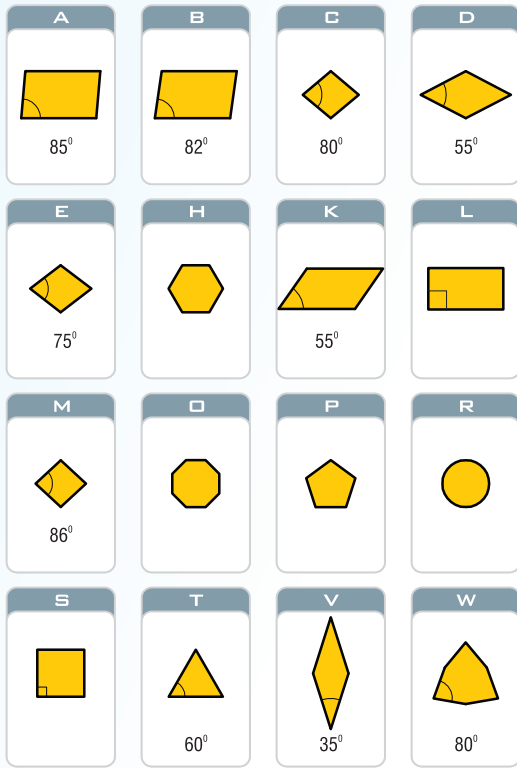


NOMENCLATURE

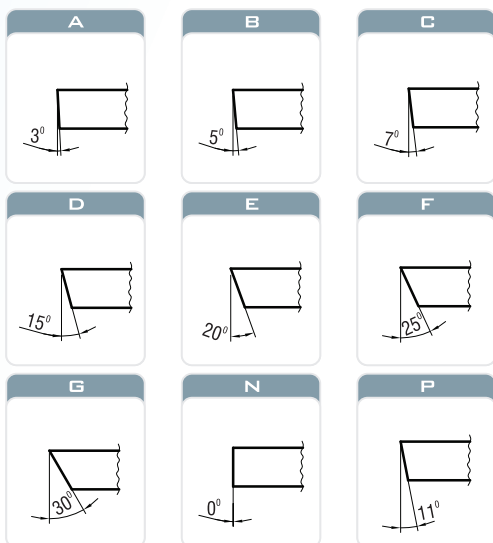
MILLING INSERT



1. INSERT SHAPE



2. CLEARANCE ANGLE

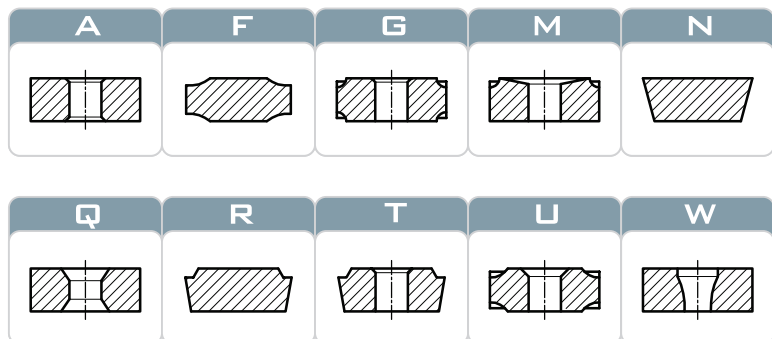


0 = SPECIAL

3. TOLERANCES

Tol. class	Tolerance +/-			For d, Dimension mm									
	m	s	d	3.175*	4.76	6.35	9.525	12.70	15.875	19.05	25.4	31.75	38.1
A	0.005	0.025	0.025	●	●	●	●	●	●	●	●	●	●
E	0.005	0.025	0.025	●	●	●	●	●	●	●	●	●	●
F	0.005	0.025	0.013	●	●	●	●	●	●	●	●	●	●
G	0.005	0.130	0.025	●	●	●	●	●	●	●	●	●	●
H	0.013	0.025	0.013	●	●	●	●	●	●	●	●	●	●
K	0.013	0.025	0.050				●						
	0.013	0.025	0.080					●					
	0.013	0.025	0.100						●	●			
	0.013	0.025	0.130							●			
	0.013	0.025	0.150								●	●	
M	0.080	0.130	0.050	●	●	●	●						
	0.130	0.130	0.080					●					
	0.150	0.130	0.100						●	●			
	0.180	0.130	0.130							●			
	0.200	0.130	0.150								●	●	

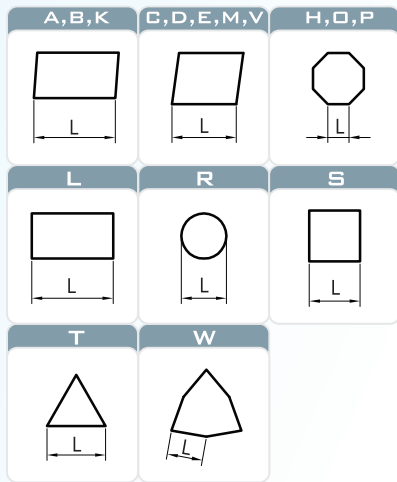
4. CLAMPING TYPE



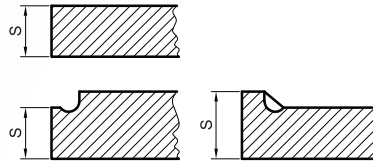
X = SPECIAL

*not ISO

5. CUTTING EDGE LENGTH

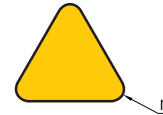


6. THICKNESS



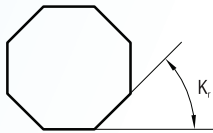
01 = 1.59 mm	04 = 4.76 mm
T1 = 1.98 mm	05 = 5.56 mm
02 = 2.38 mm	06 = 6.35 mm
03 = 3.18 mm	07 = 7.94 mm
T3 = 3.97 mm	08 = 8.00 mm

7,8. NOSE RADIUS



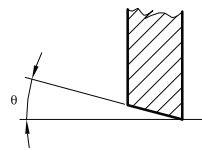
MO* = Round Inserts
00 = Sharp
02 = 0.2
04 = 0.4
08 = 0.8
12 = 1.2
16 = 1.6

7. APPROACH ANGLE



A = 15°
D = 60°
E = 75°
F = 85°
P = 90°
Z = Others

8. CLEARANCE ANGLE OF LAND

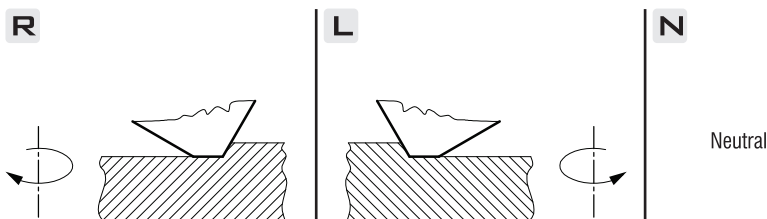


A = 3°	F = 25°
B = 5°	G = 30°
C = 7°	N = 0°
D = 15°	P = 11°
E = 20°	Z = Others

9. CUTTING EDGE TYPE

F		= Sharp
E		= Radius
T		= Chamfer
S		= Radius & Chamfer

10. CUTTING DIRECTION



11. CHIP BREAKER CODE

P M	= Steel / Medium machining
M H	= S.S. / Heavy machining
K L	= Cast Iron / Light machining

MILLING INSERT

A SERIES

ITEM CODE	DIMENSIONS					CUTTING DATA			GRADE		
	L	T	W	d	r	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	128	1110	72
APKT 11 35 04 PD FR	12.24	3.97	6.5	2.8	0.4	max. 10	0.18 (0.1-0.3)	290	★	★	
APKT 11 35 08 PD FR	12.24	3.97	6.5	2.8	0.8	max. 10	0.18 (0.1-0.3)	290	★	★	
APKT 16 04 04 PD FR	16.88	4.76	9.8	4.4	0.4	max. 14.5	0.18 (0.1-0.3)	290	★	★	
APKT 16 04 08 PD FR	16.88	4.76	9.8	4.4	0.8	max. 14.5	0.18 (0.1-0.3)	290	★	★	
APKT 16 T4 08 HFR	16.88	4.76	9.8	4.4	1.6	max. 14.5	0.18 (0.1-0.3)	290	★	★	
APKT 16 04 16 PD FR	16.88	4.76	9.8	4.4	1.6	max. 14.5	0.18 (0.1-0.3)	290	★	★	

ITEM CODE	DIMENSIONS					CUTTING DATA			GRADE		
	L	T	W	d	r	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	132	8200	2413
APMT 11 35 04 PD ER	11.21	3.97	6.2	2.8	0.4	max. 10	0.10 (0.08-0.20)	130	★		★
APMT 11 35 08 PD ER	11.21	3.97	6.2	2.8	0.8	max. 10	0.10 (0.08-0.20)	130	★		★
APMT 16 04 08 PD ER	17.15	4.76	9.28	4.4	0.8	max. 14.5	0.18 (0.1-0.25)	140	★	★	
APMT 16 04 12 PD ER	17.15	4.76	9.28	4.4	1.2	max. 14.5	0.18 (0.1-0.25)	140	★	★	
APMT 16 04 16 PD ER	17.15	4.76	9.28	4.4	1.6	max. 14.5	0.18 (0.1-0.25)	140	★	★	
APMT 16 05 08 HFR	17.15	5.56	9.28	4.4	0.8	max. 14.5	0.18 (0.1-0.25)	140			★
APMT 17 05 08 PD ER	18.54	5.56	10.8	4.4	0.8	max. 15.5	0.24 (0.18-0.32)	210	★		
APMT 17 05 16 PD ER	18.54	5.56	10.8	4.4	1.6	max. 15.5	0.24 (0.18-0.32)	210	★		

MILLING INSERT



R SERIES

							P M K N S H <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
	ITEM CODE	DIMENSIONS			CUTTING DATA			GRADE
	T	D (IC)	θ	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	21019	1019
RPMT 08 03 M0 E	3.18	8	11°	max. 4	0.25 (0.20-0.35)	220	★	★
RPMT 10 T3 M0 E	3.97	10	11°	max. 5	0.25 (0.20-0.35)	220	★	★
RPMT 12 04 M0 E	4.76	12	11°	max. 6	0.27 (0.21-0.35)	220	★	★

							P M K N S H <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
	ITEM CODE	DIMENSIONS			CUTTING DATA			GRADE
	T	D (IC)	θ	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	21019	1019
RPMW 08 03 M0 E	3.18	8	11°	max. 4	0.25 (0.20-0.35)	220	★	★
RPMW 10 T3 M0 E	3.97	10	11°	max. 5	0.25 (0.20-0.35)	220	★	★
RPMW 12 04 M0 E	4.76	12	11°	max. 6	0.27 (0.21-0.35)	220	★	★

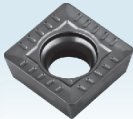
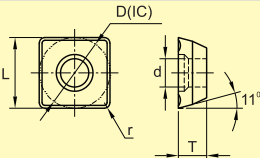

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	ITEM CODE	DIMENSIONS			CUTTING DATA			GRADE
	T	D (IC)	θ	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	128	
RCGT 08 03 M0 E	3.18	8	7°	max. 4	0.25 (0.20-0.35)	220	★	
RCGT 10 T3 M0 E	3.97	10	7°	max. 5	0.25 (0.20-0.35)	220	★	
RCGT 12 04 M0 E	3.97	12	7°	max. 6	0.27 (0.21-0.35)	220	★	

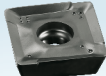
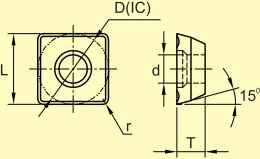

J SERIES

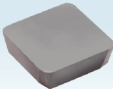
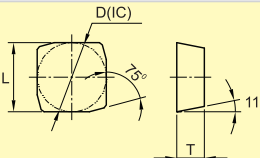

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	ITEM CODE	DIMENSIONS					GRADE	
	T	D (IC)	θ	L	r		JT 7370	
JOMW 06 T2 15	2.78	6.35	13°	06	1.5		★	
JOMW 08 03 20	3.18	8	13°	08	2		★	
JDMW 09 T3 20	3.97	9.525	15°	09	2		★	

MILLING INSERT

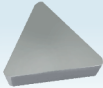
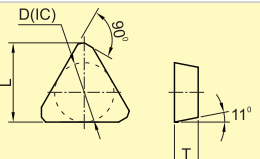

S SERIES

												
	DIMENSIONS						CUTTING DATA			GRADE		
ITEM CODE	L	T	D (IC)	r	θ	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	451			
SPMT 06 03 04	6.35	3.18	6.35	0.4	11°	1.5 (0.50-4)	0.28 (0.12-0.40)	250	★			
SPMT 09 T3 08	9.525	3.97	9.525	0.8	11°	2.5 (0.50-6)	0.28 (0.15-0.43)	250	★			
SPMT 12 04 08	12.7	4.76	12.7	0.8	11°	3.5 (0.50-7)	0.28 (0.20-0.48)	250	★			

												
	DIMENSIONS						CUTTING DATA			GRADE		
ITEM CODE	L	T	D (IC)	r	θ	Cutting Depth a_p mm	Feed F_z mm / Rev.	Cutting Speed m/min	2014	413		
SDMT 09 03 08	9.525	3.18	9.525	0.8	15°	2.5 (0.50-6)	0.28 (0.15-0.43)	250	★			
SDMT 09 T3 12	9.525	3.97	9.525	1.2	15°	2.5 (0.50-6)	0.28 (0.15-0.43)	250	★			
SDMT 12 04 08	12.7	4.76	12.7	0.8	15°	3.5 (0.50-7)	0.35 (0.20-0.48)	250	★			
SDMT 12 04 12	12.7	4.76	12.7	1.2	15°	3.5 (0.50-7)	0.35 (0.20-0.48)	250	★			

												
	DIMENSIONS						CUTTING DATA					
ITEM CODE	L	T	D (IC)	θ		Cutting depth a_p mm	Feed F_z mm / Rev.	Cutting speed m/min				
SPKN 12 03 ED FR	12.7	3.18	12.7	11°		3.5 (0.50-7)	0.25 (0.18-0.38)	250				
SPKN 12 03 ED FL	12.7	3.18	12.7	11°		3.5 (0.50-7)	0.25 (0.18-0.38)	250				
SPKN 15 04 ED FR	15.87	4.76	15.87	11°		3.5 (0.50-7)	0.25 (0.18-0.38)	250				
SPKN 15 04 ED FL	15.87	4.76	15.87	11°		3.5 (0.50-7)	0.25 (0.18-0.38)	250				

T SERIES

												
	DIMENSIONS						CUTTING DATA					
ITEM CODE	L	T	D (IC)	θ		Cutting depth a_p mm	Feed F_z mm / Rev.	Cutting speed m/min				
TPKN 16 03 PD R	16	3.18	9.525	11°		6 (0.5-12)	0.18 (0.15-0.25)	200				
TPKN 16 03 PD L	16	3.18	9.525	11°		6 (0.5-12)	0.18 (0.15-0.25)	200				
TPKN 22 04 PD R	22	4.76	12.7	11°		9 (0.5-18)	0.22 (0.18-0.28)	200				
TPKN 22 04 PD L	22	4.76	12.7	11°		9 (0.5-18)	0.22 (0.18-0.28)	200				



PM KNSH



MILLING HOLDER

NOMENCLATURE

MILLING HOLDER



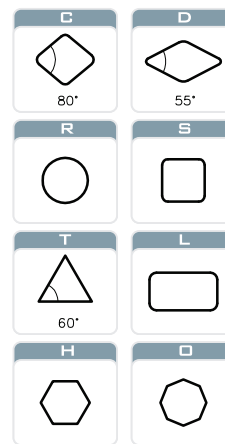
1. CUTTER TYPE

- FM** Face Milling
- EM** Shoulder Milling
- HM** Helical Milling
- BM** Profile Milling
- CM** Chamfer Milling
- XM** Special Milling

2. APPROACH ANGLE

P	90°	
E	75°	
D	60°	
A	45°	
R		

3. INSERT SHAPE



4. INSERT CLEARANCE ANGLE

N = 0°
B = 5°
C = 7°
P = 11°
D = 15°
E = 20°
F = 25°

5. LENGTH OF CUTTING EDGE

Inscribed Circle Diameter	Insert Shape					
	C	D	R	S	T	L
5.556	---	---	---	---	09	---
6.350	06	07	---	---	11	---
9.525	09	11	09	09	16	---
12.700	12	15	12	12	22	---
15.875	16	19	15	15	27	---
19.050	19	---	19	19	33	---
25.400	25	---	25	25	44	2

6. SERIES CODE

(Refer Page no. 74 & 75)

7. EFFECTIVE CUTTING DIAMETER ØD

063 = Ø63 mm
080 = Ø80 mm
100 = Ø100 mm

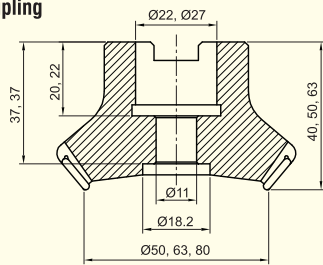
A **27** **6** **R***
 8 9 10 11

8. COUPLING TYPE

- A** A - Type Coupling
- B** B - Type Coupling
- B** C - Type Coupling
- D** D - Type Coupling
- S** Straight Shank Holder

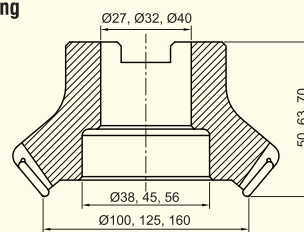
9. COUPLING STRUCTURE OF ARBOR

A - Type Coupling



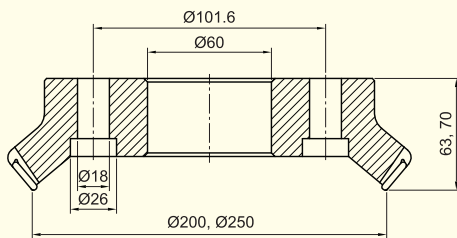
For Cutter: Ø50 - Ø80

B - Type Coupling



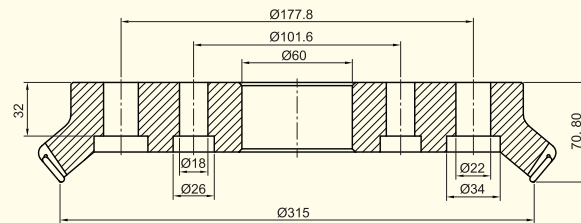
For Cutter: Ø100 - Ø160

C - Type Coupling



For Cutter: Ø200 - Ø250

D - Type Coupling



For Cutter ≥ Ø250

10. NUMBER OF TEETH / INSERT

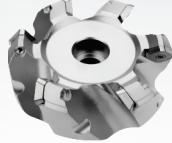
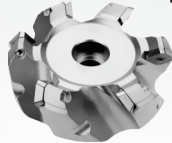







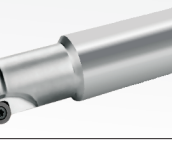
(Number of flute in case of helical end mills)

11. CUTTING DIRECTION


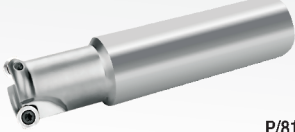








R: Right L: Left N: Neutral

* R = Standard

MILLING HOLDER SERIES CODE

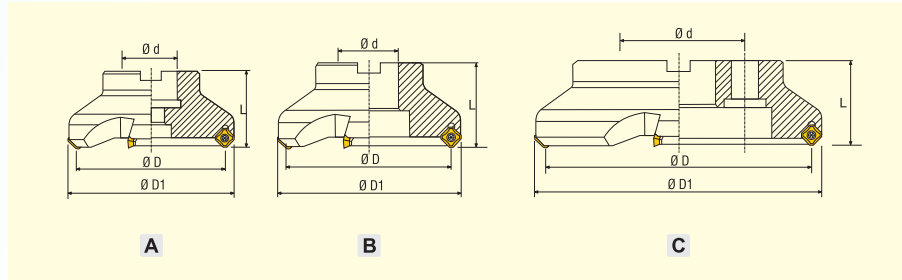
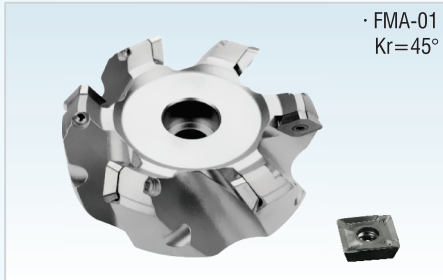
Cutting Mode	Image	Approach Angle Max. Depth of Cut	Features	Cutter Dia	Suitable Insert Code
Face Milling	 FMA-01 P/76	$K_r=45^\circ$ $a_p \text{ max}=6.0$	<ul style="list-style-type: none"> 15° Positive Insert For general purpose face milling For Steel, Stainless Steel, Cast iron Screw Clamping 	Dia Range: Ø50~Ø315	SDMT 12 04 □□
	 FMA-02 P/76	$K_r=45^\circ$ $a_p \text{ max}=6.0$	<ul style="list-style-type: none"> 20° Positive Insert For general purpose face milling For Steel, Stainless Steel, Cast iron Screw Clamping 	Dia Range: Ø50~Ø315	SPMT 12 04 □□
	 FMP-02 P/77	$K_r=90^\circ$ $a_p \text{ max}=6.5$	<ul style="list-style-type: none"> 15° Positive Insert For general purpose face milling For Steel, Stainless Steel Screw Clamping 	Dia Range: Ø50~Ø315	SDMT 09 T3 □□
		$K_r=90^\circ$ $a_p \text{ max}=10.5$			SDMT 12 04 □□
	 FME-01 P/77	$K_r=75^\circ$ $a_p \text{ max}=6.0$	<ul style="list-style-type: none"> 11° Positive Insert For general purpose face milling For Steel, Stainless Steel Top Clamping for easy fastening & unfastening 	Dia Range: Ø80~Ø315	SP□N 12 03 □□
		$K_r=75^\circ$ $a_p \text{ max}=8.0$			SP□R 12 03 □□ SP□N 15 04 □□ SP□R 15 04 □□
	 FMP-01 P/78	$K_r=90^\circ$ $a_p \text{ max}=18$	<ul style="list-style-type: none"> 11° Positive Insert For general purpose face milling For Steel, Stainless Steel Top Clamping for easy fastening & unfastening 	Dia Range: Ø80~Ø315	TPKN 22 04 □□
	 HFR-01 P/84	$a_p \text{ max}=1.0$	<ul style="list-style-type: none"> General purpose rough milling for profiling Face mill cutter For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø16~Ø40	JOMW 06 T2 15
		$a_p \text{ max}=1.5$			JOMW 08 03 20
		$a_p \text{ max}=2.0$			JDMW 09 T3 20
	 HFR-03 P/84	$a_p \text{ max}=1.0$	<ul style="list-style-type: none"> General purpose rough milling for profiling Face mill cutter For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø50~Ø160	JOMW 06 T2 15
		$a_p \text{ max}=1.5$			JOMW 08 03 20
		$a_p \text{ max}=2.0$			JDMW 09 T3 20
	 FMR-01 P/79	$a_p \text{ max}=4.0$	<ul style="list-style-type: none"> General purpose rough milling for profiling Shank type: Weldon & Straight shank For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø16~Ø50	RPMT 08 03 MO
		$a_p \text{ max}=5.0$			RPMT 10 T3 MO
		$a_p \text{ max}=6.0$			RPMT 12 04 MO
 FMR-02 P/79	$a_p \text{ max}=6.0$	<ul style="list-style-type: none"> General purpose rough milling for profiling Face mill cutter For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø50~Ø200	RPMT 08 03 MO	
	$a_p \text{ max}=8.0$			RPMT 10 T3 MO	
	$a_p \text{ max}=10.0$			RPMT 12 04 MO	
 FMR-03 P/80	$a_p \text{ max}=4.0$	<ul style="list-style-type: none"> General purpose rough milling for profiling Shank type: Weldon & Straight shank For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø16~Ø50	RPMW 08 03 MO	
	$a_p \text{ max}=5.0$			RPMW 10 T3 MO	
	$a_p \text{ max}=6.0$			RPMW 12 04 MO	

MILLING HOLDER SERIES CODE

Cutting Mode	Image	Approach Angle Max. Depth of Cut	Features	Cutter Dia	Suitable Insert Code
Face Milling	 <p>FMR-04 P/80</p>	a_p max=6.0	<ul style="list-style-type: none"> General purpose rough milling for profiling Face mill cutter For Steel, Stainless Steel For curved surface & profile milling Screw Clamping 	Dia Range: Ø50~Ø200	RPMW 08 03 MO
		a_p max=8.0			RPMW 10 T3 MO
		a_p max=10.0			RPMW 12 04 MO
	 <p>FMR06 P/81</p>	a_p max=4.0	<ul style="list-style-type: none"> General purpose rough milling for profiling Shank type: Weldon & Straight shank For Aluminium & Non Ferrous material For curved surface & profile milling Screw Clamping 	Dia Range: Ø16~Ø40	RCGT 08 03 MO
		a_p max=5.0			RCGT 10 T3 MO
		a_p max=6.0			RCGT 12 04 MO
	 <p>FMR-07 P/81</p>	a_p max=6.0	<ul style="list-style-type: none"> General purpose rough milling for profiling Face mill cutter For Aluminium & Non Ferrous material For curved surface & profile milling Screw Clamping 	Dia Range: Ø50~Ø200	RCGT 08 03 MO
		a_p max=8.0			RCGT 10 T3 MO
		a_p max=10.0			RCGT 12 04 MO
Shoulder Milling	 <p>EMP-01 P/82</p>	$K_r=90^\circ$ a_p max=10.5	<ul style="list-style-type: none"> General purpose end mill for shouldering, slotting, contouring and ramping operations For Steel, Stainless Steel Screw Clamping Shank type 	Dia Range: Ø12~Ø40	APMT 11 35 □□
		$K_r=90^\circ$ a_p max=15.5			APMT 16 04 □□
	 <p>EMP-02 P/82</p>	$K_r=90^\circ$ a_p max=10.5	<ul style="list-style-type: none"> General purpose face mill operation For Steel, Stainless Steel Screw Clamping Face mill type, low cutting force 	Dia Range: Ø50~Ø160	APMT 11 35 □□
		$K_r=90^\circ$ a_p max=15.5			APMT 16 04 □□
	 <p>EMP-05 P/83</p>	$K_r=90^\circ$ a_p max=10.5	<ul style="list-style-type: none"> General purpose end mill for shouldering, slotting, contouring and ramping operations For Aluminium & Non Ferrous material Screw Clamping Shank type 	Dia Range: Ø12~Ø40	APKT 11 35 □□
		$K_r=90^\circ$ a_p max=15.5			APKT 16 04 □□
	 <p>EMP-06 P/83</p>	$K_r=90^\circ$ a_p max=10.5	<ul style="list-style-type: none"> General purpose face mill operation For Aluminium & Non Ferrous material Screw Clamping Face mill type, low cutting force 	Dia Range: Ø50~Ø160	APKT 11 35 □□
		$K_r=90^\circ$ a_p max=15.5			APKT 16 04 □□
	 <p>EMP-03 P/85</p>	$K_r=90^\circ$ a_p max=39	<ul style="list-style-type: none"> General purpose end mill for shouldering, slotting, contouring and ramping operations For Steel, Stainless Steel, Aluminium Screw Clamping Shank type 	Dia Range: Ø20~Ø40	APMT 11 35 □□ APKT 11 35 □□
		$K_r=90^\circ$ a_p max=58			APMT 16 04 □□ APKT 16 04 □□
	 <p>EMP-04 P/85-86</p>	$K_r=90^\circ$ a_p max=39	<ul style="list-style-type: none"> General purpose face mill operation For Steel, Stainless Steel, Aluminium Screw Clamping 	Dia Range: Ø50~Ø100	APMT 11 35 □□ APKT 11 35 □□
Chamfer Milling	 <p>GMA-01 P/86</p>	$K_r=45^\circ$	<ul style="list-style-type: none"> Multi purpose tool Milling cutter for Chamfering and Deburring It can be worked on any material 	Dia Range: Ø12~Ø40	SPMT 09 T3 □□
		$K_r=60^\circ$			SPMT 12 04 □□

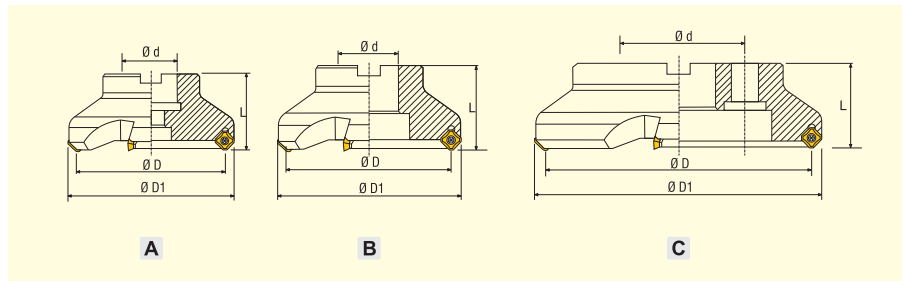
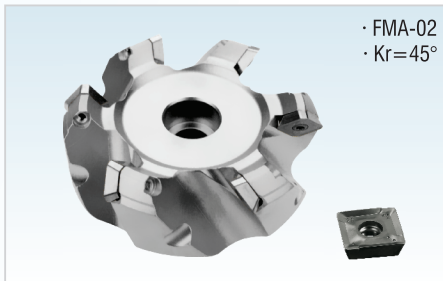
MILLING HOLDER

FACE MILLING



SERIES CODE: FMA 01

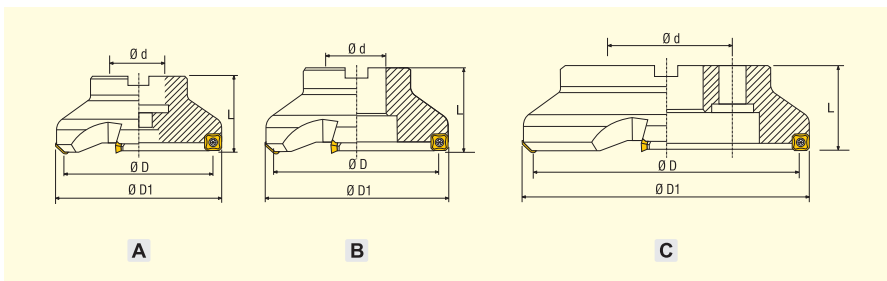
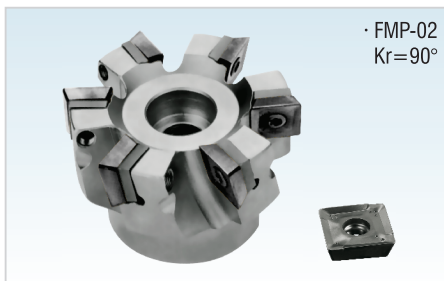
ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø D ₁	Ø d	L	a _p max	Z	Type of coupling	Suitable Insert Code
FMA- SD12- 01. 050- A 22.4	50	61	22	40	6	4	A	SDMT 12 04 □□
FMA- SD12- 01. 063- A 22.5	63	74	22	40	6	5	A	SDMT 12 04 □□
FMA- SD12-01. 080- A 27.6	80	91	27	50	6	6	A	SDMT 12 04 □□
FMA- SD12-01. 100- B 32.7	100	107	32	50	6	7	B	SDMT 12 04 □□
FMA- SD12-01. 125- B 40.8	125	136	40	63	6	8	B	SDMT 12 04 □□
FMA- SD12-01. 160- B 40.10	160	170	40	63	6	10	B	SDMT 12 04 □□
FMA- SD12-01. 200- C 60.12	200	210	60	63	6	12	C	SDMT 12 04 □□
FMA- SD12-01. 250- C 60.14	250	260	60	63	6	14	C	SDMT 12 04 □□



SERIES CODE: FMA 02

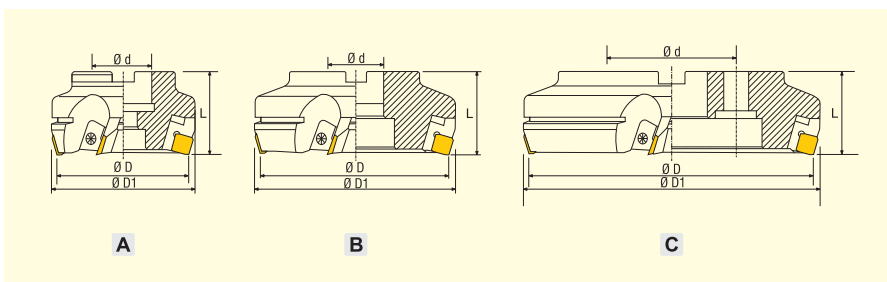
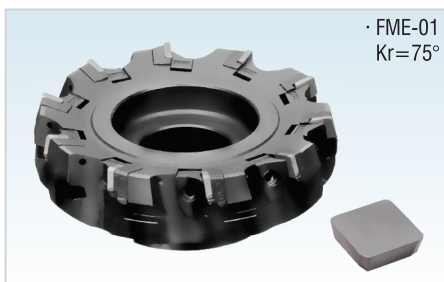
ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø D ₁	Ø d	L	a _p max	Z	Type of coupling	Suitable Insert Code
FMA- SP12- 02. 050- A 22.4	50	61	22	40	6	4	A	SPMT 12 04 □□
FMA- SP12- 02. 063- A 22.5	63	74	22	40	6	5	A	SPMT 12 04 □□
FMA- SP12- 02. 080- A 27.6	80	91	27	50	6	6	A	SPMT 12 04 □□
FMA- SP12- 02. 100- B 32.7	100	107	32	50	6	7	B	SPMT 12 04 □□
FMA- SP12- 02. 125- B 40.8	125	136	40	63	6	8	B	SPMT 12 04 □□
FMA- SP12- 02. 160- B 40.10	160	170	40	63	6	10	B	SPMT 12 04 □□
FMA- SP12- 02. 200- C 60.12	200	210	60	63	6	12	C	SPMT 12 04 □□
FMA- SP12- 02. 250- C 60.14	250	260	60	63	6	14	C	SPMT 12 04 □□

MILLING HOLDER



SERIES CODE: FMP 02

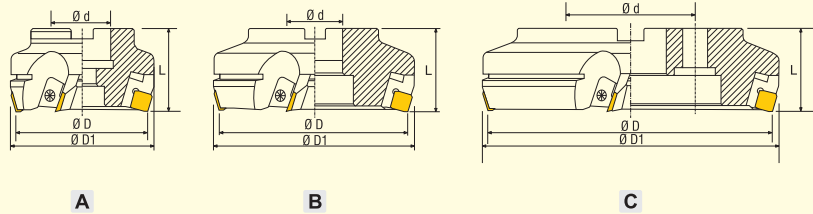
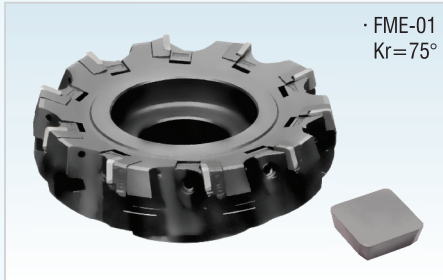
ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	a _p max	Z	Type of coupling	Suitable Insert Code
FMP- SD09- 02. 050- A 22.4	50	22	40	6.5	4	A	SDMT 09 T3 □□
FMP- SD09- 02. 063- A 22.4	63	22	40	6.5	4	A	SDMT 09 T3 □□
FMP- SD12- 02. 050- A 22.4	50	22	40	10.5	4	A	SDMT 12 04 □□
FMP- SD12- 02. 063- A 22.4	63	22	40	10.5	4	A	SDMT 12 04 □□
FMP- SD12- 02. 080- A 27.4	80	27	50	10.5	4	A	SDMT 12 04 □□
FMP- SD12- 02. 100- B 32.6	100	32	63	10.5	6	B	SDMT 12 04 □□
FMP- SD12- 02. 125- B 40.8	125	40	63	10.5	8	B	SDMT 12 04 □□
FMP- SD15- 02. 160- B 40.10	160	40	63	10.5	10	B	SDMT 15 04 □□
FMP- SD15- 02. 200- C 60.12	200	60	63	10.5	12	C	SDMT 15 04 □□
FMP- SD15- 02. 250- C 60.16	250	60	63	10.5	16	C	SDMT 15 04 □□



SERIES CODE: FME 01

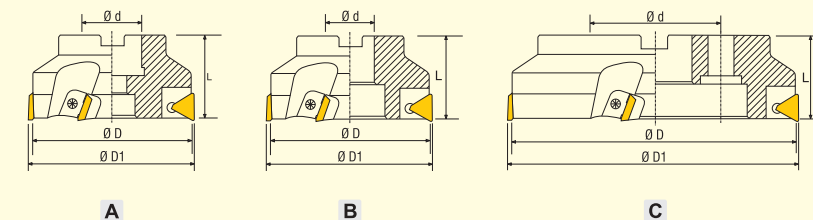
ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø D ₁	Ø d	L	a _p max	Z	Type of coupling	Suitable Insert Code
FME- SP12- 01. 080- A 27.4	80	84	27	50	6	4	A	SP□□ 12 03 □□
FME- SP12- 01. 100- B 32.6	100	104	32	63	6	6	B	SP□□ 12 03 □□
FME- SP12- 01. 125- B 40.8	125	129	40	63	6	8	B	SP□□ 12 03 □□
FME- SP12- 01. 160- B 40.10	160	164	40	63	6	10	B	SP□□ 12 03 □□
FME- SP12- 01. 200- C 60.12	200	203	60	63	6	12	C	SP□□ 12 03 □□
FME- SP15- 01. 100- B 32.6	100	104	27	63	8	6	B	SP□□ 15 04 □□
FME- SP15- 01. 125- B 40.8	125	129	40	63	8	8	B	SP□□ 15 04 □□
FME- SP15- 01. 160- B 40.10	160	164	40	63	8	10	B	SP□□ 15 04 □□
FME- SP15- 01. 200- C 60.12	200	203	60	63	8	12	C	SP□□ 15 04 □□
FME- SP15- 01. 250- C 60.16	250	253	60	63	8	16	C	SP□□ 15 04 □□

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SERIES CODE: FME 01

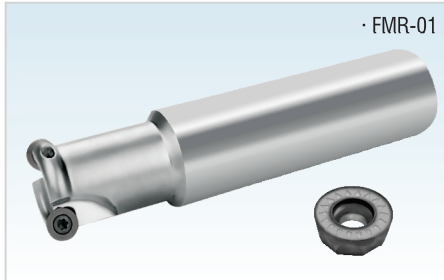
ITEM CODE	DIMENSIONS (mm)							Type of coupling	Suitable Insert Code
	Ø D	Ø D ₁	Ø d	L	a _p max	Z			
FME- SP12- 01. 080- A 27.4	80	84	27	50	6	4	A	SP□R 12 03 □□	
FME- SP12- 01. 100- B 32.6	100	104	32	63	6	6	B	SP□R 12 03 □□	
FME- SP12- 01. 125- B 40.8	125	129	40	63	6	8	B	SP□R 12 03 □□	
FME- SP12- 01. 160- B 40.10	160	164	40	63	6	10	B	SP□R 12 03 □□	
FME- SP12- 01. 200- C 60.12	200	203	60	63	6	12	C	SP□R 12 03 □□	
FME- SP15- 01. 080- A 27.4	80	84	27	50	8	4	A	SP□R 15 04 □□	
FME- SP15- 01. 100- B 32.6	100	104	27	63	8	6	B	SP□R 15 04 □□	
FME- SP15- 01. 125- B 40.8	125	129	40	63	8	8	B	SP□R 15 04 □□	
FME- SP15- 01. 160- B 40.10	160	164	40	63	8	10	B	SP□R 15 04 □□	
FME- SP15- 01. 200- C 60.12	200	203	60	63	8	12	C	SP□R 15 04 □□	
FME- SP15- 01. 250- C 60.16	250	253	60	63	8	16	C	SP□R 15 04 □□	



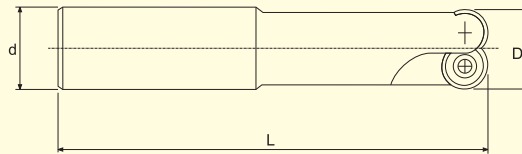
SERIES CODE: FMP 01

ITEM CODE	DIMENSIONS (mm)						Type of coupling	Suitable Insert Code
	Ø D	Ø d	L	a _p max	Z			
FMP- TP22- 01. 080- A27.4	80	27	50	18	4	A	TPKN 22 04 □□	
FMP- TP22- 01. 100- B32.6	100	32	63	18	6	B	TPKN 22 04 □□	
FMP- TP22- 01. 125- B40.8	125	40	63	18	8	B	TPKN 22 04 □□	
FMP- TP22- 01. 160- B40.10	160	40	63	18	10	B	TPKN 22 04 □□	
FMP- TP22- 01. 200- C60.12	200	60	63	18	12	C	TPKN 22 04 □□	
FMP- TP22- 01. 250- C60.16	250	60	63	18	16	C	TPKN 22 04 □□	

MILLING HOLDER



FMR-01

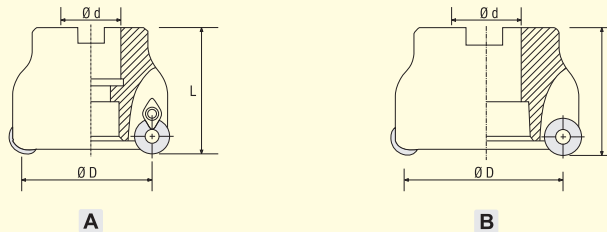


SERIES CODE: FMR 01

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	r (Radius)	a _p max	Z	Suitable Insert Code
FMR- RP08- 01. 016- S 16.2- R	16	16	120	4	4	2	RPMT 08 03 MO
FMR- RP08- 01. 020- S 20.2- R	20	20	120	4	4	2	RPMT 08 03 MO
FMR- RP10- 01. 016- S 16.2- R	16	16	120	5	5	2	RPMT 10 T3 MO
FMR- RP10- 01. 020- S 20.2- R	20	20	120	5	5	2	RPMT 10 T3 MO
FMR- RP10- 01. 025- S 25.2- R	25	25	120	5	5	2	RPMT 10 T3 MO
FMR- RP12- 01. 020- S 20.2- R	20	20	120	6	6	2	RPMT 12 04 MO
FMR- RP12- 01. 025- S 25.2- R	25	25	120	6	6	2	RPMT 12 04 MO
FMR- RP12- 01. 032- S 32.2- R	32	32	120	6	6	2	RPMT 12 04 MO
FMR- RP12- 01. 040- S 40.2- R	40	40	120	6	6	2	RPMT 12 04 MO



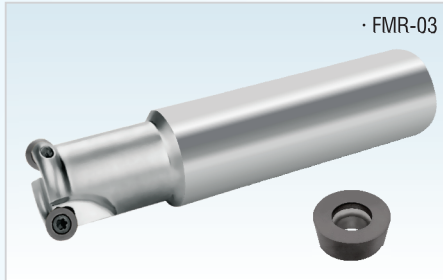
FMR-02



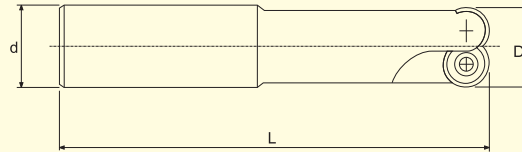
SERIES CODE: FMR 02

ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø d	L	r	a _p max	Z	Type of coupling	Suitable Insert Code
FMR- RP12- 02. 050- A 22.6	50	22	40	6	6	6	A	RPMT 12 04 MO
FMR- RP12- 02. 063- B 22.8	63	22	50	6	6	8	B	RPMT 12 04 MO
FMR- RP12- 02. 080- B 27.8	80	27	50	6	6	8	B	RPMT 12 04 MO
FMR- RP12- 02. 100- B 32.10	100	32	50	6	6	10	B	RPMT 12 04 MO
FMR- RP12- 02. 125- B 40.10	125	40	63	6	6	10	B	RPMT 12 04 MO
FMR- RP12- 02. 125- B 27.10	125	27	63	8	8	10	B	RPMT 12 04 MO
FMR- RP12- 02. 150- B 32.10	150	32	63	8	8	10	B	RPMT 12 04 MO

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FMR-03



SERIES CODE: FMR 03

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	r	a _p max	Z	Suitable Insert Code
FMR- RP08- 03. 016- S 16.2- R*	16	16	120	4	4	2	RPMW 08 03 MO
FMR- RP08- 03. 020- S 20.2- R	20	20	120	4	4	2	RPMW 08 03 MO
FMR- RP10- 03. 016- S 16.2- R	16	16	120	5	5	2	RPMW 10 T3 MO
FMR- RP10- 03. 020- S 20.2- R	20	20	120	5	5	2	RPMW 10 T3 MO
FMR- RP10- 03. 025- S 25.2- R	25	25	120	5	5	2	RPMW 10 T3 MO
FMR- RP12- 03. 020- S 20.2- R	20	20	120	6	6	2	RPMW 12 04 MO
FMR- RP12- 03. 025- S 25.2- R	25	25	120	6	6	2	RPMW 12 04 MO
FMR- RP12- 03. 032- S 32.2- R	32	32	120	6	6	2	RPMW 12 04 MO
FMR- RP12- 03. 040- S 40.2- R	40	40	120	6	6	2	RPMW 12 04 MO

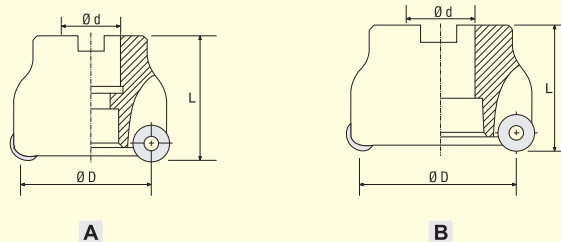
*Regular (R) = 120 mm

*Long (L) = 150 mm

*Extra Long (X) = 200 mm



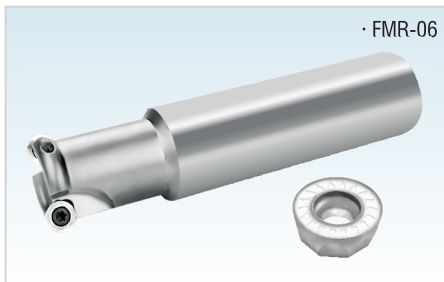
FMR-04



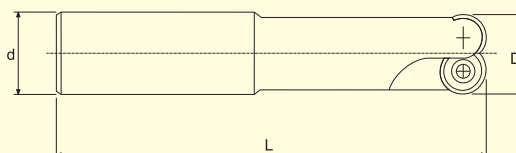
SERIES CODE: FMR 04

ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø d	L	r	a _p max	Z	Type of coupling	Suitable Insert Code
FMR- RP12- 04. 050- A 22.6	50	22	40	6	6	6	A	RPMW 12 04 MO
FMR- RP12- 04. 063- B 22.8	63	22	50	6	6	8	B	RPMW 12 04 MO
FMR- RP12- 04. 080- B 27.8	80	27	50	6	6	8	B	RPMW 12 04 MO
FMR- RP12- 04. 100- B 32.10	100	32	63	6	6	10	B	RPMW 12 04 MO
FMR- RP12- 04. 125- B 40.10	125	40	63	6	6	10	B	RPMW 12 04 MO
FMR- RP12- 04. 125- B 27.10	125	27	63	8	8	10	B	RPMW 12 04 MO
FMR- RP12- 04. 150- B 32.10	150	32	63	8	8	10	B	RPMW 12 04 MO

MILLING HOLDER

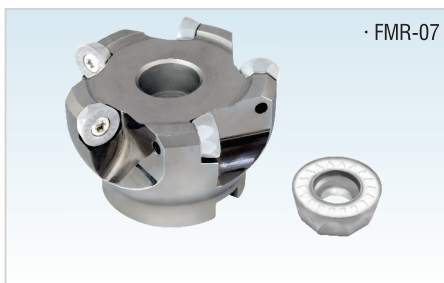


FMR-06

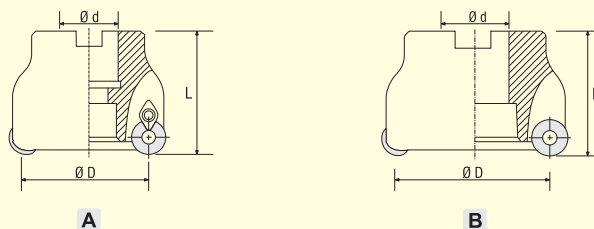


SERIES CODE: FMR 06

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	r (Radius)	a _p max	Z	Suitable Insert Code
FMR- RC08- 06. 016- S 16.2- L	16	16	150	4	4	2	RCGT 08 03 MO
FMR- RC08- 06. 020- S 20.2- L	20	20	150	4	4	2	RCGT 08 03 MO
FMR- RC10- 06. 016- S 16.2- L	16	16	150	5	5	2	RCGT 10 T3 MO
FMR- RC10- 06. 020- S 20.2- L	20	20	150	5	5	2	RCGT 10 T3 MO
FMR- RC10- 06. 025- S 25.2- L	25	25	150	5	5	2	RCGT 10 T3 MO
FMR- RC12- 06. 020- S 20.2- L	20	20	150	6	6	2	RCGT 12 04 MO
FMR- RC12- 06. 025- S 25.2- L	25	25	150	6	6	2	RCGT 12 04 MO
FMR- RC12- 06. 032- S 32.2- L	32	32	150	6	6	2	RCGT 12 04 MO
FMR- RC12- 06. 040- S 40.2- L	40	40	150	6	6	2	RCGT 12 04 MO



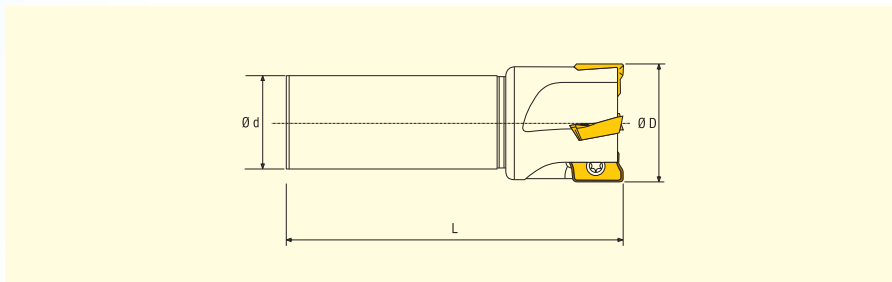
FMR-07



SERIES CODE: FMR 07

ITEM CODE	DIMENSIONS (mm)							
	Ø D	Ø d	L	r	a _p max	Z	Type of coupling	Suitable Insert Code
FMR- RC12- 07. 050- A 22.6	50	22	40	6	6	6	A	RCGT 12 04 MO
FMR- RC12- 07. 063- B 22.8	63	22	50	6	6	8	B	RCGT 12 04 MO
FMR- RC12- 07. 080- B 27.8	80	27	50	6	6	8	B	RCGT 12 04 MO
FMR- RC12- 07. 100- B 32.10	100	32	50	6	6	10	B	RCGT 12 04 MO
FMR- RC12- 07. 125- B 40.10	125	40	63	6	6	10	B	RCGT 12 04 MO
FMR- RC12- 07. 125- B 27.10	125	27	63	8	8	10	B	RCGT 12 04 MO
FMR- RC12- 07. 150- B 32.10	150	32	63	8	8	10	B	RCGT 12 04 MO

MILLING HOLDER



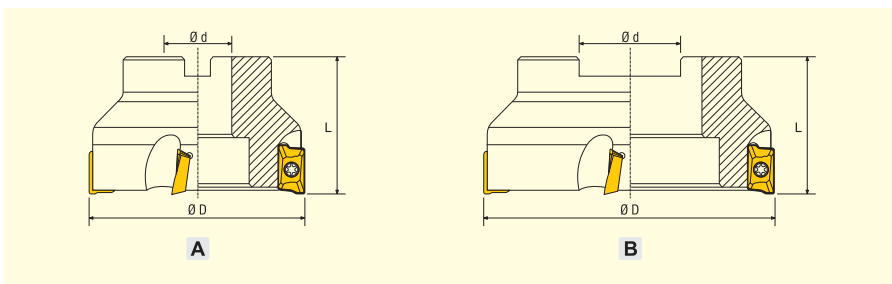
SERIES CODE: EMP 01

ITEM CODE	DIMENSIONS (mm)					Suitable Insert Code
	$\varnothing D$	$\varnothing d$	L	a_p max	Z	
EMP- AP11- 01. 012- S 12.1- R*	12	16	120	10.5	1	APMT 11 35 □□
EMP- AP11- 01. 016- S 16.2- R	16	16	120	10.5	2	APMT 11 35 □□
EMP- AP11- 01. 020- S 20.2- R	20	20	120	10.5	2	APMT 11 35 □□
EMP- AP16- 01. 020- S 20.2- R	20	20	120	15.5	2	APMT 16 04 □□
EMP- AP16- 01. 025- S 25.2- R	25	25	120	15.5	2	APMT 16 04 □□
EMP- AP16- 01. 032- S 32.3- R	32	32	120	15.5	3	APMT 16 04 □□
EMP- AP16- 01. 040- S 40.4- R	40	32	120	15.5	4	APMT 16 04 □□

*Regular (R) = 120 mm

*Long (L) = 150 mm

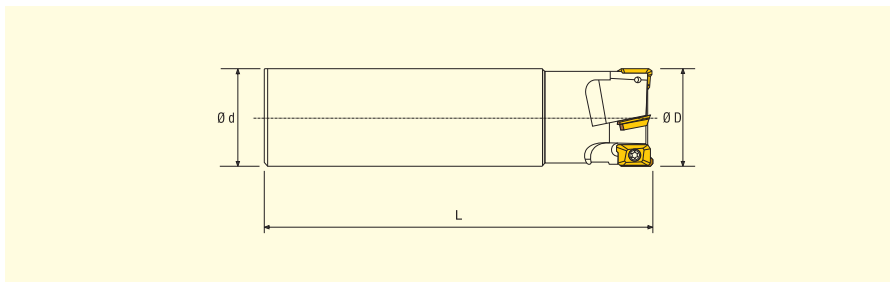
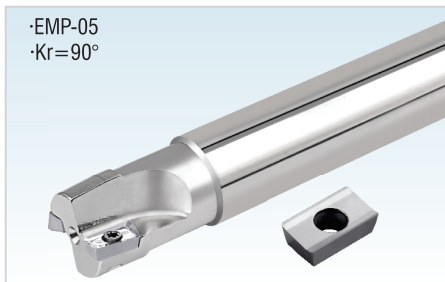
*Extra Long (X) = 200 mm



SERIES CODE: EMP 02

ITEM CODE	DIMENSIONS (mm)						
	$\varnothing D$	$\varnothing d$	L	a_p max	Z	Type of coupling	Suitable Insert Code
EMP- AP11- 02. 050- A 22.6	50	22	63	10.5	6	A	APMT 11 35 □□
EMP- AP11- 02. 063- A 22.8	63	22	63	10.5	8	A	APMT 11 35 □□
EMP- AP11- 02. 080- A 27.8	80	27	70	10.5	8	A	APMT 11 35 □□
EMP- AP16- 02. 050- A 22.5	50	22	80	15.5	5	A	APMT 16 04 □□
EMP- AP16- 02. 063- A 22.6	63	22	63	15.5	6	A	APMT 16 04 □□
EMP- AP16- 02. 080- A 27.7	80	27	63	15.5	7	A	APMT 16 04 □□
EMP- AP16- 02. 100- B 32.8	100	32	70	15.5	8	B	APMT 16 04 □□
EMP- AP16- 02. 125- B 40.10	125	40	70	15.5	10	B	APMT 16 04 □□
EMP- AP16- 02. 160- B 40.10	160	40	80	15.5	10	B	APMT 16 04 □□

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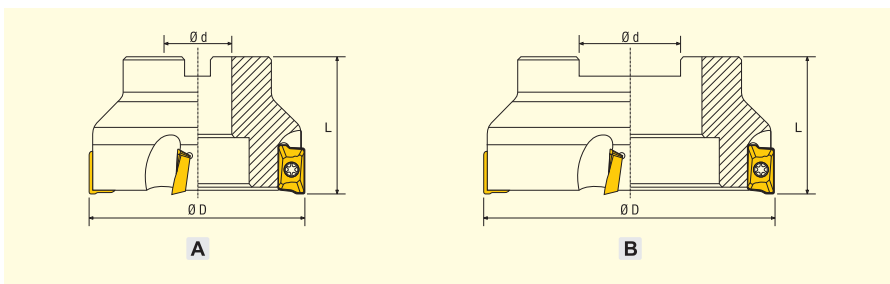
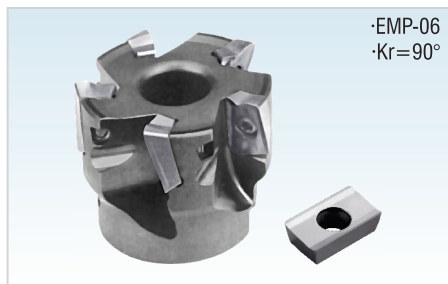
SERIES CODE: EMP 05

ITEM CODE	DIMENSIONS (mm)					
	Ø D	Ø d	L	a _p max	Z	Suitable Insert Code
EMP- AP11- 05. 012- S 12.1- R*	12	16	120	10.5	1	APKT 11 35 □□
EMP- AP11- 05. 016- S 16.2- R	16	16	120	10.5	2	APKT 11 35 □□
EMP- AP11- 05. 020- S 20.2- R	20	20	120	10.5	2	APKT 11 35 □□
EMP- AP16- 05. 020- S 20.2- R	20	20	120	15.5	2	APKT 16 04 □□
EMP- AP16- 05. 025- S 25.2- R	25	25	120	15.5	2	APKT 16 04 □□
EMP- AP16- 05. 032- S 32.3- R	32	32	120	15.5	3	APKT 16 04 □□
EMP- AP16- 05. 040- S 40.4- R	40	32	120	15.5	4	APKT 16 04 □□

*Regular (R) = 120 mm

*Long (L) = 150 mm

*Extra Long (X) = 200 mm

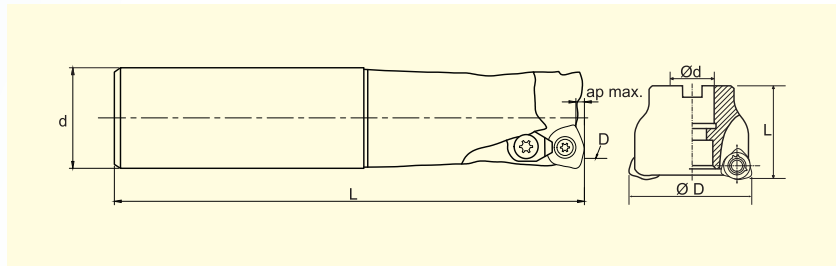


SERIES CODE: EMP 06

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	a _p max	Z	Type of coupling	Suitable Insert Code
EMP- AP11- 06. 050- A 22.6	50	22	63	10.5	6	A	APKT 11 35 □□
EMP- AP11- 06. 063- A 22.8	63	22	63	10.5	8	A	APKT 11 35 □□
EMP- AP11- 06. 080- A 27.8	80	27	70	10.5	8	A	APKT 11 35 □□
EMP- AP16- 06. 050- A 22.5	50	22	80	15.5	5	A	APKT 16 04 □□
EMP- AP16- 06. 063- A 22.6	63	22	63	15.5	6	A	APKT 16 04 □□
EMP- AP16- 06. 080- A 27.7	80	27	63	15.5	7	A	APKT 16 04 □□
EMP- AP16- 06. 100- B 32.8	100	32	70	15.5	8	B	APKT 16 04 □□
EMP- AP16- 06. 125- B 40.10	125	40	70	15.5	10	B	APKT 16 04 □□
EMP- AP16- 06. 160- B 40.10	160	40	80	15.5	10	B	APKT 16 04 □□

HIGH FEED MILING INSERT

SERIES CODE: HFR 01



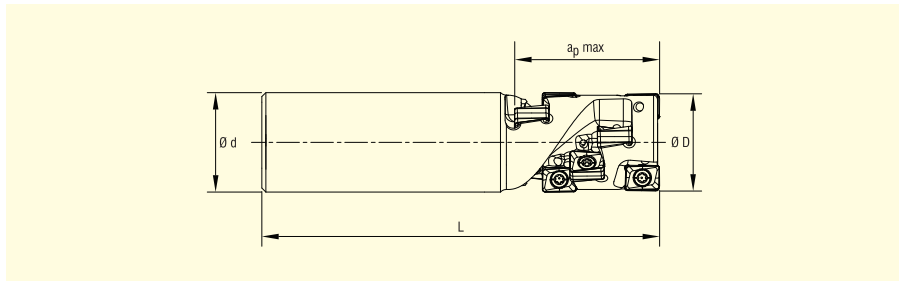
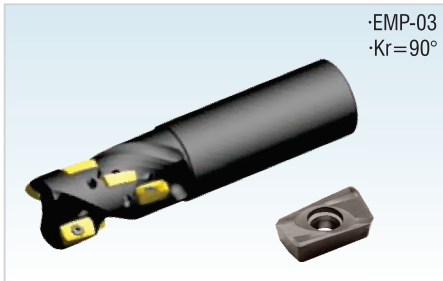
ITEM CODE	Dimension					Suitable Insert Code
	D	d	L	ap max.	Z	
HFR- J006- 01. 016- S 16.2- R	16	16	120	1	2	JOMW 06 T2 15 - JT 7370
HFR- J006- 01. 016- S 16.2- L	16	16	150	1	2	
HFR- J006- 01. 016- S 16.2- X	16	16	200	1	2	
HFR- J006- 01. 020- S 20.2- R	20	20	120	1	3	
HFR- J006- 01. 020- S 20.2- L	20	20	150	1	3	
HFR- J008- 01. 016- S 16.2- R	16	16	120	1.5	2	JOMW 08 03 20 - JT 7370
HFR- J008- 01. 016- S 16.2- L	16	16	150	1.5	2	
HFR- J008- 01. 020- S 20.2- R	20	20	120	1.5	3	
HFR- J008- 01. 020- S 20.2- L	20	20	150	1.5	3	
HFR- J008- 01. 025- S 25.2- R	25	25	120	1.5	3	
HFR- J008- 01. 025- S 25.2- L	25	25	150	1.5	3	JDMW 09 T3 20 - JT 7370
HFR- JD09- 01. 020- S 20.2- R	20	20	120	2	3	
HFR- JD09- 01. 020- S 20.2- L	20	20	150	2	3	
HFR- JD09- 01. 025- S 25.2- R	25	25	120	2	3	
HFR- JD09- 01. 025- S 25.2- L	25	25	150	2	3	
HFR- JD09- 01. 032- S 32.2- R	32	32	120	2	3	
HFR- JD09- 01. 032- S 32.2- L	32	32	150	2	3	

*Extra Long (X) = 200 mm available on request

SERIES CODE: HFR 03

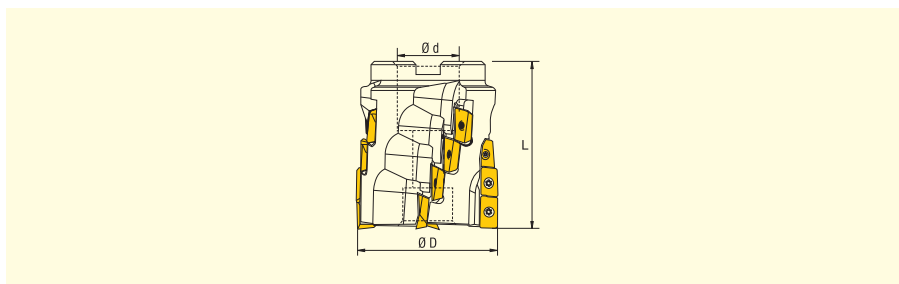
ITEM CODE	Dimension					Suitable Insert Code
	D	d	L	ap max.	Z	
HFR- JD09- 03. 050 A 22.5	50	22	50	1.00	5	JDMW 09 T3 20 - JT 7370
HFR- JD09- 03. 052 A 22.5	50	22	50	1.00	5	
HFR- JD12- 03. 050 A 22.4	50	22	50	1.50	4	JDMW 12 04 20 - JT 7370
HFR- JD12- 03. 052 A 22.4	50	22	50	1.50	4	
HFR- JD12- 03. 063 A 22.5	63	22	50	1.50	5	
HFR- JD12- 03. 080 A 27.6	80	27	50	1.50	6	
HFR- JD12- 03. 100 A 32.7	100	32	63	1.50	7	
HFR- JD14- 03. 063 A 22.3	63	22	50	2.00	3	JDMW 14 05 20 - JT 7370
HFR- JD14- 03. 080 A 27.4	80	27	50	2.00	4	
HFR- JD14- 03. 100 A 32.5	100	32	63	2.00	5	
HFR- JD14- 03. 125 A 40.5	125	40	63	2.00	5	
HFR- JD14- 03. 160 A 40.6	160	40	63	2.00	6	

MILLING HOLDER



SERIES CODE: EMP 03

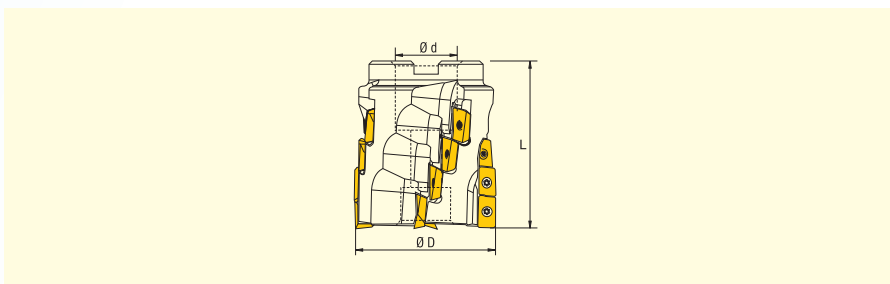
ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	a _p max	Z	Number of insert	Suitable Insert Code
EMP- AP11- 03. 016- A 16.8- R	16	16	120	39	2	8	APMT 11 35 □□
EMP- AP11- 03. 020- A 20.8- R	20	20	120	39	2	8	APMT 11 35 □□
EMP- AP16- 03. 020- A 20.14- R	20	20	120	58	2	14	APMT 16 04 □□
EMP- AP16- 03. 025- A 25.14- R	25	25	120	58	2	14	APMT 16 04 □□
EMP- AP16- 03. 032- A 32.14- R	32	32	120	58	2	14	APMT 16 04 □□
EMP- AP16- 03. 040- B 40.14- R	40	40	120	58	2	14	APMT 16 04 □□



SERIES CODE: EMP 04

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	a _p max	Z	Number of insert	Suitable Insert Code
EMP- AP11- 04. 050- A 22.16- R	50	22	58	39	4	16	APMT 11 35 □□
EMP- AP11- 04. 063- A 27.16- R	63	27	58	39	4	16	APMT 11 35 □□
EMP- AP11- 04. 080- A 32.20- R	80	32	63	39	5	20	APMT 11 35 □□
EMP- AP11- 04. 100- B 40.24- R	100	40	63	39	6	24	APMT 11 35 □□

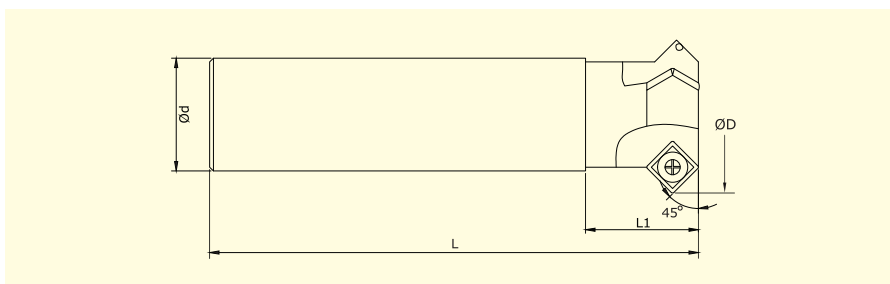
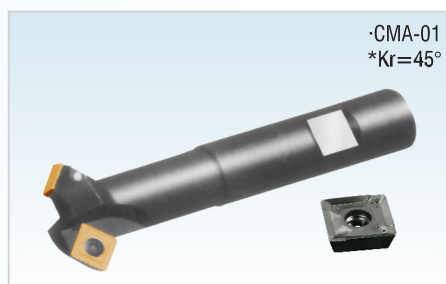
MILLING HOLDER



SERIES CODE: EMP 04

ITEM CODE	DIMENSIONS (mm)						
	Ø D	Ø d	L	a _p max	Z	Number of insert	Suitable Insert Code
EMP- AP11- 04. 050- A 22.16- R	50	22	58	39	4	16	APKT 11 35 □□
EMP- AP11- 04. 063- A 27.16- R	63	27	58	39	4	16	APKT 11 35 □□
EMP- AP11- 04. 080- A 32.20- R	80	32	63	39	5	20	APKT 11 35 □□
EMP- AP11- 04. 100- B 40.24- R	100	40	63	39	6	24	APKT 11 35 □□

INSERTED CHAMFER ENDMILL

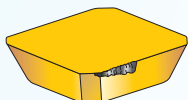
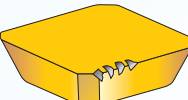


SERIES CODE: CMA 01

ITEM CODE	DIMENSIONS (mm)					
	Ø D	Ø d	L	L ₁	Z	Suitable Insert Code
CMA-SP09-01 16-S16.1-R	16	16	100	40	1	SPMT 09 T3 □□
CMA-SP09-01 20-S16.2-R	20	16	100	40	2	SPMT 09 T3 □□
CMA-SP09-01 25-S20.2-R	25	20	120	50	2	SPMT 09 T3 □□
CMA-SP12-01 32-S20.2-R	32	20	120	50	2	SPMT 12 04 □□
CMA-SP12-01 32-S25.2-R	32	25	120	50	2	SPMT 12 04 □□
CMA-SP12-01 40-S25.3-R	40	25	120	50	3	SPMT 12 04 □□
CMA-SP12-01 40-S32.3-L	40	32	150	60	3	SPMT 12 04 □□
CMA-SP12-01 50-S32.3-R	50	32	150	60	3	SPMT 12 04 □□

*Kr = 60° also available on request.

TROUBLESHOOTING - MILLING

	Problem	Cause	Remedy
	Flank wear in insert	improper cutting conditions	decrease cutting speed use appropriate coolant grade
		improper cutting edge geometry	select suitable / harder insert grade select appropriate chip breaker
	Chip welding / Edge built-up	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	increase cutting speed increase feed rate use appropriate coolant grade
	Chipping or Fracturing of cutting edge	improper cutting edge geometry run-out in work-piece	select appropriate chip breaker eliminate workpiece run-out
		improper cutting conditions	decrease feed rate decrease depth of cut increase clamping rigidity of tool & workpiece minimize holder overhang
	Notch wear in insert	improper cutting conditions	decrease cutting speed increase feed rate increase depth of cut use climb milling
			Poor surface finish
	Irregular or non-parallel surface	low rigidity of tool or workpiece	
			Vibration and/or Chattering
	Chip jamming / Poor chip disposal	improper cutting edge geometry	
		improper cutting conditions	use appropriate coolant grade decrease no of teeth / inserts

RECOMMENDED PARAMETERS JOMW INSERT (HFR SERIES)

Material Group	Material	Hardness Brinell HB	Cutting Speed V_c m/min	Feed per Tooth (f) (mm / tooth)			
				Ø16	Ø20	Ø25	Ø32
P	1 Mild Steel	≤ 180 HB	170	0.6	0.8	1.0	1.2
	2 Carbon Steel, Alloy Steel	180-280 HB	150	0.6	0.8	1.0	1.4
	3 Carbon Steel, Alloy Steel	280-350 HB	130	0.6	0.8	1.0	1.4
	4 Alloy Tool Steel	≤ 350 HB	130	0.6	0.8	1.0	1.4
	5 Pre-hardened Steel	35-45 HRC	130	0.5	0.6	0.8	1.2
M	6 Stainless Steel	≤ 270 HB	140	0.5	0.6	0.8	1.0
K	7 Cast Iron	Tensile Strength ≤ 350 MPa	150	0.8	1.0	1.2	1.4
	8 Ductile Cast Iron	Tensile Strength ≤ 800 MPa	150	0.6	0.8	1.0	1.2
S	9 Heat Resistant Alloys	≤ 350 HB	30	0.2	0.3	0.4	0.6
	10 Titanium Alloy		50	0.1	0.2	0.3	0.3
H	11 Hardened Steel	≤ 60 HRc	70	0.3	0.4	0.6	0.8



PM KNSH



U-DRILL

NOMENCLATURE

U-DRILL



1. TOOL TYPE

UD = U-Drill

2. FLUTE LENGTH

2 = 2 x D

3 = 3 x D

4 = 4 x D

5 = 5 x D

8 = 8 x D

3. EFFECTIVE DRILL DIAMETER

160 = Ø16.0 mm

185 = Ø18.5 mm

250 = Ø25.0 mm

4. SHANK DIAMETER

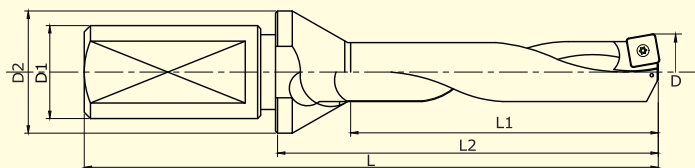
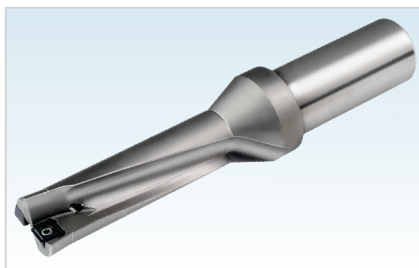
200 = Ø20.0 mm

250 = Ø25.0 mm

320 = Ø32.0 mm

5. COOLANT TYPE

TC = Through Coolant



ITEM CODE	Dimension (mm)							Suitable Insert Code
	D	L x D	D1	D2	L1	L2	L	
UD2 160.200	16.0	2	20	25	37	62	118	SPMG 05 02 04 WCGX 03 02 08
UD3 160.200		3	20	25	53	78	134	
UD2 165.200	16.5	2	20	25	38	63	119	SPMG 05 02 04 WCGX 03 02 08
UD3 165.200		3	20	25	55	80	136	
UD3 170.200	17.0	3	20	25	56	81	137	SPMG 06 02 04 WCGX 03 02 08
UD2 175.250	17.5	2	25	32	40	65	121	
UD3 175.250		3	25	32	58	83	139	
UD4 175.250	4	25	32	72	93	149	SPMG 06 02 04 WCGX 03 02 08	
UD2 180.250	18.0	2	25	32	41	66		122
UD3 180.250		3	25	32	59	84	140	
UD4 180.250	4	25	32	72	93	149	SPMG 06 02 04 WCGX 03 02 08	
UD2 185.250	18.5	2	25	32	42	67		123
UD3 185.250		3	25	32	61	86	142	
UD4 185.250	4	25	32	76	97	153	SPMG 06 02 04 WCGX 03 02 08	
UD2 190.250	19.0	2	25	32	43	68		124
UD3 190.250		3	25	32	62	87	143	
UD4 190.250	4	25	32	76	97	153	SPMG 06 02 04 WCGX 03 02 08	
UD5 190.250	5	25	32	100	125	181		
UD2 200.250	20.0	2	25	32	45	70	126	SPMG 06 02 04 WCGX 04 02 08
UD3 200.250		3	25	32	65	90	146	
UD4 200.250	4	25	32	80	103	159	SPMG 06 02 04 WCGX 04 02 08	
UD5 200.250	5	25	32	105	130	186		
UD2 210.250	21.0	2	25	32	47	72	128	SPMG 06 02 04 WCGX 04 02 08
UD3 210.250		3	25	32	68	93	149	
UD4 210.250	4	25	32	84	107	163	SPMG 06 02 04 WCGX 04 02 08	
UD5 210.250	5	25	32	110	135	191		
UD2 220.250	22.0	2	25	32	49	74	130	SPMG 07 T3 08 WCGX 04 02 08
UD3 220.250		3	25	32	71	96	152	
UD4 220.250	4	25	32	88	111	167	SPMG 07 T3 08 WCGX 04 02 08	
UD5 220.250	5	25	32	115	140	196		
UD2 230.250	23.0	2	25	32	51	76	132	SPMG 07 T3 08 WCGX 04 02 08
UD3 230.250		3	25	32	74	99	155	
UD4 230.250	4	25	32	92	117	173	SPMG 07 T3 08 WCGX 05 03 08	
UD5 230.250	5	25	32	120	145	201		
UD2 240.250	24.0	2	25	32	53	78	134	SPMG 07 T3 08 WCGX 05 03 08
UD3 240.250		3	25	32	77	102	158	
UD4 240.250	4	25	32	96	112	178	SPMG 07 T3 08 WCGX 05 03 08	
UD5 240.250	5	25	32	125	150	206		
UD2 250.250	25.0	2	25	32	55	80	140	SPMG 07 T3 08 WCGX 05 03 08
UD3 250.250		3	25	32	80	105	165	
UD4 250.250	4	25	32	100	127	183	SPMG 07 T3 08 WCGX 05 03 08	
UD5 250.250	5	25	32	130	155	215		

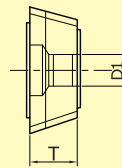
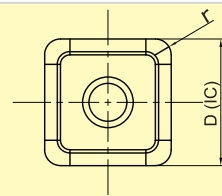
U-DRILL

ITEM CODE	Dimension (mm)							Suitable Insert Code
	D	L x D	D1	D2	L1	L2	L	
UD2 260.320	26.0	2	32	42	57	82	142	SPMG 09 04 08 WCGX 05 03 08
UD3 260.320		3	32	42	83	108	168	
UD4 260.320		4	32	42	104	131	187	
UD5 260.320		5	32	42	135	160	220	
UD8 260.320		8	32	42	213	238	298	
UD2 270.320	27.0	2	32	42	59	84	144	SPMG 09 04 08 WCGX 05 03 08
UD3 270.320		3	32	42	86	111	171	
UD4 270.320		4	32	42	108	135	191	
UD5 270.320		5	32	42	140	165	225	
UD8 270.320		8	32	42	221	246	306	
UD2 280.320	28.0	2	32	42	61	86	146	SPMG 09 04 08 WCGX 05 03 08
UD3 280.320		3	32	42	89	114	174	
UD4 280.320		4	32	42	112	140	196	
UD5 280.320		5	32	42	145	170	230	
UD8 280.320		8	32	42	229	254	314	
UD2 290.320	29.0	2	32	42	63	88	148	SPMG 09 04 08 WCGX 05 03 08
UD3 290.320		3	32	42	92	117	177	
UD4 290.320		4	32	42	116	114	200	
UD5 290.320		5	32	42	150	175	235	
UD8 290.320		8	32	42	237	262	322	
UD2 300.320	30.0	2	32	42	65	90	150	SPMG 09 04 08 WCGX 06 T3 08
UD3 300.320		3	32	42	95	120	180	
UD4 300.320		4	32	42	120	151	211	
UD5 300.320		5	32	42	155	180	240	
UD8 300.320		8	32	42	245	270	330	
UD2 310.400	31.0	2	40	50	67	92	152	SPMG 09 04 08 WCGX 06 T3 08
UD3 310.400		3	40	50	98	123	183	
UD4 310.400		4	40	50	124	156	216	
UD5 310.400		5	40	50	160	185	245	
UD8 310.400		8	40	50	253	278	338	
UD2 320.400	32.0	2	40	50	69	94	162	SPMG 11 04 08 WCGX 06 T3 08
UD3 320.400		3	40	50	101	126	194	
UD4 320.400		4	40	50	128	160	220	
UD5 320.400		5	40	50	165	190	258	
UD8 320.400		8	40	50	261	286	346	
UD2 330.400	33.0	2	40	50	71	96	164	SPMG 11 04 08 WCGX 06 T3 08
UD3 330.400		3	40	50	104	129	197	
UD4 330.400		4	40	50	132	165	225	
UD5 330.400		5	40	50	170	195	263	
UD8 330.400		8	40	50	269	294	354	
UD2 340.400	34.0	2	40	50	73	98	166	SPMG 11 04 08 WCGX 06 T3 08
UD3 340.400		3	40	50	107	132	200	
UD4 340.400		4	40	50	136	169	229	
UD5 340.400		5	40	50	175	200	268	
UD8 340.400		8	40	50	277	302	362	
UD2 350.400	35.0	2	40	50	75	100	168	SPMG 11 04 08 WCGX 06 T3 08
UD3 350.400		3	40	50	110	135	203	
UD4 350.400		4	40	50	140	174	234	
UD5 350.400		5	40	50	180	205	273	
UD8 350.400		8	40	50	285	310	370	

U-DRILL INSERT

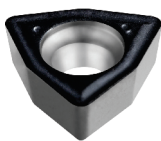
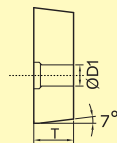
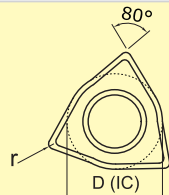


SPMG



ITEM CODE	DIMENSIONS			
	D (IC)	T	D1	r
SPMG 05 02 04 - CM1904	5.56	2.38	2.5	0.4
SPMG 06 02 04 - CM1904	6.35	2.38	2.8	0.4
SPMG 07 T3 08 - CM1904	7.94	3.97	2.8	0.8
SPMG 09 04 08 - CM1904	9.8	4.3	4.1	0.8
SPMG 11 04 08 - CM1904	11.5	4.76	4.4	0.8
SPMG 14 05 12 - CM1904	14.3	5.56	5.5	1.2

WCGX

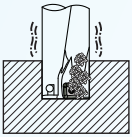
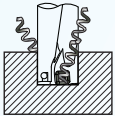

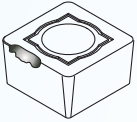
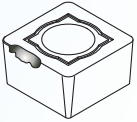







ITEM CODE	DIMENSIONS			
	D (IC)	T	D1	r
WCGX 03 02 04 - CM1904	5.56	2.38	2.5	0.4
WCGX 04 02 04 - CM1904	6.35	2.38	2.8	0.4
WCGX 05 03 08 - CM1904	7.94	3.18	3.4	0.8
WCGX 06 T3 08 - CM1904	9.525	3.97	4.4	0.8
WCGX 08 04 08 - CM1904	12.8	4.76	5.5	0.8

RECOMMENDED PARAMETERS U-DRILL

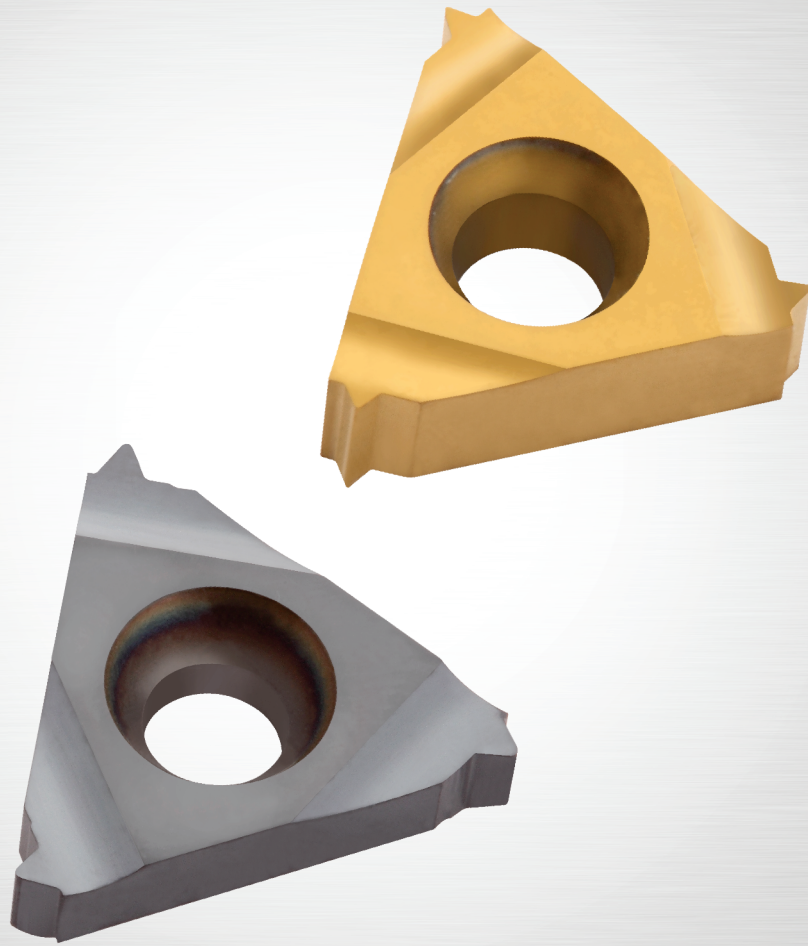
Material Group		Material	Hardness Brinell HB	Cutting Speed V_c m/min	Feed Rate f per Revolution (mm / r)		
					$\varnothing 14 \sim \varnothing 20$	$\varnothing 20.1 \sim \varnothing 25$	$\varnothing 25.1 \sim \varnothing 30$
P	1	Mild Steel	≤ 180 HB	200 (150~300)	0.06 (0.03~0.09)	0.07 (0.04~0.10)	0.08 (0.06~0.10)
	2	Carbon Steel	180-280 HB	150 (120~180)	0.08 (0.05~0.10)	0.09 (0.06~0.11)	0.11 (0.08~0.14)
	3	Alloy Steel	180-280 HB	150 (120~180)	0.07 (0.04~0.09)	0.08 (0.06~0.11)	0.10 (0.07~0.14)
M	4	Stainless Steel	≤ 200 HB	120 (90~140)	0.04 (0.02~0.07)	0.05 (0.03~0.08)	0.07 (0.04~0.09)
K	5	Cast Iron	Tensile Strength ≤ 350 MPa	150 (120~180)	0.12 (0.09~0.15)	0.15 (0.10~0.18)	0.18 (0.14~0.23)
	6	Ductile Cast Iron	Tensile Strength ≤ 450 MPa	150 (120~180)	0.10 (0.07~0.13)	0.13 (0.09~0.16)	0.15 (0.10~0.18)
N	7	Aluminium Alloy	≤ 90 HB	210 (170~250)	0.11 (0.06~0.14)	0.13 (0.09~0.18)	0.15 (0.11~0.20)
S	8	Heat Resistant Alloys	≤ 250 HB	30 (20~45)	0.04 (0.02~0.07)	0.05 (0.03~0.08)	0.07 (0.04~0.09)
H	9	Hardened Steel	≤ 60 HRc	45 (30~60)	0.04 (0.02~0.07)	0.05 (0.03~0.08)	0.07 (0.04~0.09)

TROUBLESHOOTING - U-DRILL

	Problem	Cause	Remedy	
	Vibration	improper clamping of drill	check clamping of drill	
		improper clamping of work-piece	check clamping of work-piece	
		improper cutting conditions	Increase feed. In case of very soft material, reduce feed and increase speed. reduce cutting speed	
	Chip jamming due to long chips	improper cutting conditions	Increase feed. In case of very soft material, reduce feed and increase speed.	
		improper cutting edge geometry	choose a geometry with harder chipbreaking for lower feeds	
	Chip jamming due to short chips	insufficient coolant volume and/or pressure	increase coolant volume / pressure	
		improper cutting conditions	reduce cutting speed	
	Chipping or Fracture of Peripheral Insert	improper insert grade	choose a tougher grade choose a geometry with softer chipbreaking for higher feeds	
		improper cutting conditions	reduce entrance feed reduce feed reduce cutting speed	
			use of insert even after corner wear	change the corner of the insert before excess corner-wear
			Chipping or Fracture of Center Insert	improper clamping of drill
improper clamping of work-piece	check clamping of work-piece			
improper cutting conditions	reduce entrance feed increase feed reduce cutting speed			
	use of insert even after corner wear			change the corner of the insert before excess corner-wear
	Flank Wear on Peripheral Insert	improper cutting conditions	reduce cutting speed	
		insufficient coolant pressure	increase coolant pressure	
		improper insert grade	choose a more wear resistant grade	
	Poor Drill Hole Accuracy	insufficient coolant volume and/or pressure	increase coolant volume / pressure	
		improper cutting conditions	increase cutting speed	
		improper clamping of drill	check clamping of drill	
		improper clamping of work-piece	check clamping of work-piece	
		loose insert clamping screw	fasten insert clamping screw	
		drilling through non-flat surface	machine the non-flat surface before drilling	
	Poor Hole Surface Finish	improper cutting conditions	increase cutting speed reduce feed	
			insufficient coolant volume and/or pressure	increase coolant volume / pressure
			Rubbing Scratch On Drill Body Peripheri	chip jamming
improper clamping of work-piece	check clamping of work-piece			
fracturing of peripheral insert	change peripheral insert			
drilling through non-flat surface	machine the non-flat surface before drilling			
	Chattering	improper cutting conditions	reduce cutting speed increase feed	
			use of insert even after corner wear	change the corner of the insert before excess corner-wear
		improper clamping of work-piece	check clamping of work-piece	
		loose insert clamping screw	fasten insert clamping screw	



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THREADING INSERT

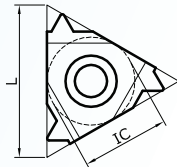
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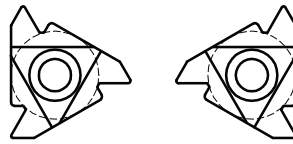
1. INSERT SIZE

L (mm)	IC
06	3.968 mm = 5/32"
08	4.762 mm = 3/16"
11	6.350 mm = 1/4"
16	9.525 mm = 3/8"
22	12.700 mm = 1/2"
27	15.875 mm = 5/8"



2. APPLICATION

E - External
I - Internal



E I

3. CUTTING DIRECTION

R - Right hand
L - Left hand
RL - Right / Left hand

4. PITCH

Full Profile (value by number)	
0.35 - 9.0	mm
72 - 2	tpi

Partial Profile (range by letter)		
	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
U	5.5 - 9.0	4.5 - 2.75
Q	5.5 - 6.0	4.5 - 4

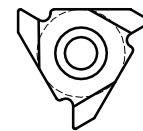
5. THREAD STANDARD

60°	Partial Profile 60°
55°	Partial Profile 55°
ISO	ISO Metric
UN	American UN
W	Withworth
BSPT	British BSPT
RD	Round DIN 405
TR	Taper DIN 103
ACME	ACME
ABOUT	American Buttress
NPT	NPT
BUT	API Buttress Casing

6. INSERT STYLE



U

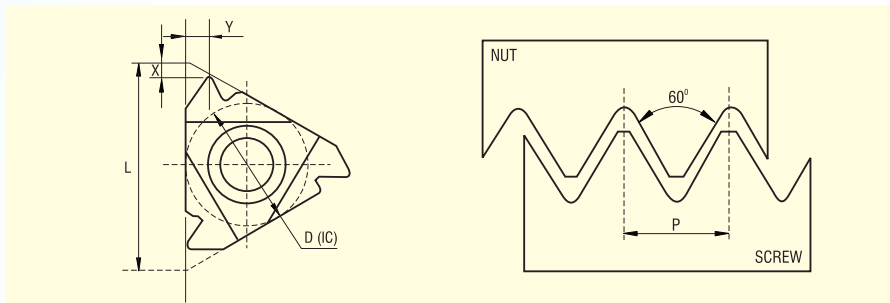
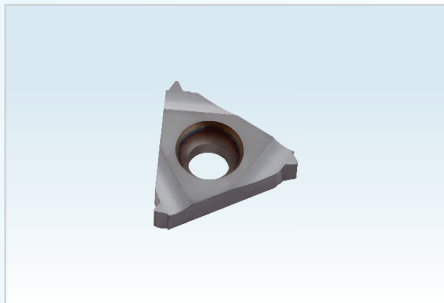


S

*S = Standard

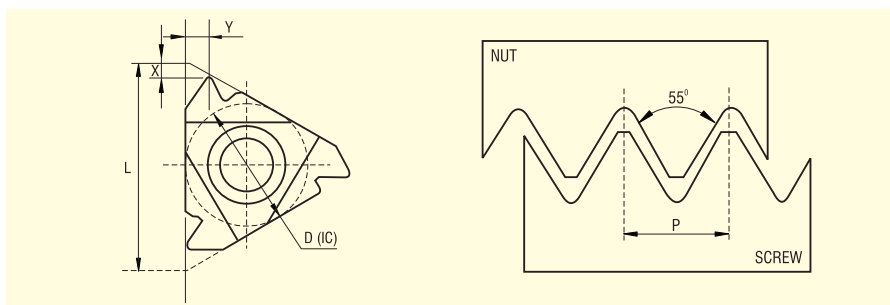
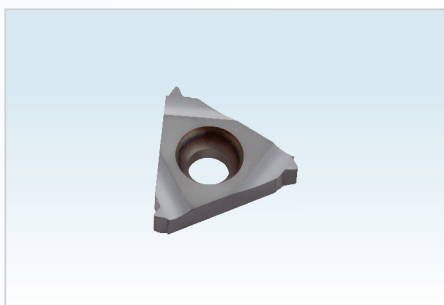
THREADING INSERT

PARTIAL PROFILE 60°



ITEM CODE		mm	TPI	D (IC) inch	L	X	Y	
RH	LH							
EXTERNAL	11 ER A60	11 EL A60	0.5~1.5	48~16	1/4"	11	0.8	0.9
	16 ER A60	16 EL A60	0.5~1.5	48~16	3/8"	16	0.8	0.9
	16 ER AG60	16 EL AG60	0.5~3.0	48~8			1.2	1.7
	16 ER G60	16 EL G60	1.75~3.0	14~8	1.2	1.7		
	22 ER N60	22 EL N60	3.5~5.0	7~5	1/2"	22	1.7	2.5
	27 ER Q60	27 EL Q60	5.5~6.0	4.5~4	5/8"	27	2.1	3.1
INTERNAL	11 IR A60	11 IL A60	0.5~1.5	48~16	1/4"	11	0.8	0.9
	16 IR A60	16 IL A60	0.5~1.5	48~16	3/8"	16	0.8	0.9
	16 IR AG60	16 IL AG60	0.5~3.0	48~8			1.2	1.7
	16 IR G60	16 IL G60	1.75~3.0	14~8	1.2	1.7		
	22 IR N60	22 IL N60	3.5~5.0	7~5	1/2"	22	1.7	2.5
	27 IR Q60	27 IL Q60	5.5~6.0	4.5~4	5/8"	27	1.8	2.7

PARTIAL PROFILE 55°



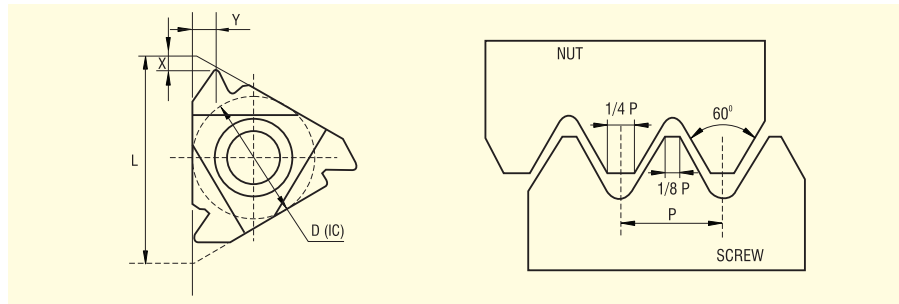
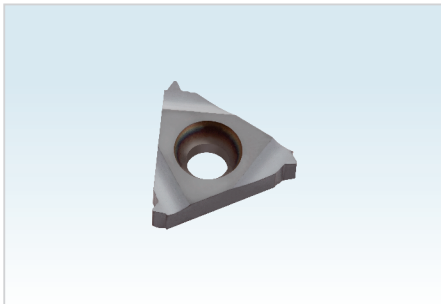
ITEM CODE		mm	TPI	D (IC) inch	L	X	Y	
RH	LH							
EXTERNAL	11 ER A55	11 EL A55	0.5~1.5	48~16	1/4"	11	0.8	0.9
	16 ER A55	16 EL A55	0.5~1.5	48~16	3/8"	16	0.8	0.9
	16 ER AG55	16 EL AG55	0.5~3.0	48~8			1.2	1.7
	16 ER G55	16 EL G55	1.75~3.0	14~8	1.2	1.7		
	22 ER N55	22 EL N55	3.5~5.0	7~5	1/2"	22	1.7	2.5
	27 ER Q55	27 EL Q55	5.5~6.0	4.5~4	5/8"	27	2.1	3.1
INTERNAL	11 IR A55	11 IL A55	0.5~1.5	48~16	1/4"	11	0.8	0.9
	16 IR A55	16 IL A55	0.5~1.5	48~16	3/8"	16	0.8	0.9
	16 IR AG55	16 IL AG55	0.5~3.0	48~8			1.2	1.7
	16 IR G55	16 IL G55	1.75~3.0	14~8	1.2	1.7		
	22 IR N55	22 IL N55	3.5~5.0	7~5	1/2"	22	1.7	2.5
	27 IR Q55	27 IL Q55	5.5~6.0	4.5~4	5/8"	27	1.8	2.7

*Exclusive grade for Stainless Steel:
Item Code: 16 ERM 100 ISO

THREADING INSERT



ISO METRIC FULL PROFILE

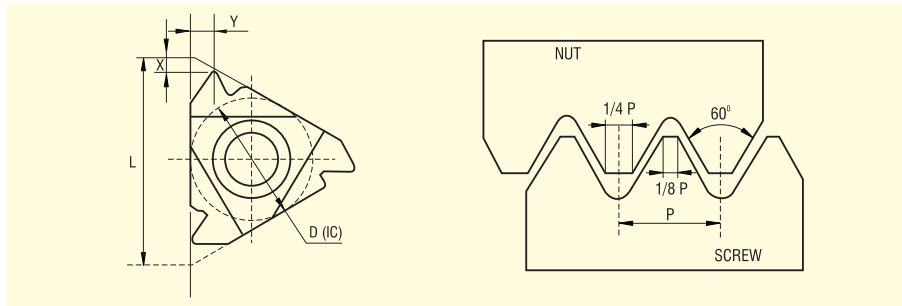
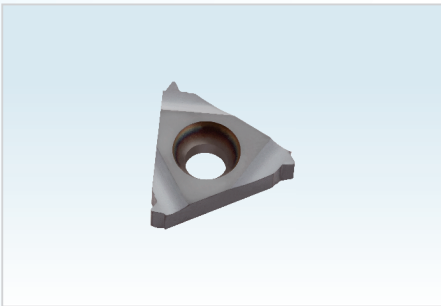


ITEM CODE		Pitch mm	D (IC) inch	L	X	Y	
RH	LH						
EXTERNAL	11 ER 050 ISO	11 EL 050 ISO	0.5	1/4"	11	0.6	0.6
	11 ER 075 ISO	11 EL 075 ISO	0.75			0.6	0.6
	11 ER 100 ISO	11 EL 100 ISO	1.0			0.7	0.7
	11 ER 125 ISO	11 EL 125 ISO	1.25			0.8	0.9
	11 ER 150 ISO	11 EL 150 ISO	1.5			0.8	1.0
	11 ER 175 ISO	11 EL 175 ISO	1.75			0.8	1.1
	16 ER 050 ISO	16 EL 050 ISO	0.5	3/8"	16	0.6	0.6
	16 ER 075 ISO	16 EL 075 ISO	0.75			0.6	0.7
	16 ER 100 ISO	16 EL 100 ISO	1.0			0.7	0.8
	16 ER 125 ISO	16 EL 125 ISO	1.25			0.8	0.9
	16 ER 150 ISO	16 EL 150 ISO	1.5			0.8	1.0
	16 ER 175 ISO	16 EL 175 ISO	1.75			0.9	1.2
	16 ER 200 ISO	16 EL 200 ISO	2.0			1.0	1.3
	16 ER 250 ISO	16 EL 250 ISO	2.5			1.1	1.5
	16 ER 300 ISO	16 EL 300 ISO	3.0			1.2	1.6
	22 ER 350 ISO	22 EL 350 ISO	3.5			1/2"	22
	22 ER 400 ISO	22 EL 400 ISO	4.0	1.6	2.3		
	22 ER 450 ISO	22 EL 450 ISO	4.5	1.7	2.4		
	22 ER 500 ISO	22 EL 500 ISO	5.0	1.7	2.5		

*Exclusive grade for Stainless Steel:
Item Code: 16 ERM 100 ISO

THREADING INSERT

ISO METRIC FULL PROFILE



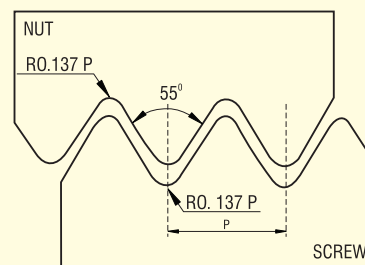
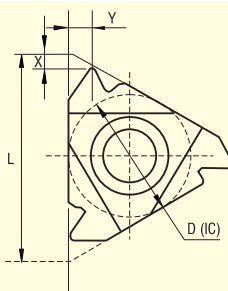
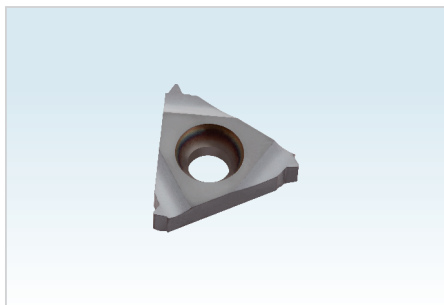
ITEM CODE		Pitch mm	D (IC) inch	L	X	Y	
RH	LH						
INTERNAL	11 IR 050 ISO	11 IL050 ISO	0.5	1/4"	11	0.6	0.6
	11 IR 075 ISO	11 IL075 ISO	0.75			0.6	0.6
	11 IR 100 ISO	11 IL100 ISO	1.0			0.6	0.7
	11 IR 125 ISO	11 IL125 ISO	1.25			0.8	0.9
	11 IR 150 ISO	11 IL150 ISO	1.5			0.8	1.0
	11 IR 175 ISO	11 IL175 ISO	1.75			0.9	1.1
	16 IR 050 ISO	16 IL 050 ISO	0.5	3/8"	16	0.6	0.6
	16 IR 075 ISO	16 IL 075 ISO	0.75			0.6	0.6
	16 IR 100 ISO	16 IL 100 ISO	1.0			0.6	0.7
	16 IR 125 ISO	16 IL 125 ISO	1.25			0.8	0.9
	16 IR 150 ISO	16 IL 150 ISO	1.5			0.8	1.0
	16 IR 175 ISO	16 IL 175 ISO	1.75			0.9	1.2
	16 IR 200 ISO	16 IL 200 ISO	2.0			1.0	1.3
	16 IR 250 ISO	16 IL 250 ISO	2.5			1.1	1.5
	22 IR 350 ISO	22 IL 350 ISO	3.5	1/2"	22	1.6	2.3
	22 IR 400 ISO	22 IL 400 ISO	4.0			1.6	2.3
	22 IR 450 ISO	22 IL 450 ISO	4.5			1.7	2.4
	22 IR 500 ISO	22 IL 500 ISO	5.0			1.7	2.5

*Exclusive grade for Stainless Steel:
Item Code: 16 ERM 100 ISO

THREADING INSERT



WHITWORTH FULL PROFILE

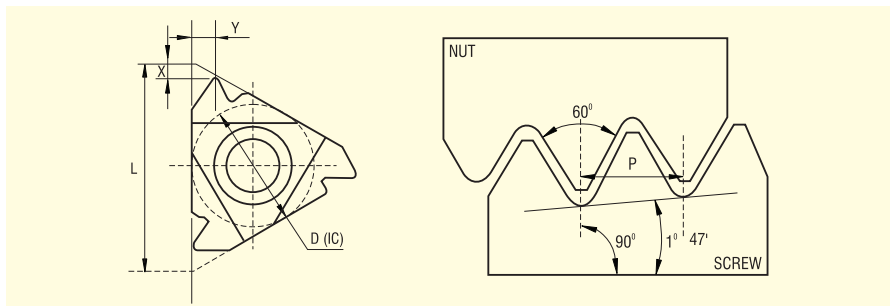
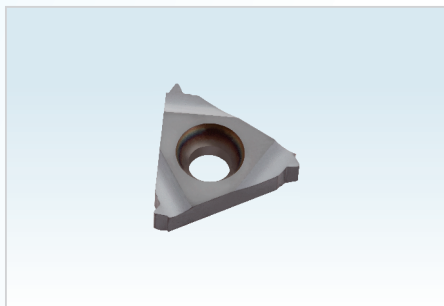


ITEM CODE		Pitch mm	D (IC) inch	L	X	Y	
RH	LH						
EXTERNAL	11 ER 28 W	11 EL 28 W	28	1/4"	11	0.6	0.7
	11 ER 26 W	11 EL 26 W	26			0.7	0.8
	11 ER 20 W	11 EL 20 W	20			0.8	0.9
	11 ER 19 W	11 EL 19 W	19			0.8	1.0
	11 ER 18 W	11 EL 18 W	18			0.8	1.0
	11 ER 16 W	11 EL 16 W	16			0.9	1.1
	11 ER 14 W	11 EL 14 W	14			1.0	1.2
	16 ER 28 W	16 EL 28 W	28	3/8"	16	0.6	0.7
	16 ER 26 W	16 EL 26 W	26			0.7	0.8
	16 ER 20 W	16 EL 20 W	20			0.8	0.9
	16 ER 19 W	16 EL 19 W	19			0.8	1.0
	16 ER 18 W	16 EL 18 W	18			0.8	0.9
	16 ER 16 W	16 EL 16 W	16			0.9	1.1
	16 ER 14 W	16 EL 14 W	14			1.0	1.2
	16 ER 12 W	16 EL 12 W	12			1.1	1.4
	16 ER 11 W	16 EL 11 W	11			1.1	1.5
	16 ER 10 W	16 EL 10 W	10			1.1	1.5
	16 ER 9 W	16 EL 9 W	9	1.2	1.5		
	16 ER 8 W	16 EL 8 W	8	1.2	1.7		
	22 ER 7 W	22 EL 7 W	7	1/2"	22	1.6	2.3
	22 ER 6 W	22 EL 6 W	6			1.6	2.3
	22 ER 5 W	22 EL 5 W	5			1.7	2.4
	27 ER 4.5 W	27 EL 4.5 W	4.5	5/8"	27	1.8	2.6
	27 ER 4 W	27 EL 4 W	4			2.0	2.9

*Exclusive grade for Stainless Steel:
Item Code: 16ERM 100 ISO

THREADING INSERT

NPT

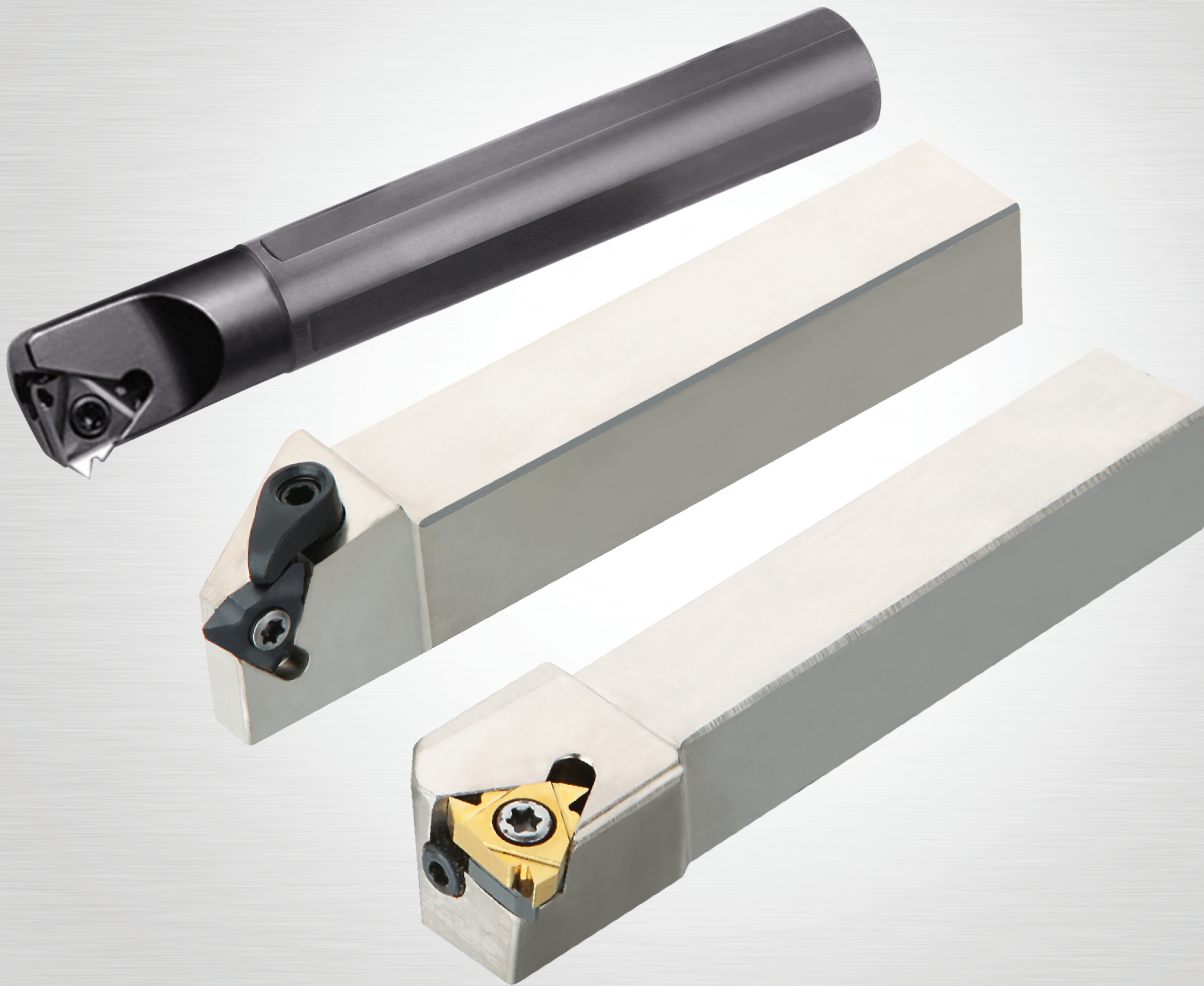


ITEM CODE		Pitch mm	D (IC) inch	L	X	Y	
RH	LH						
EXTERNAL	11 ER 27 NPT	11 EL 27 NPT	27	1/4"	11	0.7	0.8
	11 ER 18 NPT	11 EL 18 NPT	18			0.8	1.0
	11 ER 14 NPT	11 EL 14 NPT	14			0.8	1.0
	16 ER 27 NPT	16 EL 27 NPT	27	3/8"	16	0.7	8.0
	16 ER 18 NPT	16 EL 18 NPT	18			0.8	1.0
	16 ER 14 NPT	16 EL 14 NPT	14			0.9	1.2
	16 ER 11.5 NPT	16 EL 11.5 NPT	11.5			1.1	1.5
	16 ER 8 NPT	16 EL 8 NPT	8			1.2	1.8
INTERNAL	11 IR 27 NPT	11 IL 27 NPT	27	1/4"	11	0.7	0.8
	11 IR 18 NPT	11 IL 18 NPT	18			0.8	1.0
	11 IR 14 NPT	11 IL 14 NPT	14			0.8	1.0
	16 IR 27 NPT	16 IL 27 NPT	27	3/8"	16	0.7	0.8
	16 IR 18 NPT	16 IL 18 NPT	18			0.8	1.0
	16 IR 14 NPT	16 IL 14 NPT	14			0.9	1.2
	16 IR 11.5 NPT	16 IL 11.5 NPT	11.5			1.1	1.5
	16 IR 8 NPT	16 IL 8 NPT	8			1.2	1.8

*Exclusive grade for Stainless Steel:
Item Code: 16 ERM 100 ISO



PM **KNSH**



THREADING HOLDER

NOMENCLATURE

THREADING HOLDER



1. CLAMPING SYSTEM

C

C / TOP CLAMP

S

S / SCREW CLAMP

2. APPLICATION

- E - External Thread
- I - Internal Thread
- N - Nutral

3. CUTTING DIRECTION

R

Feed →

L

← Feed

4. SHANK HEIGHT

5. SHANK WIDTH

6. TOOL LENGTH

CODE	H	K	M	P	Q	R	S	T	U
LENGTH	100	125	150	170	180	200	250	300	350

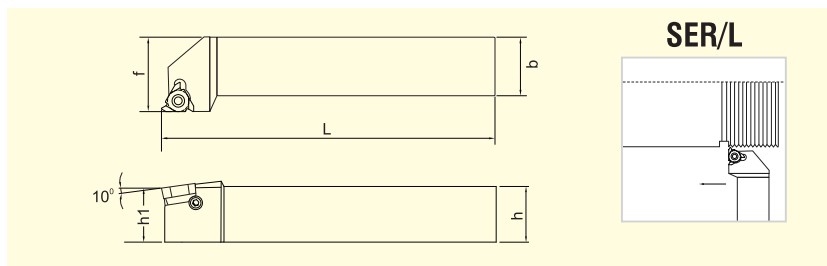
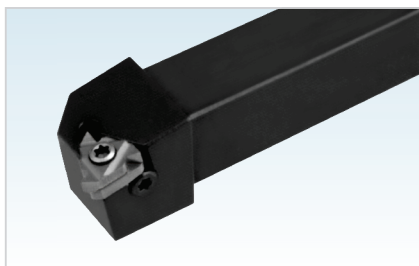
7. INSERT SIZE

CODE	11	16	22
TRIANGLE SIDE LENGTH	11	16	22
INSCRIBED CIRCLE	6.35	9.525	12.70

THREADING HOLDER

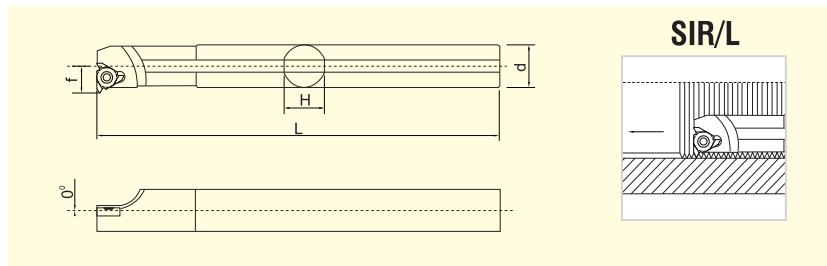


EXTERNAL



ITEM CODE	Dimension (mm)						Suitable Insert Code
	h	b	L	f	h1	L1	
SER/L 1212 H16	12	12	100	16	12	20	16 ER/L 16 CGE
SER/L 1616 H16	16	16	100	20	16	22	
SER/L 2020 K16	20	20	125	25	20	22	
SER/L 2525 M16	25	25	150	32	25	22	
SER/L 3232 P16	32	32	170	40	32	22	

INTERNAL



ITEM CODE	Dimension (mm)							Suitable Insert Code
	D min	D	H	L	L1	f	θ	
SIR/L 0010 K11	13	10	9	125	22	7.2	15°	11 IR/L 11CGI
SIR/L 0012 M11	15	12	11	150	22	8.5	15°	
SIR/L 0013 M16	16	16	15	150	32	10.2	17°	16 IR/L 16 CGI
SIR/L 0016 M16	19	16	15	150	40	11.7	15°	
SIR/L 0020 Q16	24	20	19	180	40	13.7	21°	
SIR/L 0025 R16	29	25	24	200	45	16.2	21°	
SIR/L 0032 S16	36	32	30	250	50	19.7	15°	
SIR/L 0040 T16	44	40	38	300	55	23.7	15°	
SIR/L 0050 U16	54	50	48	350	60	28.7	15°	

RECOMMENDED PARAMETERS THEADING INSERT

Material Group		Material	Hardness Brinell HB	Cutting Speed V _c m/min	Feed f mm/tooth	
P	1	Unalloyed steel	Medium carbon (C=0.25-0.55%)	150	80 - 140	0.03 - 0.07
	2	Low alloy steel (alloying elements ≤ 5%)	Non hardened	180	65 - 120	0.05 - 0.09
	3		Hardened	275	55 - 110	0.03 - 0.07
M	4	Stainless steel	Non hardened	200	65 - 120	0.03 - 0.07
	5		Austenitic	180	50 - 100	0.03 - 0.07
	6	Stainless steel Cast ferritic	Hardened	330	50 - 100	0.01 - 0.03
K	7	Malleable cast iron	Ferritic (short chips)	130	50 - 90	0.02 - 0.05
	8	Grey cast iron	Low tensile strength	180	50 - 90	0.03 - 0.07
	9		High tensile strength	260	40 - 70	0.03 - 0.05
	10	Nodular SG iron	Pearlitic	260	35 - 60	0.03 - 0.05
N	11	Aluminium alloys	Cast	75	80 - 150	0.07 - 0.15
	12		Cast & aged	90	50 - 100	0.05 - 0.1
	13	Copper and copper alloys	Brass	90	50 - 100	0.05 - 0.1
	14		Bronze and non leaded copper	10	40 - 80	0.3 - 0.08
S	15	High temperature alloys	Annealed (Nickel or Cobalt based)	250	10 - 20	0.01 - 0.03
	16	Titanium alloys	Pure 99.5 Ti	400 Rm	50 - 100	0.02 - 0.05
H	17	Extra hard steel	Hardened & tempered	45-50 HRc	15 - 40	0.05 - 0.1
	18			51-55 HRc	15 - 40	0.05 - 0.1

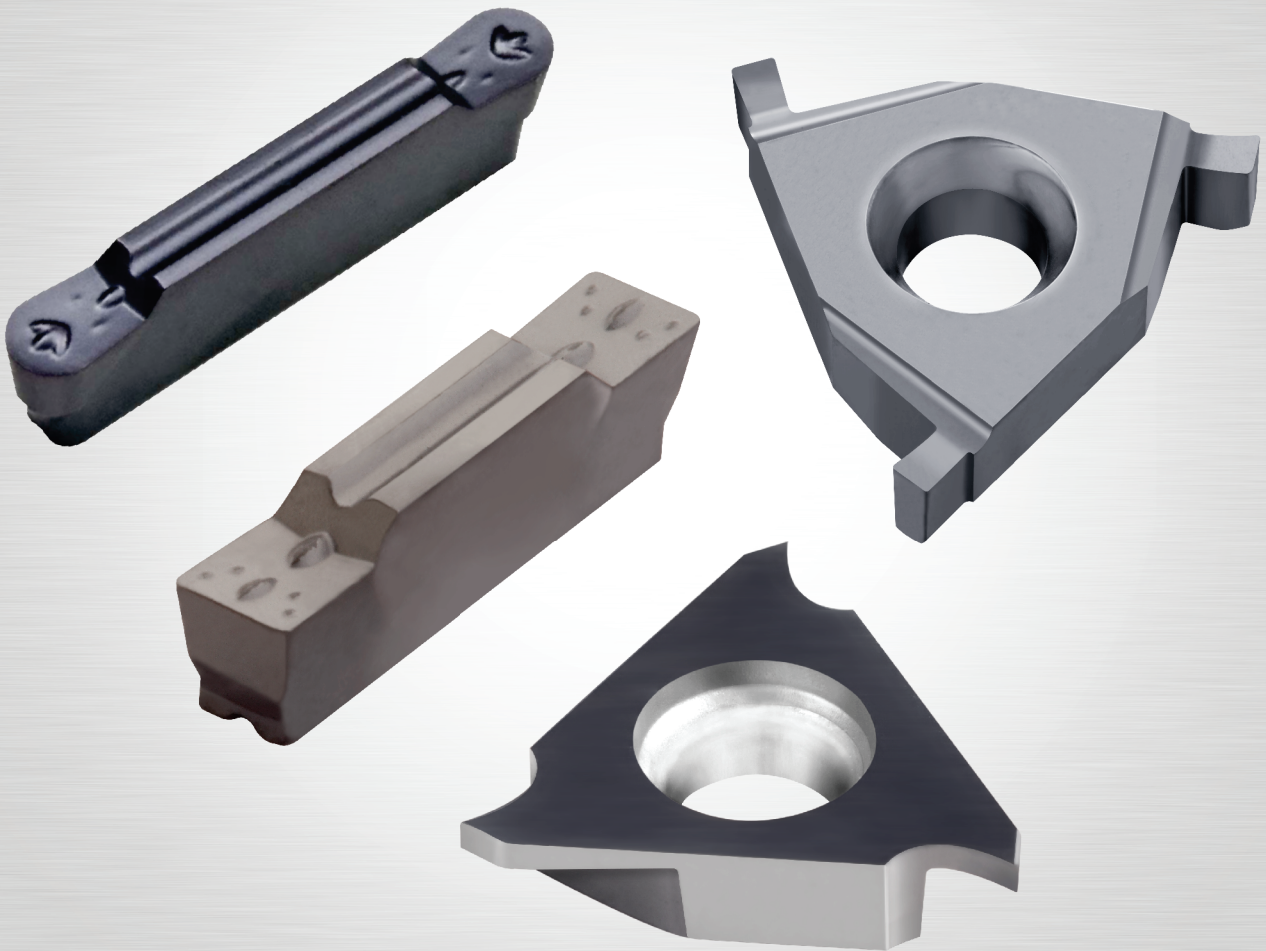
TROUBLESHOOTING - THREADING

	Problem	Cause	Remedy	
	Flank wear in insert	improper cutting edge geometry	select suitable / harder insert grade	
			select appropriate chip breaker	
		improper cutting conditions	select insert with bigger nose radius	
			decrease cutting speed	
	Chipping or fracturing of cutting edge	improper cutting conditions	increase cutting speed	
			increase clamping rigidity of tool & workpiece	
			minimize holder overhang	
		cutting resistance too high	decrease depth of cut	
	Plastic deformation in insert	improper cutting conditions	decrease cutting speed	
			increase number of passes	
			increase coolant flow pressure	
			check if the workpiece diameter is correct prior to cutting thread	
	Chip welding / Edge built-up	improper cutting edge geometry	select suitable / harder insert grade	
		improper cutting parameters	increase cutting speed	
			Poor tool life	decrease cutting speed
				too many passes causes abrasive wear
workpiece lead angle & tool lead angle do not match	check workpiece lead angle & tool lead angle			
	select appropriate shim			
	Poor surface finish	chip welding / chip jamming	increase coolant flow pressure	
			use appropriate coolant grade	
		improper cutting conditions	decrease cutting speed	
			decrease feed rate	
			decrease depth of cut	
			improve tool holder rigidity	
			increase clamping rigidity of tool & workpiece	
			set insert height at exactly 0 mm	
			minimize holder overhang	
			change shim to get correct angle of inclination	
Dimensional inaccuracy	incorrect tool clamping	set insert height at exactly 0 mm		
		increase clamping rigidity of tool & workpiece		
		minimize holder overhang		
	improper cutting conditions	decrease depth of cut		
	Vibration & noise	improper cutting conditions	decrease cutting speed	
			increase clamping rigidity of tool & workpiece	
			set insert height at exactly 0 mm	
			minimize holder overhang	
			decrease depth of cut	



PM KNSH

GROOVING INSERT



NOMENCLATURE

GROOVING INSERT



1. INSERT APPLICATION

GI - GROOVING

TGE - TRIANGULAR GROOVING - EXTERNAL

GR - ROUND

CGE - CIRCLIP GROOVING - EXTERNAL

PI - PARTING

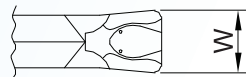
CGI - CIRCLIP GROOVING - INTERNAL

2. CUTTING EDGE TYPE

S - SINGLE CUTTING EDGE

D - DOUBLE CUTTING EDGE

3. CUTTING EDGE WIDTH OF INSERT



025 = 2.5 mm

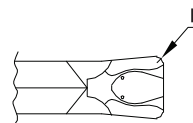
030 = 3.0 mm

040 = 4.0 mm

050 = 5.0 mm

060 = 6.0 mm

4. NOSE RADIUS



02 = 0.2 mm

03 = 0.3 mm

04 = 0.4 mm

08 = 0.8 mm

5. GRADE

B = Black Coated

G = Gold Coated

TX = Tough (Triangular)

GROOVING INSERT



ITEM CODE	DIMENSIONS			CUTTING DATA	
	W	r	L	Feed f mm/min	Cutting speed V_c m/min
DOUBLE ENDED GID 020 03 - B	2.0	0.3	17	0.11 (0.05-0.18)	130
GID 025 03 - B	2.5	0.3	17	0.11 (0.05-0.18)	130
GID 030 04 - B	3.0	0.4	22	0.11 (0.05-0.18)	130
GID 040 04 - B	4.0	0.4	22	0.12 (0.05-0.18)	130
GID 050 04 - B	5.0	0.4	22	0.13 (0.05-0.18)	130



ITEM CODE	DIMENSIONS			CUTTING DATA	
	W	r	L	Feed f mm/min	Cutting speed V_c m/min
DOUBLE ENDED GID 020 03 - G	2.0	0.3	17	0.11 (0.05-0.18)	140
GID 025 03 - G	2.5	0.3	17	0.11 (0.05-0.18)	140
GID 030 04 - G	3.0	0.4	22	0.11 (0.05-0.18)	140
GID 040 04 - G	4.0	0.4	22	0.12 (0.05-0.18)	140
GID 050 04 - G	5.0	0.4	22	0.13 (0.05-0.18)	140

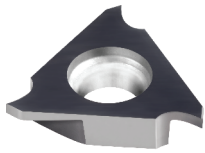
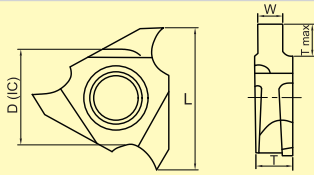


ITEM CODE	DIMENSIONS			CUTTING DATA	
	W	r	L	Feed f mm/min	Cutting speed V_c m/min
DOUBLE ENDED GRD 020 - B	2.0	1.0	16	0.11 (0.05-0.18)	130
GRD 030 - B	3.0	1.5	21	0.11 (0.05-0.18)	130
GRD 040 - B	4.0	2.0	21	0.12 (0.05-0.18)	130
GRD 050 - B	5.0	2.5	25	0.13 (0.05-0.18)	140

GROOVING INSERT



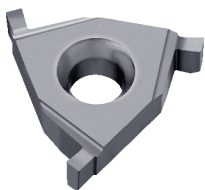
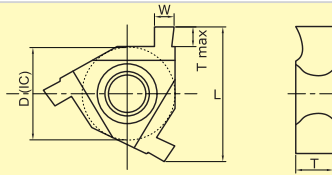
TGE



ITEM CODE	DIMENSIONS					CUTTING DATA	
	W	D (IC)	L	T max	T	Vc (m/min)	Feed (mm/rev)
16 TGE 070 - TX	0.70	3/8"	16	1.9	3.18	50~200	0.020~0.080
16 TGE 080 - TX	0.80	3/8"	16	1.9	3.18	50~200	0.020~0.080
16 TGE 090 - TX	0.90	3/8"	16	1.9	3.18	50~200	0.020~0.080
16 TGE 100 - TX	1.00	3/8"	16	2.3	3.18	50~200	0.020~0.080
16 TGE 110 - TX	1.10	3/8"	16	2.3	3.18	50~200	0.020~0.080
16 TGE 120 - TX	1.20	3/8"	16	2.3	3.18	50~200	0.020~0.080
16 TGE 150 - TX	1.50	3/8"	16	2.3	3.18	50~200	0.020~0.080

*Applicable holder: Refer P/116

CGE - EXTERNAL



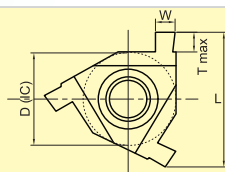
ITEM CODE	DIMENSIONS					CUTTING DATA	
	W	D (IC)	L	T max	T	Vc (m/min)	Feed (mm/rev)
08 CGE 080 - TX	0.80	3/16"	8	0.80	2.2	30~120	0.010~0.030
08 CGE 100 - TX	1.00	3/16"	8	0.80	2.2	30~120	0.010~0.030
11 CGE 100 - TX	1.00	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGE 120 - TX	1.20	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGE 130 - TX	1.30	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGE 140 - TX	1.40	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGE 150 - TX	1.50	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGE 200 - TX	2.00	1/4"	11	1.20	3.2	30~120	0.010~0.030
16 CGE 080 - TX	0.80	3/8"	16	1.40	3.65	30~120	0.010~0.030
16 CGE 100 - TX	1.00	3/8"	16	1.40	3.65	30~120	0.010~0.030
16 CGE 110 - TX	1.10	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGE 120 - TX	1.20	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGE 130 - TX	1.30	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGE 140 - TX	1.4	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGE 150 - TX	1.50	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGE 160 - TX	1.60	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 170 - TX	1.70	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 180 - TX	1.80	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 190 - TX	1.90	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 200 - TX	2.00	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 220 - TX	2.20	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGE 230 - TX	2.30	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGE 240 - TX	2.40	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGE 250 - TX	2.50	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGE 260 - TX	2.60	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 270 - TX	2.70	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 280 - TX	2.80	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 290 - TX	2.90	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGE 300 - TX	3.00	3/8"	16	2.00	3.65	30~120	0.010~0.030

*Refer page no. 105 for holder.

*Applicable holder: Refer P/105

GROOVING INSERT

CGI - INTERNAL



ITEM CODE	DIMENSIONS					CUTTING DATA	
	W	D (IC)	L	T max	T	Vc (m/min)	Feed (mm/rev)
08 CGI 080 - TX	0.80	3/16"	8	0.80	2.2	30~120	0.010~0.030
08 CGI 100 - TX	1.00	3/16"	8	0.80	2.2	30~120	0.010~0.030
11 CGI 100 - TX	1.00	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGI 120 - TX	1.20	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGI 130 - TX	1.30	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGI 140 - TX	1.40	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGI 150 - TX	1.50	1/4"	11	1.20	3.2	30~120	0.010~0.030
11 CGI 200 - TX	2.00	1/4"	11	1.20	3.2	30~120	0.010~0.030
16 CGI 080 - TX	0.80	3/8"	16	1.40	3.65	30~120	0.010~0.030
16 CGI 100 - TX	1.00	3/8"	16	1.40	3.65	30~120	0.010~0.030
16 CGI 110 - TX	1.10	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGI 120 - TX	1.20	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGI 130 - TX	1.30	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGI 140 - TX	1.4	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGI 150 - TX	1.50	3/8"	16	1.80	3.65	30~120	0.010~0.030
16 CGI 160 - TX	1.60	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 170 - TX	1.70	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 180 - TX	1.80	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 190 - TX	1.90	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 200 - TX	2.00	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 220 - TX	2.20	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGI 230 - TX	2.30	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGI 240 - TX	2.40	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGI 250 - TX	2.50	3/8"	16	2.20	3.65	30~120	0.010~0.030
16 CGI 260 - TX	2.60	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 270 - TX	2.70	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 280 - TX	2.80	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 290 - TX	2.90	3/8"	16	2.00	3.65	30~120	0.010~0.030
16 CGI 300 - TX	3.00	3/8"	16	2.00	3.65	30~120	0.010~0.030

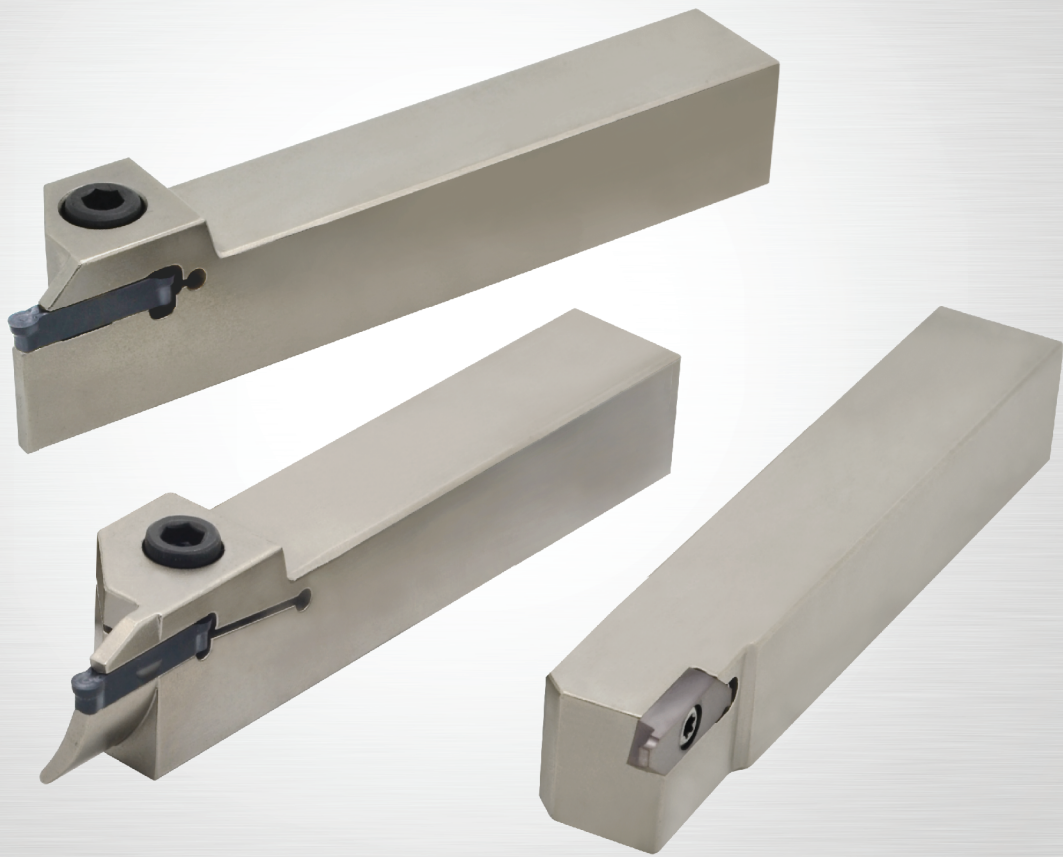


*Applicable holder: Refer P/105



PM KNSH

GROOVING HOLDER



NOMENCLATURE

GROOVING HOLDER



1. GROOVING HOLDER

- 1. GH - GROOVING HOLDER
- 2. TGH - TRIANGULAR GROOVING HOLDER

2. MACHINING MODE

- 1. EXTERNAL
- 2. INTERNAL
- 3. END FACE

3. HAND OF TOOL

- 1. R - RIGHT HAND
- 2. L - LEFT HAND
- 3. N - NATURAL

4. SHANK HEIGHT

- 1. EXTERNAL - HEIGHT OF SHANK
- 2. INTERNAL - DIAMETER OF SHANK

5. SHANK WIDTH

- 1. EXTERNAL - WIDTH OF SHANK

6. TOOL LENGTH

- 1. EXTERNAL - WIDTH OF SHANK

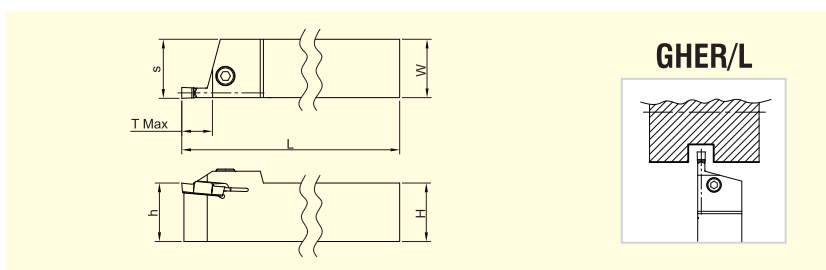
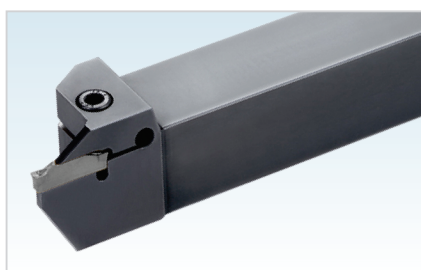
E = 70 mm	H = 150 mm
P = 80 mm	P = 170 mm
H = 100 mm	R = 200 mm
K = 125 mm	S = 250 mm

7. INSERT WIDTH

- 10 = 1.00 mm
- 20 = 2.00 mm
- 30 = 3.00 mm
- 40 = 4.00 mm
- 50 = 5.00 mm

8. MAX CUTTING DEPTH (MM)

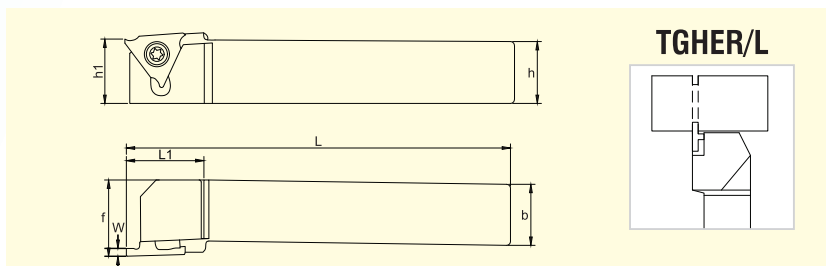
EXTERNAL



ITEM CODE	Dimension (mm)					Suitable Insert Code
	H=h	W	L	S	T max	
GHER/L 1212 H - 20 15	12	12	100	14.25	14.5	GID 020 GRD 020
GHER/L 1616 H - 20 15	16	16	100	16.25	14.5	
GHER/L 2020 K - 20 15	20	20	125	20.25	14.5	
GHER/L 2525 M - 20 15	25	25	150	25.25	14.5	GID 025 GRD 025
GHER/L 1616 H - 25 17	16	16	100	16.30	16.5	
GHER/L 2020 K - 25 17	20	20	125	20.30	16.5	
GHER/L 2525 M - 25 17	25	25	150	25.30	16.5	GID 030 GRD 030
GHER/L 1616 H - 30 19	16	16	100	16.35	18.5	
GHER/L 2020 K - 30 18	20	20	125	20.4	18.0	
GHER/L 2020 K - 30 10	20	20	125	20.4	10.0	GID 040 GRD 040
GHER/L 2525 M - 30 18	25	25	150	25.4	18.0	
GHER/L 2525 M - 30 10	25	25	150	25.4	10.0	
GHER/L 3232 P - 30 18	32	32	170	32.4	18.0	GID 050 GRD 050
GHER/L 3232 P - 30 10	32	32	170	32.4	10.0	
GHER/L 2020 K - 40 18	20	20	125	20.4	18.0	
GHER/L 2020 K - 40 10	20	20	125	20.4	10.0	GID 050 GRD 050
GHER/L 2525 M - 40 18	25	25	150	25.4	18.0	
GHER/L 2525 M - 40 10	25	25	150	25.4	10.0	
GHER/L 3232 P - 40 18	32	32	170	32.4	18.0	GID 050 GRD 050
GHER/L 3232 P - 40 10	32	32	170	32.4	10.0	
GHER/L 2020 M - 50 23	20	20	150	20.5	23.0	
GHER/L 2020 M - 50 15	20	20	150	20.5	15.0	GID 050 GRD 050
GHER/L 2525 M - 50 23	25	25	150	25.5	23.0	
GHER/L 2525 M - 50 15	25	25	150	25.5	15.0	
GHER/L 3232 P - 50 23	32	32	170	32.5	23.0	GID 050 GRD 050
GHER/L 3232 P - 50 15	32	32	170	32.5	15.0	

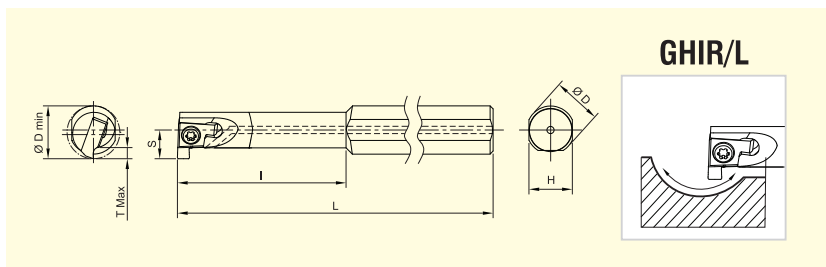
GROOVING HOLDER

EXTERNAL




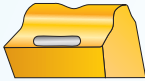
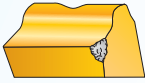


ITEM CODE	Dimension (mm)							Suitable Insert Code
	W	b	h	L	L1	h1	f	
TGHER/L 1616 H16	0.50 ~ 1.5	16	16	100	22	16	20	16 TGE
TGHER/L 2020 K16	0.50 ~ 1.5	20	20	125	26	20	25	
TGHER/L 2525 M16	0.50 ~ 1.5	25	25	150	26	25	32	

INTERNAL



ITEM CODE	Dimension (mm)							Suitable Insert Code
	D	d	L	l	T max	H	S	
GHIR/L 2016 K - 20 05	20	16	125	35	5	15	12.4	GID 020 GRD 020
GHIR/L 2520 M - 20 05	25	20	150	45	5	18	14	
GHIR/L 2925 R - 20 05	29	25	200	45	5	23	17.2	GID 025 GRD 025
GHIR/L 2016 K - 25 06	20	16	125	35	6	15	12.5	
GHIR/L 2520 M - 25 06	25	20	150	45	6	18	15.1	
GHIR/L 2925 R - 25 06	29	25	200	45	6	23	18.2	GID 030 GRD 030
GHIR/L 2520 M - 30 06	25	20	150	45	6	18	15.6	
GHIR/L 3125 R - 30 06	31	25	200	45	6	23	18.9	
GHIR/L 3732 S - 30 06	37	32	250	65	6	30	21.5	GID 040 GRD 040
GHIR/L 2520 M - 40 06	35	20	150	45	6	18	12.6	
GHIR/L 3125 R - 40 06	31	25	200	45	6	23	18.9	
GHIR/L 3732 S - 40 06	37	32	250	65	6	30	21.5	GID 050 GRD 050
GHIR/L 3125 R - 50 08	31	25	200	45	8	23	19.4	
GHIR/L 3732 S - 50 08	37	32	250	65	8	30	21.5	

TROUBLESHOOTING - GROOVING / PARTING

	Problem	Cause	Remedy
	Flank wear in insert	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	decrease cutting speed
	Crater wear in insert	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	decrease cutting speed
			decrease feed rate increase coolant flow pressure
	Chipping or fracturing of cutting edge	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	set insert height at exactly 0 mm
			minimize holder overhang
			decrease cutting speed
			decrease feed rate decrease depth of cut
	Chip welding / edge built-up	improper cutting edge geometry	select appropriate chip breaker
		improper cutting conditions	increase cutting speed
			increase feed rate
			select insert with smaller nose radius
	Poor surface finish	improper cutting conditions	increase cutting speed
			decrease feed rate
			increase coolant flow pressure
			set insert height at exactly 0 mm
			increase clamping rigidity of tool & workpiece
			minimize holder overhang

CUTTING FORMULAE

TURNING

FORMULAE

RPM	$n = \frac{V_c \times 1000}{\pi \times D}$	rev/min
Cutting speed	$V_c = \frac{\pi \times D \times n}{1000}$	m/min
Feed Rate	$V_f = f \times n$	mm/min
Feed per Revolution	$f = \frac{V_f}{n}$	mm/rev
Metal Removal Rate	$Q = V_c \times a_p \times f$	cm ³ /min

NOMENCLATURE

D =	Cutter diameter	mm
V _c =	Cutting speed	m/min
n =	Revolution per minute	rev/min
V _f =	Feed rate	mm/min
f =	Feed per revolution	mm/rev
f _z =	Feed per tooth	mm/tooth
Z _n =	No. of teeth	
Q =	Metal removal rate	cm ³ /min
a _p =	Depth of cut	mm

MILLING

FORMULAE

RPM	$n = \frac{V_c \times 1000}{\pi \times D}$	rev/min
Cutting speed	$V_c = \frac{\pi \times D \times n}{1000}$	m/min
Feed Rate	$V_f = f_z \times n \times z$	mm/min
Feed per Revolution	$f = \frac{V_f}{n}$	mm/rev
Cutting Time	$T_c = \frac{L}{V_f}$	minute/s
Metal Removal Rate	$Q = \frac{a_p \times a_w \times V_f}{1000}$	cm ³ /min

NOMENCLATURE

D =	Cutter diameter	mm
V _c =	Cutting speed	m/min
n =	Revolution per minute	rev/min
V _f =	Table Feed	mm/min
f =	Feed per revolution	mm/rev
f _z =	Feed per tooth	mm/tooth
z =	No. of teeth	
T _c =	Cutting time	minute/s
L =	Total Table Feed Length (workpiece length) + Cutter Diameter (D)	mm
Q =	Metal removal rate	cm ³ /min
a _p =	Depth of cut	mm
a _w =	Width of cut	mm

THREADING

FORMULAE

RPM	$n = \frac{V_c \times 1000}{\pi \times D}$	rev/min
Cutting speed	$V_c = \frac{\pi \times D \times n}{1000}$	m/min
Feed Rate	$V_f = f_z \times n \times Z_n$	mm/min
	$V_f = f_z \times n \times Z_c$	mm/min
Feed per Revolution	$f = \frac{V_f}{n}$	mm/rev
	$f = \frac{V_f}{n}$	mm/rev

NOMENCLATURE

D =	Cutter diameter	mm
V _c =	Cutting speed	m/min
n =	Revolution per minute	rev/min
V _f =	Feed rate	mm/min
f =	Feed per revolution	mm/rev
f _z =	Feed per tooth	mm/tooth
Z _n =	No. of teeth	
Z _c =	Effective no. of teeth for calculation of feed speed or feed per revolution	

MATERIAL GROUPS

According to DIN / ISO 513 & VDI 3323

ISO	Material	Condition	Tensile Strength	Kc (1) [N/mm ²]	mc ⁽²⁾	Hardness HB	Material Number	
P	Non-alloy Steel & Cast Steel, Free Cutting Steel	< 0.25% C	Annealed	420	1350	0.21	125	1
		≥ 0.25% C	Annealed	650	1500	0.22	190	2
		< 0.55% C	Quenched & Tempered	850	1675	0.24	250	3
		≥ 0.55% C	Annealed	750	1700	0.24	220	4
			Quenched & Tempered	1000	1900	0.24	300	5
	Low Alloy Steel & Cast Steel (< 5% of Alloying Elements)		Annealed	600	1775	0.24	200	6
				930	1675	0.24	275	7
			Quenched & Tempered	1000	1725	0.24	300	8
				1200	1800	0.24	350	9
	High Alloy Steel, Cast Steel & Tool Steel		Annealed	680	2450	0.23	200	10
			Quenched & Tempered	1100	2500	0.23	325	11
M	Stainless Steel & Cast Steel	Ferritic / Martensitic	680	1875	0.21	200	12	
		Martensitic	820	1875	0.21	240	13	
		Austenitic	600	2150	0.20	180	14	
K	Grey Cast Iron (GG)	Ferritic		1150	0.20	180	15	
		Pearlitic		1350	0.28	260	16	
	Cast Iron Nodular (GGG)	Pearlitic / Ferritic		1225	0.25	160	17	
		Pearlitic / Martensitic		1350	0.28	250	18	
	Malleable Cast Iron	Ferritic		1225	0.25	130	19	
		Pearlitic		1420	0.30	230	20	
N	Aluminium - Wrought alloyed	Not curable		700	0.25	60	21	
		Cured		800	0.25	100	22	
	Aluminium - cast, alloyed	≥ 12% Si	Not curable		700	0.25	75	23
			Cured		700	0.25	90	24
		> 12% Si	High temperature		750	0.25	130	25
	Copper Alloys	> 1% Pb	Free cutting		700	0.27	110	26
		0.55% C	Brass		700	0.27	90	27
			Electrolitic copper		700	0.27	100	28
	Non-metallic	Duroplastics, Fiber plastics						29
		Hard rubber						30
S	Heat Resistant Alloys	Fe based	Annealed		2600	0.24	200	31
			Cured		3100	0.24	280	32
		Ni or Co based	Annealed		3300	0.24	250	33
			Cured		3300	0.24	350	34
			Cast		3300	0.24	320	35
	Titanium & Titanium Alloys		RM 400	1700	0.23		36	
		α+β alloys cured	RM 1050	2110	0.22		37	
H	Hardened Steel	Hardened		4600		55 HRc	38	
		Hardened		4700		60 HRc	39	
	Chilled Cast Iron	Cast		4600		400	40	
	Cast Iron	Hardened		4500		55 HRc	41	

NOTES

A series of horizontal dotted lines for writing notes.