

EDGE TECH

High performance indexable tooling



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Material Group Examples

► VDI = VDI 3323 material group. EMG = Europa Material Group.

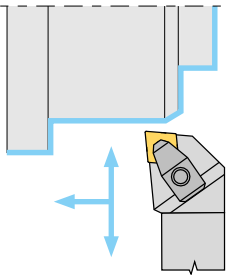
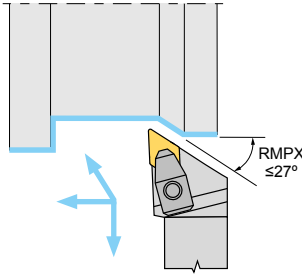
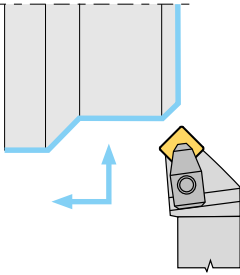
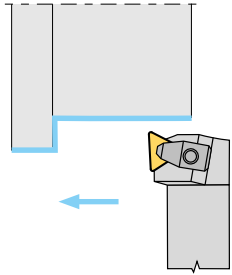
Steel	VDI	Non-alloy steel	1-5	Low alloy steel	6-9	High alloy steel	10-11		
	EMG		11-13		14		15		
P		EN3A, 4, 5, 6, 7, 8 040A10 230Mo7		EN9, 10 EN43 070M20 060A62 080M46		S95, 98, 99 D2 H13 EN24 B02			
Stainless Steel	VDI	Ferritic/Martensitic Annealed	12	Martensitic Quenched/Tempered	13	Austenitic	14		
	EMG		21		22		23		
M		403 410 430		410S 430F 321		304 316 15-5PH 17-4PH Duplex/Super Duplex			
Cast Iron	VDI	Grey cast iron	15, 16	Nodular cast iron	17, 18	Malleable cast iron	19, 20		
	EMG		31, 32		33		34		
K		GG10 GG20 GG30 GG40		GGG40 GGG50 Meehanite		GTS35 GTS45 GTS55			
Aluminium	VDI	Aluminium, not curable	21	Aluminium, curable, hardened	22	Aluminium, Si 0.5-12%	23, 24	Aluminium, Si >12%	25
	EMG		71		72		73		74
N		Al99 Al99.5 AlMg1		AlCuMg1 AlMgSi1 7050 7075		HE9, 30 LM6, 9, 20, 24, 25 5052 6063		G-AlSi10Mg G-AlSi12 G-MgAl6 LM5	
Copper	VDI	Copper, Bronze short chip alloys	26	Copper, Bronze long chip alloys	27	Copper, Bronze Cu - Al - Fe alloys	28		
	EMG		61, 62		63		64		
N		Commercially pure C101 CZ120 PB104		CZ106 CZ108 CuZn37		Ampco18 Ampco20 Ampco26			
Non metallic	VDI	Thermosetting plastics	29.1	Thermosetting and reinforced plastics	29.2	Non-metals	30		
	EMG		81, 82		83		84		
N		Acetal Nylon		CFRP, GFRP Circuit Board Kevlar Tufnol		Synthetic Graphite Hard rubber			
Nickel	VDI	HRSA, FE based aged or annealed	31, 32	HRSA, Ni/Co based aged or annealed	33, 34	HRSA, Ni/Co based cast	35		
	EMG		51		52		53		
S		NA15 NA17 GX40NiCrSi38-18		Nimonic 75 Hastelloy C-4 Inconel 625, 718 Incoloy 825, 901 Monel 400/500 Haynes 25		Hastelloy B Hastelloy C Inconel X750			
Titanium	VDI	Titanium unalloyed	36	Titanium alloys alpha + beta alloys	37				
	EMG		41		42, 43				
S		Pure Titanium Ti1 2TA1		TiAl6V4 TA10-13 TiAl3V2.5 TA45-51 TA11					
Hardened Material	VDI	Hardened steels	38	Hardened steels	39	Chilled Cast Iron	40	Hardened Cast Iron	41
	EMG		16		16		-		-
H		45- 55HRc Hardox400 Hardox500 P20		>55HRc Hardox 600		Ni-Hard 1 Ni-Hard 2		GX300CrMo15-3	

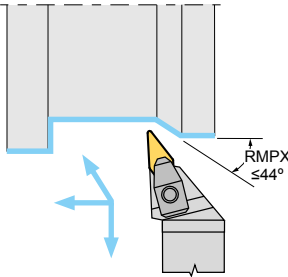
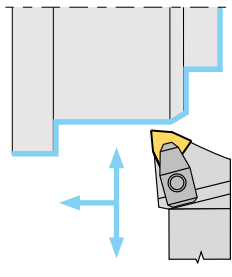
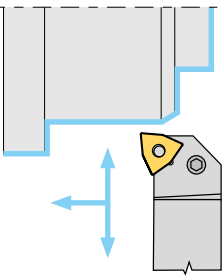
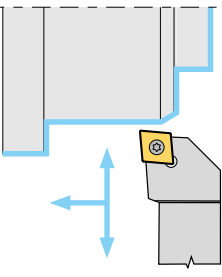
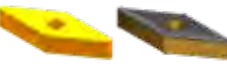
► For full material group tables, refer to P.126-139

TURNING

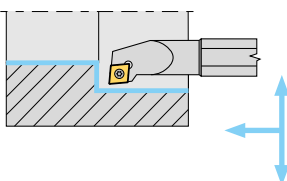
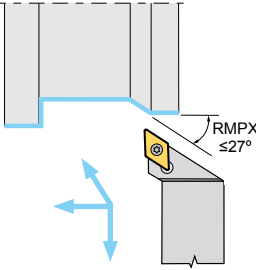
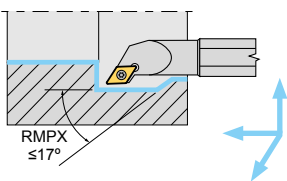
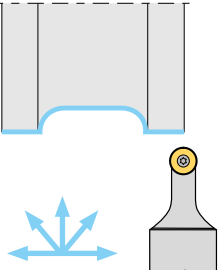
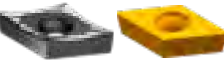
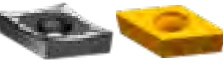


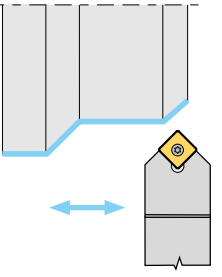
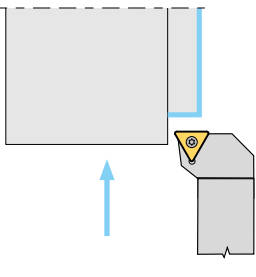
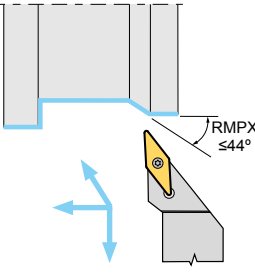
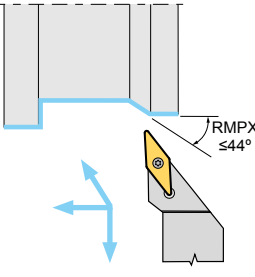
APPLICATION GUIDE & INDEX

DCLNR/L - PCLNR/L	DDJNR/L	DSSNR/L	DTJNR/L
			
P.45	P.47	P.47	P.48
20mm sq - 40mm sq	20mm sq - 40mm sq	20mm sq - 25mm sq	20mm sq - 40mm sq
			
CNMA/CNMG P.14-16	DNMA/DNMG P.17-19	SNMA/SNMG P.20-21	TNMA/TNMG P.22-23

DVJNR/L	DWLNR/L	PWLNR/L	SCLCR/L
			
P.48	P.49	P.50	P.51
20mm sq - 25mm sq	20mm sq - 40mm sq	16mm sq - 20mm sq	8mm sq - 25mm sq
			
VNMA/VNMG P.24-25	WNMA/WNMG 08 P.26-27	WNMG 06 P.26	CCGT/CCMT P.30

APPLICATION GUIDE & INDEX

- SCLCR/L	SDJCR/L	- SDQCR/L	SRDCN
			
P.52	P.53	P.53	P.54
ø8mm - ø25mm	10mm sq - 25mm sq	ø10mm - ø25mm	16mm sq - 25mm sq
			
CCGT/CCMT P.30	DCGT/DCMT P.31	DCGT/DCMT P.31	RCMT P.32

SSDCN	STFCR/L	SVJBR/L	SVJCR/L
			
P.54	P.56	P.55	P.55
12mm sq - 25mm sq	12mm sq - 25mm sq	16mm sq - 25mm sq	20mm sq - 32mm sq
			
SCMT P.33	TCGT/TCMT P.34	VBMT P.35	VCGT/VCMT P.36

MISCELLANEOUS TURNING INSERTS	P.28
CUTTING DATA	P.37-43

INSERT CODE GUIDE

*ISO

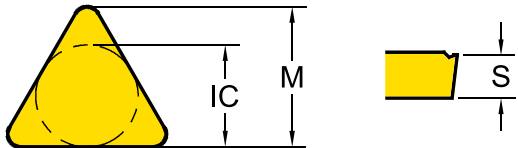
1	2	3	4	5	6	7	8	9
C	N	M	G	12	04	08	-BG	ET33C
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

1 - Shape

Symbol	Shape	
H	Hexagonal	
O	Octagonal	
P	Pentagonal	
S	Square	
T	Triangular	
C	Rhombic 80°	
D	Rhombic 55°	
V	Rhombic 35°	
W	Trigon	
L	Rectangular	
K	Parallelogram 55°	
R	Round	

2 - Relief Angle (AN)

Symbol	Relief Angle (AN)	
N	No Relief Angle	
C	Relief 7°	
P	Relief 11°	
D	Relief 15°	
E	Relief 20°	
F	Relief 25°	
O	Special	



3 - Tolerance Class

Symbol	Inner Circle IC (mm)	Nose Height M (mm)	Thickness S (mm)
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
K	±0.05~0.15	±0.013	±0.025
M	±0.05~0.15	±0.08~0.2	±0.13
U	±0.08~0.25	±0.13~0.38	±0.13

4 - Clamping & Chipbreaker

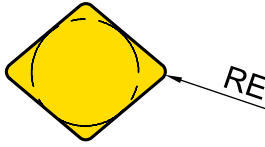
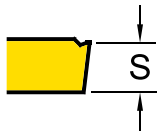
Symbol	Clamping	Chipbreaker	Figure
N	No clamping hole	X	
R		One Face	
A	Cylindrical Clamping hole	X	
M		One Face	
G	Screw Hole	Both Faces	
W		X	
T	Screw Hole	One Face	
U		Both Faces	
X	Special		

*ANSI

1	2	3	4	5	6	7	8	9
C	N	M	G	4	3	2	-BG	ET33C
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

5 - Insert Size

Metric (ISO)							Inscribed Circle IC (mm)	ANSI
06	11	06	07	11			6.53	2
07							7.94	2.5
09	16	09	11	16	06	09 (00)	9.525	3
12	22	12	15	22	08	12 (00)	12.7	4
15		16					15.875	5
						06 (M0)	6	
						08 (M0)	8	
						10 (M0)	10	
						12 (M0)	12	
						16 (M0)	16	



6 - Insert Thickness (S)

Metric (ISO)	Thickness - S (mm)	ANSI
T1	1.98	1.2
02	2.38	1.5
03	3.18	2
T3	3.97	2.5
04	4.76	3
05	5.56	3.5
06	6.35	4
07	7.94	5

7 - Corner Radius (RE)

Metric (ISO)	Corner Radius - RE (mm)	ANSI
01	0.1	0
02	0.2	0.5
04	0.4	1
08	0.8	2
12	1.2	3
16	1.6	4
20	2.0	5
24	2.4	6

CHIPBREAKER GUIDE

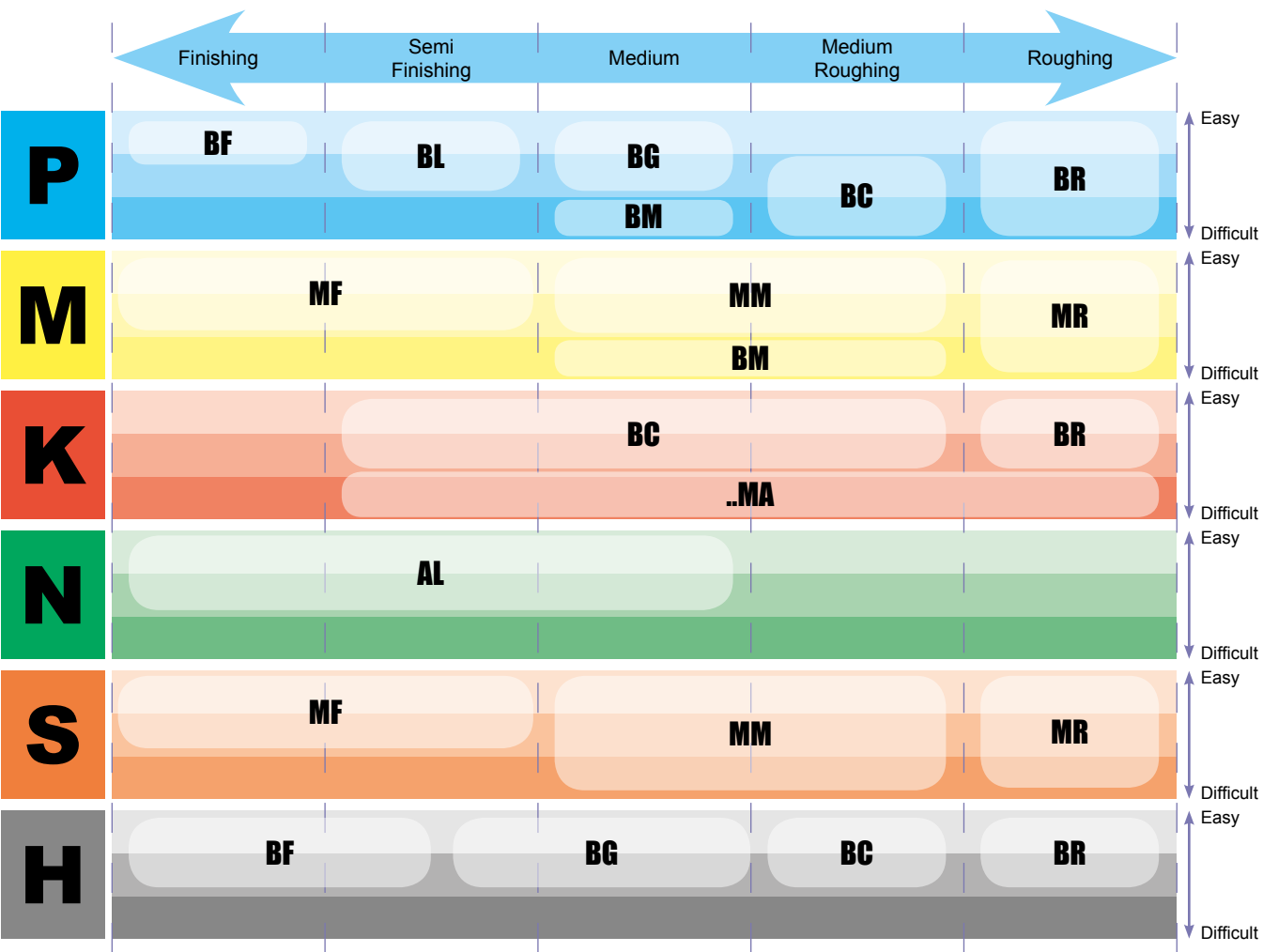
Chipbreaker		BF			MF			BL			BG			BM			MM			BC			BR			MR			AL			MA		
ISO	Grade	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R			
P	ET1001																			○	○													
	ET31C	●						●				●			●	●				○	○		●											
	ET32C	●						●	●			●			●	●		○			●	●		●										
	ET33C	●						●	●			●			●	●				●	●		●											
	ET801	○						○				○											○											
M	ET33C	●						●	●			●			●								●											
	ET21P				●											●																		
	ET23P				●											●									●									
	ET24P															●	●								●									
K	ET1001											●								●	●											●		
	ET31C	●									●									●	●											●		
	ET801	○									○												○											
N	ET10D																										●	●						
	ET10U																										●	●						
S	ET21P				●											●																		
	ET23P				●											●										●								
	ET24P															●	●									●								
H	ET31C	●									●									●	●		●											
	ET801	○									○												○											

●:First choice ○:Second choice

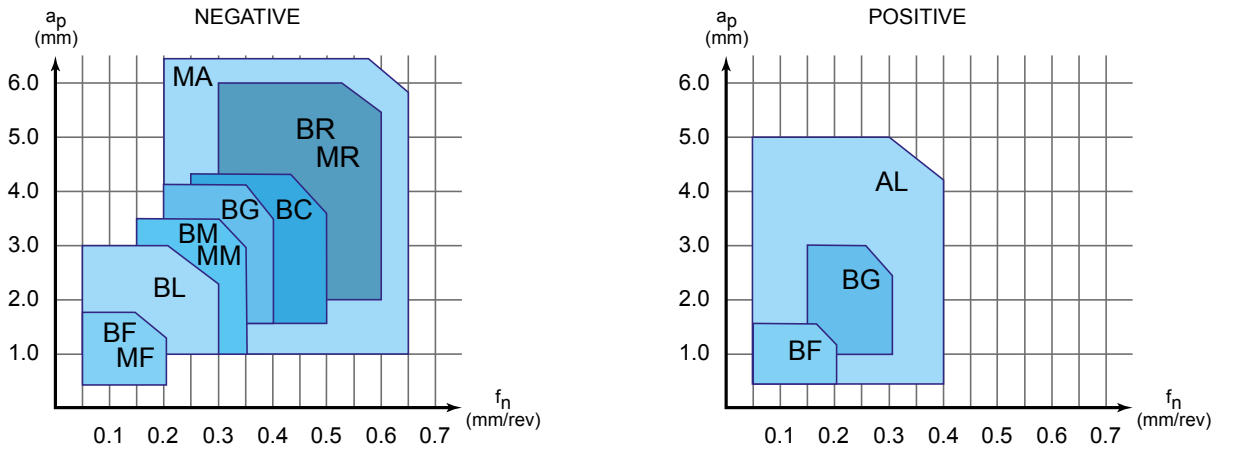
NEGATIVE CHIPBREAKERS			
BF	Finishing	BR	Roughing and interrupted cut
BL	Light cutting and sticky materials	MA	Cast iron heavy roughing
BM	Medium cutting and unstable conditions	MF	Finishing of stainless steel and HRSA
BG	Medium cutting First choice	MM	Medium cutting of stainless steel and HRSA
BC	Cast iron and medium roughing of steel	MR	Roughing of stainless steel and HRSA

POSITIVE CHIPBREAKERS	
BF	Finishing
BG	Medium Cutting
AL	For Aluminium

CHIPBREAKER GUIDE



CHIPBREAKER MAPS



INSERT GRADES

CVD COATED GRADES

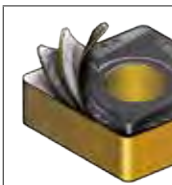
	P01 - P10 K10 - K25	ET1001 First choice for stable turning of Cast Iron CVD TiCN - Al ₂ O ₃
	P05 - P20 K15 - K35	ET31C First choice for high speed finishing of Steels and ductile Cast Iron. CVD TiCN - Al ₂ O ₃
	P15 - P30	ET32C Versatile grade for general turning of Steels. CVD TiCN - Al ₂ O ₃
	P20 - P35 M20 - M30	ET33C Tough grade for turning of Stainless Steel and interrupted cutting of Steel. CVD TiCN - Al ₂ O ₃

NON-FERROUS GRADES

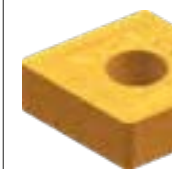
	N05 - N35	ET10D First choice for high speed turning of Aluminium, and Si >10% NX Coated
	N05 - N35	ET10U Polished face for general turning of Aluminium. Uncoated

PVD COATED GRADES

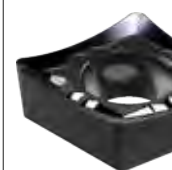
	M05 - M20 S05 - S20	ET21P First choice for stable turning of Stainless Steel and HRSA. PVD Coated
	M20 - M35 S15 - S25	ET23P Optimised grade for cutting of Stainless Steel and HRSA at low cutting speeds. PVD Coated
	M30 - M40 S25 - S30	ET24P Optimised grade for interrupted cutting of Stainless Steel and HRSA. PVD Coated
	P10 - P30 K20 - K30 H20 - H30	ET801 Turning grade for mid and low cutting conditions in most steels and cast iron PVD Coated



New Multi-layer CVD coated grades are finished with a special process to enable smoother chip flow.



Single layer PVD coated grades are designed to balance edge strength with extended tool life.



NX coated inserts maintain sharp cutting edge due to coating thickness of ≤ 1 µm and highly polished face.

INSERT GRADE GUIDE

		P STEEL				M STAINLESS STEEL				K CAST IRON			
		05	15	25	35	05	15	25	35	05	15	25	35
CVD	ET1001	1001								1001			
	ET31C	31C								31C			
	ET32C		32C										
	ET33C			33C			33C						
PVD	ET21P						21P						
	ET23P							23P					
	ET24P								24P				
	ET801		801							801			
NX	ET10D												
-	ET10U												
		HARDER ← → TOUGHER				HARDER ← → TOUGHER				HARDER ← → TOUGHER			

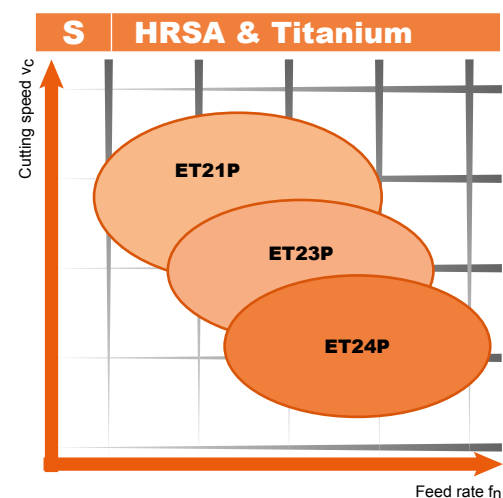
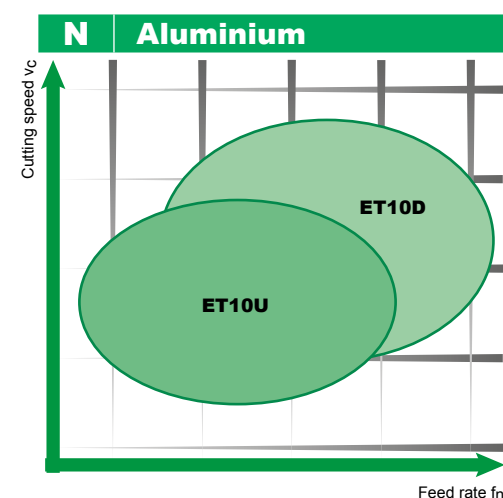
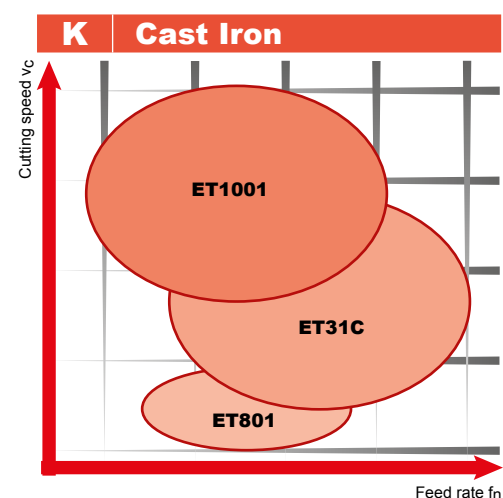
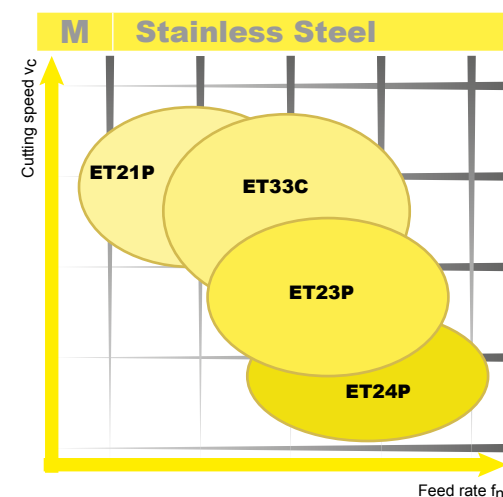
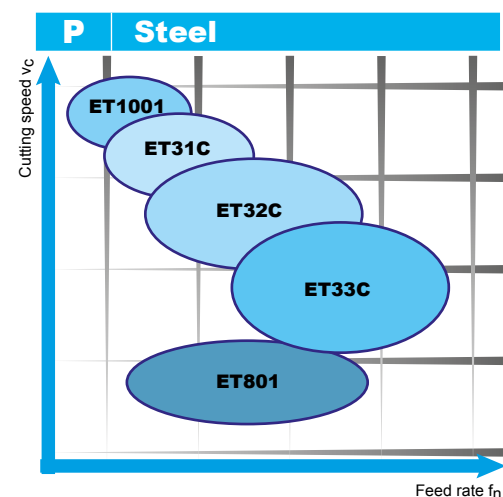
		N NON-FERROUS				S HRSA				H HARDENED STEEL			
		05	15	25	35	05	15	25	35	05	15	25	35
CVD	ET1001												
	ET31C									31C			
	ET32C												
	ET33C												
PVD	ET21P						21P						
	ET23P							23P					
	ET24P								24P				
	ET801										801		
NX	ET10D		10D										
-	ET10U		10U										
		HARDER ← → TOUGHER				HARDER ← → TOUGHER				HARDER ← → TOUGHER			

THEORETICAL SURFACE ROUGHNESS BY INSERT RADIUS

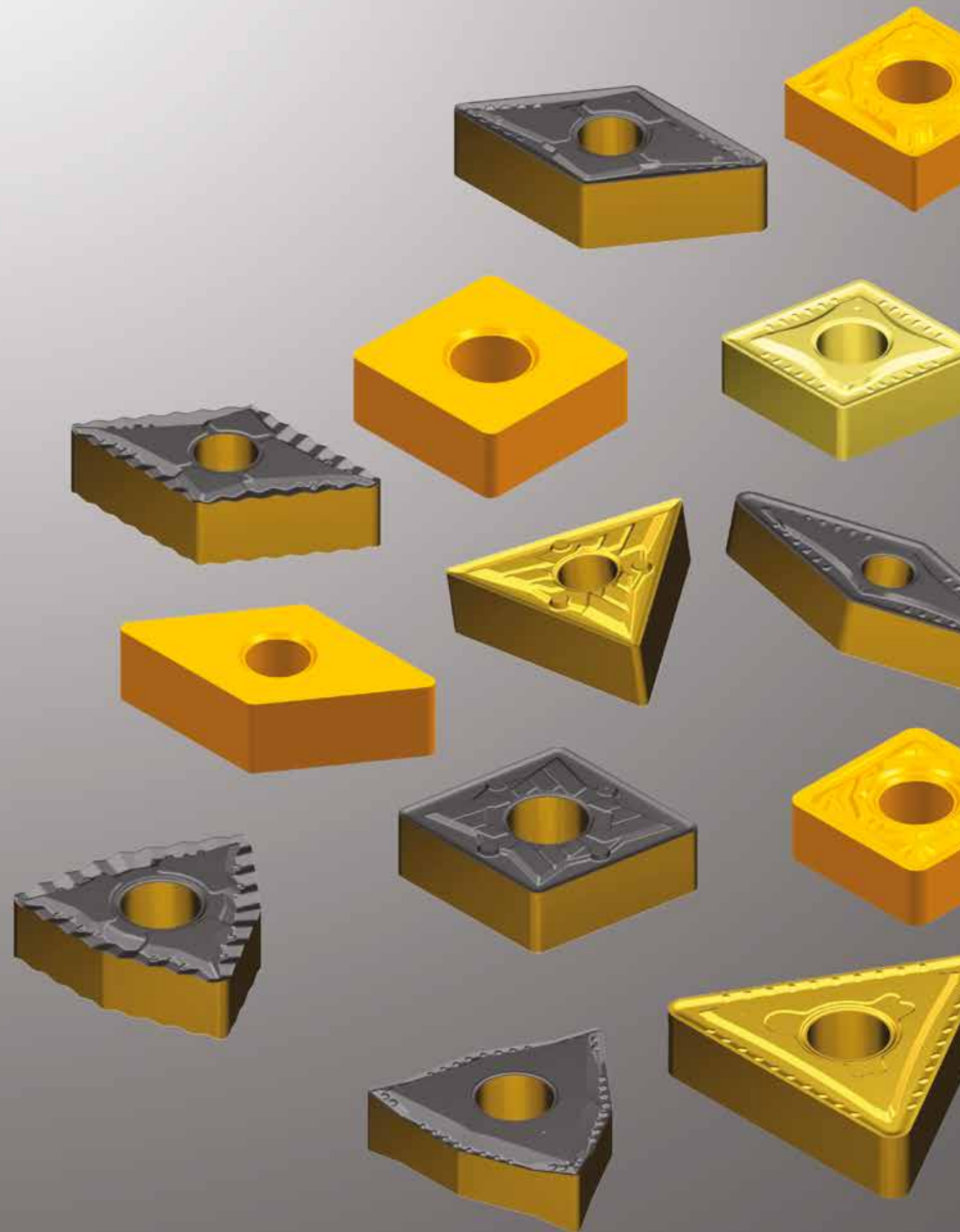
Ra (Rz) µm	Insert corner radius					
	0.2	0.4	0.8	1.2	1.6	2.4
	f _n (mm/rev)					
0.4 (1.6)	0.05	0.07	0.10	0.12	0.14	0.18
1.6 (6.3)	0.10	0.14	0.20	.025	0.28	0.35
3.2 (12.5)	0.14	0.20	0.28	0.35	0.40	0.49
6.3 (25)	-	0.28	0.40	0.49	0.57	0.69
8 (32)	-	-	0.45	0.55	0.64	0.78

INSERT GRADE APPLICATION AREA

The charts below indicate grade selection in relation to cutting speed and feed rate

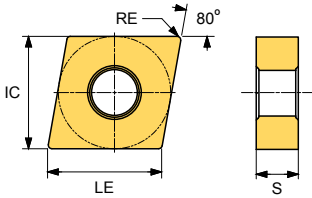


NEGATIVE INSERTS



▶ Cutting Conditions: page 38
▶ Toolholders: page 46

INSERT	LE	IC	S
CNMA/G 1204	12	12.7	4.76
CNMA/G 1606	16	15.88	6.35
CNMA/G 1906	19	19.05	6.35

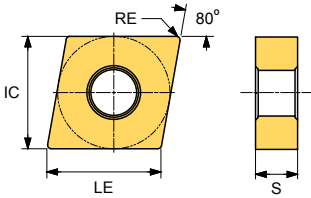


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

CNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET24P	P	M	K	N	S	H
 Finishing	TI00402	CNMG 120404-BF	0.4	●								●		●			
	TI00403				●							●					
	TI00095					●						●	●			●	
	TI00028	CNMG 120408-BF	0.8					●				●		●			○
	TI00404			●								●		●			
	TI00405				●							●					
 Finishing Stainless Steel and HRSA	TI00654	CNMG 120404-MF	0.4						●				●			●	
	TI00655								●				●			●	
	TI00656	CNMG 120408-MF	0.8						●				●			●	
	TI00657								●				●			●	
	TI00658									●			●			●	
 Light cutting and sticky materials	TI00545	CNMG 120404-BL	0.4	●								●		●			
	TI00546				●							●					
	TI00547	CNMG 120408-BL	0.8	●								●		●			
	TI00548				●							●	●				
	TI00101					●						●				●	
	TI00074	CNMG 120412-BL	1.2					●				●		●			○
	TI00549			●								●		●			
 Medium cutting Stainless Steel and HRSA	TI00550	CNMG 120412-BL	1.2		●							●				●	
	TI00551					●						●	●				
	TI00637	CNMG 120404-MM	0.4						●				●			●	
	TI00645									●			●			●	
	TI00341	CNMG 120408-MM	0.8		●							●					
	TI00122					●						●	●			●	
	TI00340								●				●			●	
	TI00646									●			●			●	
	TI00659	CNMG 120412-MM	1.2							●			●			●	
	TI00343					●						●	●			●	
	TI00638								●				●			●	
	TI00647									●			●			●	
	TI00664										●		●			●	

▶ Cutting Conditions: page 38
▶ Toolholders: page 46

INSERT	LE	IC	S
CNMA/G 1204	12	12.7	4.76
CNMA/G 1606	16	15.88	6.35
CNMA/G 1906	19	19.05	6.35



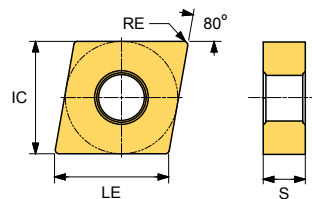
○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

CNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET24P	P	M	K	N	S	H
 Medium cutting First choice	TI00461	CNMG 120404-BG	0.4	●								●		●			
	TI00462				●							●					
	TI00110					●						●	●			●	
	TI00464	CNMG 120408-BG	0.8	●								●		●			
	TI00465				●							●					
	TI00113					●						●	●			●	
	TI00463	CNMG 120412-BG	1.2									○		●			
	TI00029											●		●			○
	TI00466			●								●		●			
	TI00467	CNMG 160612-BG	1.2		●							●					
 Medium cutting and unstable conditions	TI00468			●								●		●			
	TI00469				●							●					
	TI00470	CNMG 160616-BG	1.6			●						●	●			●	
	TI00471			●								●		●			
	TI00472				●							●					
	TI00473	CNMG 120408-BM	0.8			●						●	●			●	
	TI00569			●								●		●			
	TI00570	CNMG 120404-BM	0.4		●							●					
	TI00105					●						●	●			●	
	TI00572			●								●		●			
 Cast Iron and Medium roughing Steel	TI00573	CNMG 120408-BM	0.8		●							●					
	TI00107					●						●	●			●	
	TI00571											○		●			
	TI00355	CNMG 120404-BC	0.4	●								●		●			
	TI00356				●							●					
	TI00357					●						●	●			●	
	TI00073	CNMG 120408-BC	0.8									○		●			
	TI00358			●								●		●			
	TI00359				●							●					
	TI00360	CNMG 120412-BC	1.2			●						●	●			●	
	TI00075											○		●			
	TI00361			●								●		●			
	TI00362	CNMG 120412-BC	1.2		●							●					
	TI00363					●						●	●			●	
	TI00076											○		●			

▶ CONTINUED OVERLEAF

► Cutting Conditions: page 38
► Toolholders: page 46

INSERT	LE	IC	S
CNMA/G 1204	12	12.7	4.76
CNMA/G 1606	16	15.88	6.35
CNMA/G 1906	19	19.05	6.35

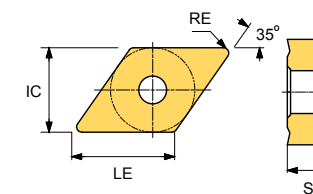


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

CNMG CNMA	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET24P	P	M	K	N	S	H
 Roughing Stainless Steel and HRSA	MR	TI00663	0.8			●						●	●			●	
		TI00660							●			●	●			●	
		TI00661								●		●	●			●	
		TI00662									●	●	●			●	
		TI00665							●			●	●			●	
		TI00666								●		●	●			●	
		TI00667	1.2								●	●	●			●	
	BR	TI00583		●								●		●			
		TI00584			●							●	●			●	
		TI00118				●						●	●			●	
		TI00585		●								●		●			
		TI00586			●							●	●			●	
		TI00120	1.2			●						●	●			●	
		TI00030						●				●	●				○
		TI00587		●								●		●			
		TI00588			●							●	●			●	
		TI00589				●						●	●			●	
		TI00590		●								●		●			
		TI00591	0.4		●							●	●			●	
		TI00592				●						●	●			●	
		TI00594		●								●		●			
		TI00593					●					○	●			●	
		TI00328		●								●	●			●	
		TI00072					●					○	●			●	
		TI00329	0.8	●				●				●	●			●	
		TI00025					●					○	●			●	
		TI00330		●								●	●			●	
		TI00026					●					○	●			●	
		TI00332		●								●	●			●	
		TI00027					●					○	●			●	
		TI00334	1.2	●								●	●			●	
		TI00333					●					○	●			●	
		TI00336		●								●	●			●	
		TI00335					●					○	●			●	
		TI00335										○	●			●	
		TI00335										○	●			●	
		TI00328	0.4	●								●	●			●	
		TI00072					●					○	●			●	
		TI00329		●				●				●	●			●	
		TI00025					●					○	●			●	
		TI00330		●								●	●			●	
		TI00026					●					○	●			●	
		TI00332	1.2	●								●	●			●	
		TI00027					●					○	●			●	
		TI00334		●								●	●			●	
		TI00333					●					○	●			●	
		TI00336		●								●	●			●	
		TI00335					●					○	●			●	
		TI00328	1.6	●								●	●			●	
		TI00072					●					○	●			●	
		TI00329		●				●				●	●			●	
		TI00025					●					○	●			●	
		TI00330		●								●	●			●	
		TI00026					●					○	●			●	
		TI00332	1.2	●								●	●			●	
		TI00027					●					○	●			●	
		TI00334		●								●	●			●	
		TI00333					●					○	●			●	
		TI00336		●								●	●			●	
		TI00335					●					○	●			●	
		TI00328	1.6	●								●	●			●	
		TI00072					●					○	●			●	
		TI00329		●				●				●	●			●	
		TI00025					●					○	●			●	
		TI00330		●								●	●			●	
		TI00026					●					○	●			●	

► Cutting Conditions: page 38-39

INSERT	LE	IC	S
DNMG 1504	15	12.7	4.76

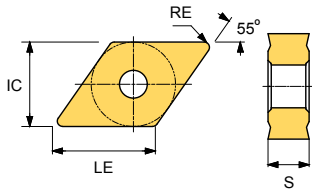


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

DNMG 1504	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Finishing	BF	TI00412	0.4	●									●		●			
		TI00413			●								●					
		TI00414				●							●	●			●	
		TI00032						●					●		●			○
 Medium cutting First choice	BG	TI00483	0.8	●									●		●			
		TI00484			●								●				●	
		TI00485				●							●	●			●	
		TI00482					●						○		●			○
		TI00033	1.2					●					●		●			○
		TI00486			●								●					
		TI00574		●									●		●			
		TI00574																
 Medium cutting and unstable conditions	BM	TI00344	0.4			●							●	●			●	
		TI00639											●	●			●	
		TI00346				●							●	●			●	
		TI00345											●	●			●	
 Medium cutting Stainless Steel and HRSA	MM	TI00648	0.8										●	●			●	
		TI00347				●							●	●			●	
		TI00365		●									●		●			
		TI00364					●						○		●			
 Cast Iron and Medium roughing Steel	BC	TI00367	1.2	●									●		●			
		TI00366					●						○		●			
		TI00367		●									●		●			
		TI00366					●						○		●			
 Roughing and Interrupted cut	BR	TI00595	1.2	●									●		●			
		TI00595																
		TI00595																
		TI00595																

► Cutting Conditions: page 38-39
► Toolholders: page 47

INSERT	LE	IC	S
DNMA 1506	15	12.7	6.35
DNMG 1506	15	12.7	6.35

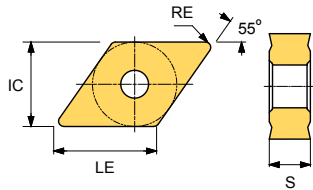


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

DNMA 1506 DNMG 1506	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron Heavy roughing	TI00077	DNMA 150608	0.8				●						○		●			
	TI00078	DNMA 150612	1.2				●						○		●			
 Finishing	TI00415	DNMG 150604-BF	0.4	●									●		●			
	TI00416				●								●					
	TI00125					●							●	●			●	
	TI00034	DNMG 150608-BF	0.8					●					●		●			○
	TI00417			●									●		●			
	TI00418				●								●					
 Light cutting and sticky materials	TI00552	DNMG 150604-BL	0.4	●									●		●			
	TI00553	DNMG 150608-BL	0.8		●								●					
	TI00554			●									●		●			
	TI00555				●								●	●			●	
	TI00131					●							●				●	
 Medium cutting First choice	TI00079							●					●		●			○
	TI00487	DNMG 150604-BG	0.4	●									●		●			
	TI00488				●								●					
	TI00136					●							●	●			●	
	TI00490	DNMG 150608-BG	0.8	●									●		●			
	TI00491				●								●					
	TI00139					●							●	●			●	
	TI00489						●						○		●			
	TI00035	DNMG 150612-BG	1.2					●					●		●			○
	TI00493			●									●		●			
	TI00494				●								●					
	TI00142					●							●	●			●	
	TI00492						●						○		●			

► Cutting Conditions: page 38-39
► Toolholders: page 47

INSERT	LE	IC	S
DNMA 1506	15	12.7	6.35
DNMG 1506	15	12.7	6.35

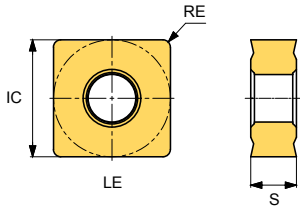


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

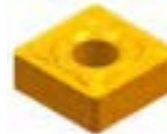
DNMG 1506		ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H	
 Medium cutting and unstable conditions	BM	TI00575	DNMG 150608-BM	0.8	●									●		●				
		TI00576				●								●						
		TI00133					●							●	●				●	
 Medium cutting Stainless Steel and HRSA	MM	TI00348	DNMG 150604-MM	0.4			●							●	●			●		
		TI00641							●						●			●		
		TI00350					●							●	●			●		
		TI00349	DNMG 150608-MM	0.8						●					●			●		
		TI00649								●					●			●		
		TI00351					●							●	●			●		
		TI00653	DNMG 150612-MM	1.2						●					●			●		
		TI00650								●					●			●		
 Cast Iron and Medium roughing Steel	BC	TI00368	DNMG 150608-BC	0.8	●									●		●				
		TI00369				●									●					
		TI00370					●								●	●			●	
		TI00080					●							○		●				
		TI00371	DNMG 150612-BC	1.2	●										●		●			
		TI00372				●									●					
		TI00373					●								●	●			●	
		TI00081						●							○		●			
 Roughing and Interrupted cut	BR	TI00596	DNMG 150612-BR	1.2	●									●		●				
		TI00597				●									●					
		TI00144					●								●	●			●	
		TI00036							●						●		●			○

▶ Cutting Conditions: page 39-40
▶ Toolholders: page 47

INSERT	LE	IC	S
SNMA 1204	12	12.7	4.76
SNMG 1204	12	12.7	4.76

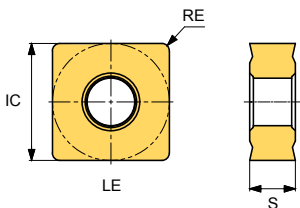


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

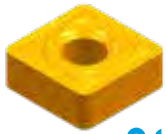
SNMA SNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron Heavy roughing	TI00040	SNMA 120408	0.8				●						○		●			
	TI00041	SNMA 120412	1.2				●						○		●			
 Finishing	TI00042	SNMG 120404-BF	0.4					●					●		●			○
 Light cutting and sticky materials	TI00556	SNMG 120408-BL	0.8	●									●		●			
	TI00557				●								●					
	TI00558					●							●	●			●	
	TI00082							●					●		●			○
 Medium cutting First choice	TI00503	SNMG 120408-BG	0.8	●									●		●			
	TI00504				●								●					
	TI00505					●							●	●			●	
	TI00043							●					●		●			○
	TI00506	SNMG 120412-BG	1.2	●									●		●			
	TI00507				●							●						
	TI00508					●						●	●			●		

▶ Cutting Conditions: page 39-40
▶ Toolholders: page 47

INSERT	LE	IC	S
SNMA 1204	12	12.7	4.76
SNMG 1204	12	12.7	4.76

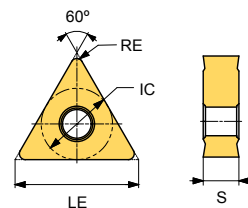


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

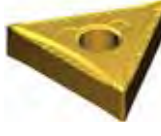
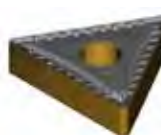
SNMG		ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H	
 Cast Iron and Medium roughing Steel	BC	TI00374	SNMG 120408-BC	0.8	●									●		●				
		TI00375				●								●						
		TI00376					●							●	●				●	
		TI00083						●						○		●				
		TI00084	SNMG 120412-BC	1.2				●						○		●				
 Roughing and Interrupted cut	BR	TI00598	SNMG 120408-BR	0.8	●									●		●				
		TI00599				●								●						
		TI00600					●							●	●				●	
		TI00601	SNMG 120412-BR	1.2		●								●						
		TI00602					●						●	●				●		
		TI00044							●					●		●			○	

► Cutting Conditions: page 40-41
► Toolholders: page 48

INSERT	LE	IC	S
TNMA 1604	16	9.53	4.76
TNMG 1604	16	9.53	4.76
TNMG 2204	22	12.7	4.76

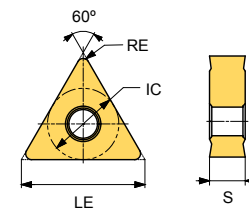


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

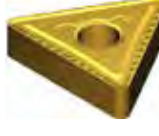
TNMA TNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron Heavy roughing	TI00046	TNMA 160408	0.8				●						○		●			
	TI00047	TNMA 160412	1.2				●						○		●			
 Finishing	TI00423	TNMG 160404-BF	0.4	●									●		●			
	TI00424				●								●	●			●	
	TI00425					●							●		●			○
	TI00426			●				●					●		●			
	TI00427	TNMG 160408-BF	0.8		●								●	●			●	
	TI00428					●							●	●			●	
	TI00429	TNMG 220404-BF	0.4	●									●		●			
	TI00051							●					●		●			○
 Light cutting and sticky materials	TI00559	TNMG 160408-BL	0.8	●									●		●			
	TI00560				●								●					
	TI00561					●							●	●			●	
 Medium cutting First choice	TI00516	TNMG 160404-BG	0.4	●									●		●			
	TI00517				●								●	●			●	
	TI00518					●							○		●			
	TI00515						●						●		●			
	TI00520	TNMG 160408-BG	0.8	●									●		●			
	TI00521				●								●	●			●	
	TI00522					●							●	●			●	
	TI00519						●						○		●			
	TI00049							●					●		●			○
	TI00523	TNMG 220408-BG	0.8	●									●		●			
	TI00524				●								●	●			●	
	TI00525					●							●	●			●	
	TI00052							●					●		●			○
	TI00052												●	●	●			

► Cutting Conditions: page 40-41
► Toolholders: page 48

INSERT	LE	IC	S
TNMA 1604	16	9.53	4.76
TNMG 1604	16	9.53	4.76
TNMG 2204	22	12.7	4.76
TNMX 1604	16	9.53	4.76

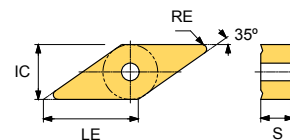


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

TNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Medium cutting and unstable conditions	TI00577	TNMG 160408-BM	0.8	●									●		●			
	TI00578				●								●					
	TI00579					●							●	●			●	
 Medium cutting Stainless Steel and HRSA	TI00642	TNMG 160408-MM	0.8						●						●		●	
 Cast Iron and Medium roughing Steel	TI00378	TNMG 160404-BC	0.4	●									●		●			
	TI00379				●								●					
	TI00380					●							●	●			●	
	TI00377						●						○		●			
	TI00381	TNMG 160408-BC	0.8	●									●		●			
	TI00382				●								●					
	TI00383					●							●	●			●	
	TI00085						●						○		●			
 Roughing and Interrupted cut	TI00086	TNMG 160412-BC	1.2				●						○		●			
	TI00603	TNMG 160412-BR	1.2	●									●		●			
	TI00604				●								●					
	TI00605					●							●	●			●	
	TI00050							●					●		●			○
	TI00607	TNMG 220412-BR	1.2	●									●		●			
	TI00608				●								●					
	TI00609					●							●	●			●	
	TI00606						●						○		●			
	TI00053							●					●		●			○
	TI00611	TNMG 220416-BR	1.6	●									●		●			
	TI00610						●						○		●			

► Cutting Conditions: page 40-41
► Toolholders: page 48

INSERT	LE	IC	S
VNMA 1604	16	9.53	4.76
VNMG 1604	16	19.53	4.76

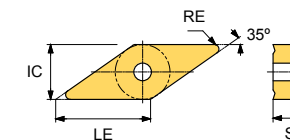


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

VNMA VNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron Heavy roughing ● ✚	TI00337	VNMA 160408	0.8				●						○		●			
 Finishing ○ ●	TI00435	VNMG 160404-BF	0.4	●									●		●			
	TI00436				●								●					
	TI00437					●							●	●			●	
	TI00061	VNMG 160408-BF	0.8					●					●		●			○
	TI00438			●									●		●			
	TI00439				●								●					
	TI00440					●							●	●			●	
 Light cutting and sticky materials ○ ●	TI00562	VNMG 160408-BL	0.8	●									●		●			
	TI00563				●								●					
 Medium cutting First choice ○ ●	TI00533	VNMG 160408-BG	0.8	●									●		●			
	TI00534				●								●					
	TI00535					●							●	●			●	
	TI00532						●						○		●			
	TI00062							●					●		●			○

► Cutting Conditions: page 40-41
► Toolholders: page 48

INSERT	LE	IC	S
VNMA 1604	16	9.53	4.76
VNMG 1604	16	19.53	4.76

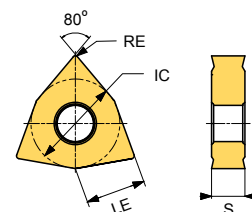


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

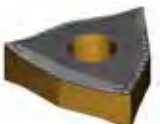
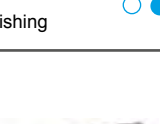
VNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron and Medium roughing Steel ○ ✚	TI00384	VNMG 160404-BC	0.4	●									●		●			
	TI00386	VNMG 160408-BC	0.8	●									●		●			
	TI00387				●								●					
	TI00388					●							●	●			●	
	TI00385						●						○		●			
 Roughing and Interrupted cut ○ ✚	TI00612	VNMG 160412-BR	1.2	●									●		●			
	TI00613				●								●					
	TI00614					●							●	●			●	
	TI00063							●					●		●			○
													●					

► Cutting Conditions: page 41
► Toolholders: page 49-50

INSERT	LE	IC	S
WNMG 0604	06	9.53	4.76
WNMA 0804	08	12.7	6.35
WNMG 0804	08	12.7	6.35

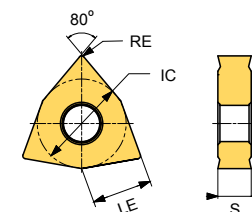


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

WNMA WNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Cast Iron Heavy roughing	TI00064	WNMA 080404	0.4				●						○		●			
	TI00338	WNMA 080408	0.8	●									●		●			
	TI00065						●						○		●			
	TI00339	WNMA 080412	1.2	●									●		●			
	TI00066						●						○		●			
 BF Finishing	TI00441			●									●		●			
	TI00442	WNMG 060404-BF	0.4		●								●		●			
	TI00199					●							●	●			●	
	TI00067							●					●		●			○
	TI00443			●									●		●			
	TI00444	WNMG 080404-BF	0.4		●								●	●			●	
	TI00204					●							●		●			
	TI00069							●					●		●			○
 WNGM 080408-BF	TI00445			●									●		●			
	TI00446	WNMG 080408-BF	0.8		●								●		●			
	TI00207					●							●	●			●	
	TI00564			●									●		●			
	TI00565	WNMG 060408-BL	0.8		●								●		●			
 BL Light cutting and sticky materials	TI00566					●							●	●			●	
	TI00567			●									●		●			
	TI00568				●								●		●			
	TI00209	WNMG 080408-BL	0.8			●							●	●			●	
	TI00088							●					●		●			○
 BG Medium cutting First choice	TI00536	WNMG 060408-BG	0.8		●								●		●			○
	TI00068							●					●		●			○
	TI00537			●									●		●			
	TI00538	WNMG 080404-BG	0.4		●								●		●			
	TI00214					●							●	●			●	
	TI00540			●									●		●			
	TI00541				●								●		●			
	TI00217	WNMG 080408-BG	0.8			●							●	●			●	
	TI00539						●						○		●			
	TI00070							●					●		●			○
	TI00543			●									●		●			
	TI00544	WNMG 080412-BG	1.2		●								●		●			
	TI00542						●						○		●			

► Cutting Conditions: page 41
► Toolholders: page 49-50

INSERT	LE	IC	S
WNMG 0604	06	9.53	4.76
WNMA 0804	08	12.7	6.35
WNMG 0804	08	12.7	6.35

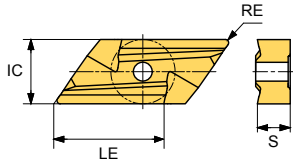


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✚ : Unstable conditions

WNMG	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 BM Medium cutting and unstable conditions	TI00581			●									●		●			
	TI00582	WNMG 080408-BM	0.8		●								●		●			
	TI00211					●							●	●			●	
	TI00580						●						○		●			
	TI00643	WNMG 080404-MM	0.4						●				●		●			●
 MM Medium cutting Stainless Steel and HRSA	TI00651									●			●		●			●
	TI00354	WNMG 080408-MM	0.8			●							●	●			●	
	TI00352								●				●		●			●
	TI00353									●			●		●			●
	TI00644	WNMG 080412-MM	1.2						●				●		●			●
 BC Cast Iron and Medium roughing Steel	TI00389			●									●		●			
	TI00390	WNMG 080404-BC	0.4		●								●		●			
	TI00391					●							●	●			●	
	TI00087						●						○		●			
	TI00392			●									●		●			
	TI00393	WNMG 080408-BC	0.8		●								●		●			
	TI00394					●							●	●			●	
	TI00089						●						○		●			
	TI00395			●									●		●			
	TI00396	WNMG 080412-BC	1.2		●								●		●			
 BR Roughing and Interrupted cut	TI00397					●							●	●			●	
	TI00090						●						○		●			
	TI00616			●									●		●			
	TI00617	WNMG 080408-BR	0.8		●								●		●			
	TI00219					●							●	●			●	
	TI00615						●						○		●			
	TI00619			●									●		●			
	TI00620				●								●		●			
	TI00221	WNMG 080412-BR	1.2			●							●	●			●	
	TI00618						●						○		●			
	TI00071							●					●		●			○
	TI00622	WNMG 080416-BR		●									●		●			
	TI00621						●						○		●			

▶ Cutting Conditions: page 39

INSERT	LE	IC	S
KNUX 1604	15	9.53	4.76

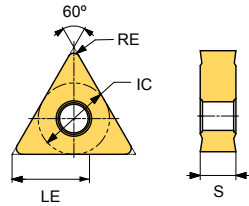


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

KNUX		ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Finishing to Medium 	TI00623	KNUX 160405L	0.5	●									●			●			
	TI00624				●							●							
	TI00625					●							●	●				●	
	TI00038							●				●		●					○
	TI00626	KNUX 160405R	0.5	●									●			●			
	TI00627				●							●							
	TI00628					●						●	●				●		
	TI00039							●				●		●					○

▶ Cutting Conditions: page 40

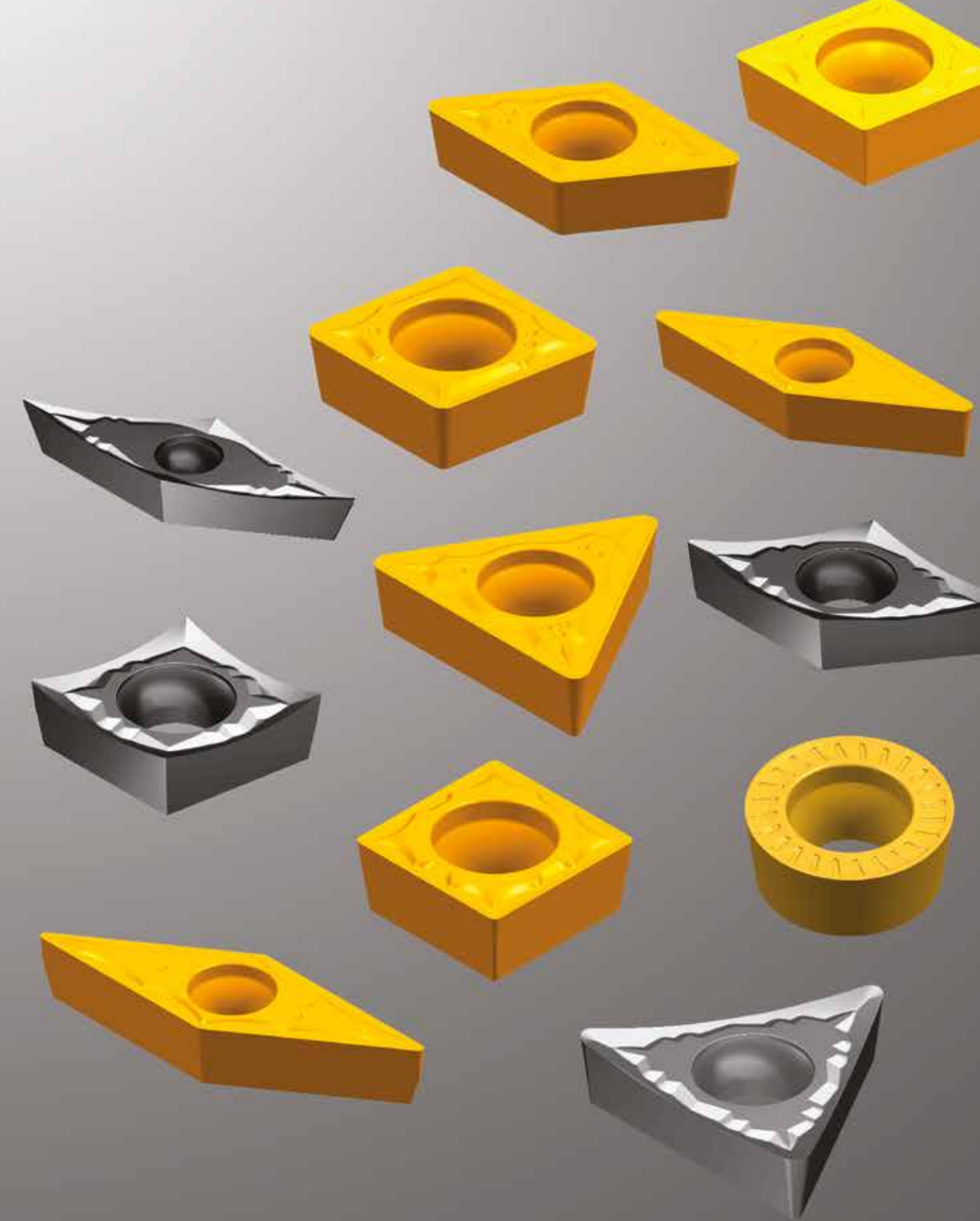
INSERT	LE	IC	S
TNUX 1604	16	9.53	4.76



○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

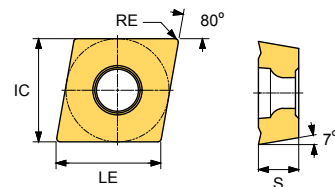
TNUX		ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H			
  Finishing to Medium	TI00629	TNUX 160404L	0.4	●									●			●						
	TI00630				●								●									
	TI00054							●					●		●				○			
	TI00633	TNUX 160408L	0.8	●									●			●						
	TI00634				●							●										
	TI00056							●				●		●				○				
	TI00631	TNUX 160404R	0.4	●									●			●						
	TI00632				●								●									
	TI00055							●					●		●			○				
	TI00635	TNUX 160408R	0.8	●									●			●						
	TI00636				●								●									
	TI00057							●					●		●				○			

POSITIVE INSERTS

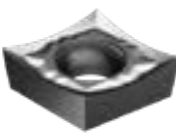
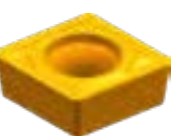


► Cutting Conditions: page 42
► Toolholders: page 51-52

INSERT	LE	IC	S
CCMT 0602	06	6.35	2.38
CCGT/MT 09T3	09	9.53	3.97
CCGT/MT 1204	12	12.7	4.76

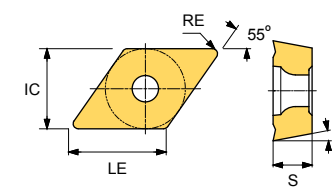


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

CCGT CCMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Aluminium Finishing to Medium	TI00222	CCGT 09T302-AL	0.2								●					●		
	TI00223											●				●		
	TI00224	CCGT 09T304-AL	0.4								●					●		
	TI00225											●				●		
	TI00226	CCGT 09T308-AL	0.8								●					●		
	TI00227											●				●		
	TI00311	CCGT 120402-AL	0.2								●					●		
	TI00310											●				●		
	TI00313	CCGT 120404-AL	0.4								●					●		
	TI00312											●				●		
 Finishing	TI00315	CCGT 120408-AL	0.8								●					●		
	TI00314											●				●		
	TI00398	CCMT 060204-BF	0.4	●							●				●			
	TI00399				●						●							
	TI00001							●			●	●	○				○	○
 Medium cutting	TI00400	CCMT 09T304-BF	0.4	●							●				●			
	TI00401				●						●							
	TI00003							●			●	●	○				○	○
	TI00447	CCMT 060204-BG	0.4	●							●				●			
	TI00448	CCMT 060208-BG	0.8	●							●				●			
	TI00002							●			●	●	○				○	○
	TI00449	CCMT 09T304-BG	0.4	●							●				●			
	TI00450				●						●							
	TI00452	CCMT 09T308-BG	0.8	●							●				●			
	TI00453				●						●							
	TI00454					●					●	●				●		
	TI00451						●				○		●					
	TI00004							●			●	●	○				○	○
	TI00455	CCMT 120404-BG	0.4	●							●				●			
	TI00456				●						●							
	TI00457	CCMT 120408-BG	0.8	●							●				●			
	TI00458				●						●							
	TI00459					●					●	●				●		
	TI00005							●			●	●	○				○	○
	TI00460	CCMT 120412-BG	1.2	●							●				●			

► Cutting Conditions: page 42
► Toolholders: page 53

INSERT	LE	IC	S
DCMT 0702	07	6.35	2.38
DCGT/MT 11T3	11	9.53	3.97

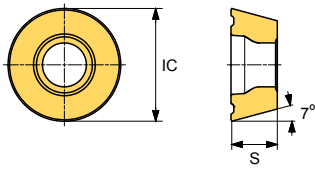


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

DCGT DCMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Aluminium Finishing to Medium	TI00241	DCGT 11T302-AL	0.2								●					●		
	TI00242											●				●		
	TI00243	DCGT 11T304-AL	0.4								●					●		
	TI00244											●				●		
	TI00245	DCGT 11T308-AL	0.8								●					●		
	TI00246											●				●		
 Finishing	TI00406	DCMT 070204-BF	0.4	●									●			●		
	TI00407				●								●					
	TI00006	DCMT 11T304-BF	0.4					●					●	●	○		○	○
	TI00408			●									●		●			
	TI00409				●								●					
	TI00007							●					●	●	○		○	○
 Medium cutting	TI00410	DCMT 11T308-BF	0.8	●									●			●		
	TI00411				●								●					
	TI00474	DCMT 070204-BG	0.4	●									●			●		
	TI00475	DCMT 070208-BG	0.8		●								●					
	TI00476			●									●		●			
	TI00477	DCMT 11T304-BG	0.4	●									●			●		
	TI00478				●								●					
	TI00479			●									●		●			
	TI00480				●								●					
	TI00481	DCMT 11T308-BG	0.8			●							●	●			●	
	TI00008							●					●	●	○		○	○

► Cutting Conditions: page 42
► Toolholders: page 54

INSERT	LE	IC	S
RCMT 0602	-	6.0	2.38
RCMT 0803	-	8.0	3.18
RCMT 10T3	-	10.0	3.97
RCMT 1204	-	12.0	4.76

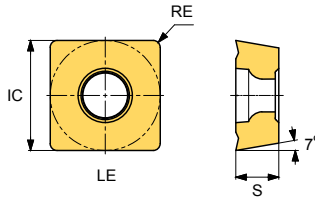


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

RCMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Finishing to Medium cutting	TI00317	RCMT 0602MO	-	●									●		●			
	TI00318				●								●		●			
	TI00316						●						○	●	○		○	○
	TI00009							●					●	●	○		○	○
	TI00320	RCMT 0803MO	-	●									●		●			
	TI00321				●								●		●			
	TI00319						●						○		●			
	TI00010							●					●	●	○		○	○
	TI00323	RCMT 10T3MO	-	●									●		●			
	TI00324				●								●		●			
	TI00322						●						○		●			
	TI00011							●					●	●	○		○	○
	TI00326	RCMT 1204MO	-	●									●		●			
	TI00327				●								●		●			
	TI00325						●						○		●			
	TI00012							●					●	●	○		○	○

► Cutting Conditions: page 43
► Toolholders: page 54

INSERT	LE	IC	S
SCMT 09T3	09	9.53	3.97
SCMT 1204	12	12.7	4.76

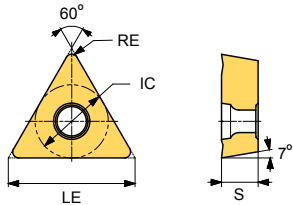


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

SCMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Finishing	TI00419	SCMT 09T304-BF	0.4	●									●		●			
	TI00307				●								●		●			
	TI00013							●					●	●	○		○	○
 Medium cutting	TI00496	SCMT 09T304-BG	0.4	●									●		●			
	TI00495	SCMT 09T308-BG	0.8				●						○		●			
	TI00498			●									●		●			
	TI00499				●								●		●			
	TI00497						●						○		●			
	TI00014	SCMT 120408-BG	0.8					●					●	●	○		○	○
	TI00500			●									●		●			
	TI00501				●								●		●			
	TI00502					●							●	●			●	

▶ Cutting Conditions: page 43
▶ Toolholders: page 56

INSERT	LE	IC	S
TCMT 1102	11	6.35	2.38
TCGT/MT 16T3	16	9.53	3.97

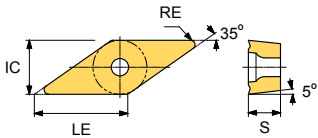


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

TCGT TCMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Aluminium Finishing to Medium	TI00276	TCGT 16T302-AL	0.2								●					●		
	TI00277											●				●		
	TI00278	TCGT 16T304-AL	0.4								●					●		
	TI00279											●				●		
	TI00280	TCGT 16T308-AL	0.8								●					●		
	TI00281											●				●		
 Finishing	TI00420	TCMT 110204-BF	0.4	●									●		●			
	TI00308				●								●	●	○		○	○
	TI00016							●					●					
	TI00421	TCMT 16T304-BF	0.4	●									●		●			
	TI00422				●								●					
	TI00017							●					●	●	○		○	○
 Medium cutting	TI00509	TCMT 110208-BG	0.8	●									●		●			
	TI00510	TCMT 16T304-BG	0.4	●									●		●			
	TI00511				●								●					
	TI00513	TCMT 16T308-BG	0.8	●									●		●			
	TI00309				●								●					
	TI00514					●							●	●			●	
	TI00512						●						○		●			
	TI00018							●					●	●	○		○	○

▶ Cutting Conditions: page 43
▶ Toolholders: page 55

INSERT	LE	IC	S
VBMT 1604	16	9.53	4.76

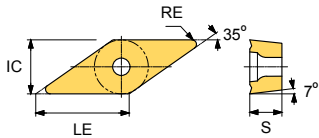


○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ✖ : Unstable conditions

VBMT	ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Finishing	TI00430	VBMT 160404-BF	0.4	●									●		●			
	TI00431				●								●					
	TI00020							●					●	●	○		○	○
	TI00432	VBMT 160408-BF	0.8	●									●		●			
	TI00433				●								●					
 Medium cutting	TI00526	VBMT 160404-BG	0.4	●									●		●			
	TI00527				●								●					
	TI00528	VBMT 160408-BG	0.8	●									●		●			
	TI00529				●								●					
	TI00530					●							●	●			●	
	TI00021							●					●	●	○		○	○

► Cutting Conditions: page 43
► Toolholders: page 55

INSERT	LE	IC	S
VC GT/MT 1604	16	9.53	4.76



○ : Light cutting ● : Medium cutting ● : Heavy cutting ● : Stable conditions ⊕ : Unstable conditions

VCGT VCMT		ORD CODE	ISO DESIGNATION	RE (mm)	ET31C	ET32C	ET33C	ET1001	ET801	ET21P	ET23P	ET10D	ET10U	P	M	K	N	S	H
 Aluminium Finishing to Medium	AL	TI00301	VCGT 160402-AL	0.2								●					●		
		TI00302											●					●	
		TI00303	VCGT 160404-AL	0.4								●					●		
		TI00304										●				●			
		TI00305	VCGT 160408-AL	0.8								●					●		
		TI00306										●				●			
 Finishing	BF	TI00434	VCMT 160404-BF	0.4		●							●						
		TI00023							●					●	●	○		○	○
 Medium cutting	BG	TI00531	VCMT 160408-BG	0.8		●							●						
		TI00024							●					●	●	○		○	○

CUTTING DATA

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
VC (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET21P	-	-	-	130 -230	100 - 200	-	-	-	30 - 90	-
	ET23P	-	-	-	110 - 180	40 - 130	-	-	-	20 - 40	-
	ET24P	-	-	-	80 - 150	30 - 120	-	-	-	20 - 40	-
	ET801	120 - 200	70 - 230	70 - 180	-	-	60 - 160	60 - 120	-	-	40 - 80

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
CNMA 1204..	f _n	0.15	0.50	0.15	0.50	0.15	0.45	-	-	-	-	0.15	0.50	0.15	0.50	-	-	-	-	-	-
	ap	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	0.5	5.0	0.5	5.0	-	-	-	-	-	-
CNMA 1606..	f _n	0.30	0.50	0.30	0.50	0.30	0.45	-	-	-	-	0.30	0.50	0.30	0.50	-	-	-	-	-	-
	ap	1.5	6.0	1.5	6.0	1.0	5.5	-	-	-	-	1.5	6.0	1.5	6.0	-	-	-	-	-	-
CNMA 1906..	f _n	0.30	0.50	0.30	0.50	0.30	0.45	-	-	-	-	0.30	0.50	0.30	0.50	-	-	-	-	-	-
	ap	1.5	7.0	1.5	7.0	1.5	6.5	-	-	-	-	1.5	7.0	1.5	7.0	-	-	-	-	-	-
CNMG 1204.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.05	0.25	-	-	0.05	0.20	0.05	0.15
	ap	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	0.5	1.8
CNMG 1204.. MF	f _n	-	-	-	-	-	-	0.07	0.20	0.07	0.25	-	-	-	-	-	-	0.07	0.20	-	-
	ap	-	-	-	-	-	-	0.15	1.4	0.15	1.7	-	-	-	-	-	-	0.15	1.4	-	-
CNMG 1204.. BL	f _n	0.05	0.30	0.05	0.30	0.05	0.25	0.05	0.25	0.05	0.30	0.05	0.30	0.05	0.30	-	-	0.05	0.25	0.05	0.20
	ap	0.5	3.5	0.5	3.5	0.5	3.0	0.5	3.0	0.5	3.5	0.5	3.5	0.5	3.5	-	-	0.5	3.0	0.5	2.5
CNMG 1204.. BG	f _n	0.20	0.45	0.20	0.45	0.20	0.40	0.20	0.40	0.20	0.45	0.20	0.45	0.20	0.45	-	-	0.20	0.40	0.20	0.35
	ap	0.5	4.0	0.5	4.0	0.5	3.5	0.5	3.5	0.5	4.0	0.5	4.0	0.5	4.0	-	-	0.5	3.5	0.5	2.0
CNMG 1204.. BM	f _n	0.15	0.30	0.15	0.30	0.15	0.25	0.15	0.25	0.15	0.30	0.15	0.30	0.15	0.30	-	-	0.15	0.25	-	-
	ap	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
CNMG 1204.. MM	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	-	-	-	-	-	-	0.20	0.30	-	-
	ap	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	-	-	-	-	-	-	1.0	3.0	-	-
CNMG 1204.. BC	f _n	0.25	0.55	0.25	0.55	0.25	0.50	0.25	0.50	0.25	0.55	0.25	0.55	0.25	0.55	-	-	0.25	0.50	-	-
	ap	0.5	4.5	0.5	4.5	0.5	4.0	0.5	4.0	0.5	4.5	0.5	4.5	0.5	4.5	-	-	0.5	4.0	-	-
CNMG 1204.. BR	f _n	0.25	0.60	0.25	0.60	0.25	0.50	0.25	0.50	0.25	0.60	0.25	0.60	0.25	0.60	-	-	0.25	0.50	0.25	0.45
	ap	1.0	5.0	1.0	5.0	1.0	4.5	1.0	4.5	1.0	5.0	1.0	5.0	1.0	5.0	-	-	1.0	4.5	1.0	4.0
CNMG 1204.. MR	f _n	-	-	-	-	-	-	0.35	0.55	0.35	0.60	-	-	-	-	-	-	0.35	0.55	-	-
	ap	-	-	-	-	-	-	1.8	5.0	1.8	5.5	-	-	-	-	-	-	1.8	5.0	-	-
DNMG 1504.. BF	f _n	0.05	0.15	0.05	0.15	0.05	0.12	0.05	0.12	0.05	0.15	0.05	0.15	0.05	0.15	-	-	0.05	0.12	0.05	0.10
	ap	0.5	1.5	0.5	1.5	0.5	1.2	0.5	1.2	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.2	0.5	1.0
DNMG 1504.. BG	f _n	0.20	0.35	0.20	0.30	0.20	0.25	0.20	0.20	0.20	0.25	0.25	0.45	0.25	0.45	-	-	0.20	0.25	0.20	0.20
	ap	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.5	1.0	2.5	1.0	3.0	1.0	3.0	-	-	1.0	2.0	1.0	1.8
DNMG 1504.. BM	f _n	0.15	0.25	0.15	0.25	0.15	0.20	-	-	-	-	0.15	0.25	0.15	0.25	-	-	-	-	-	-
	ap	0.5	1.5	0.5	1.5	0.5	1.2	-	-	-	-	0.5	1.5	0.5	1.5	-	-	-	-	-	-

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
Vc (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET21P	-	-	-	130 - 230	100 - 200	-	-	-	30 - 90	-
	ET23P	-	-	-	110 - 180	40 - 130	-	-	-	20 - 40	-
	ET801	120 - 200	70 - 230	70 - 180	-	-	60 - 160	60 - 120	-	-	40 - 80

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
DNMG 1504.. MM	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	-	-	-	-	-	-	0.20	0.30	-	-
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	-	-	-	-	-	-	1.0	3.0	-	-
DNMG 1504.. BC	f _n	0.25	0.45	0.25	0.45	0.25	0.40	-	-	-	-	0.25	0.45	0.25	0.45	-	-	-	-	-	-
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	-	-	-	-	1.0	3.0	1.0	3.0	-	-	-	-	-	-
DNMG 1504.. BR	f _n	0.30	0.45	0.30	0.45	0.30	0.40	-	-	-	-	0.30	0.45	0.30	0.45	-	-	-	-	-	-
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	-	-	-	-	1.0	3.5	1.0	3.5	-	-	-	-	-	-
DNMA 1506.. BF	f _n	0.15	0.45	0.15	0.45	0.15	0.40	-	-	-	-	0.15	0.45	0.15	0.45	-	-	-	-	-	-
	a _p	1.0	4.0	1.0	4.0	1.0	3.5	-	-	-	-	1.0	4.0	1.0	4.0	-	-	-	-	-	-
DNMG 1506.. BL	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	-	-	-	-	-	-	0.05	0.20	0.05	0.15
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	-	-	-	-	-	-	1.0	3.0	1.0	2.5
DNMG 1506.. BG	f _n	0.05	0.30	0.05	0.30	0.05	0.25	0.05	0.25	0.05	0.30	-	-	-	-	-	-	0.05	0.25	0.05	0.20
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	-	-	-	-	-	-	0.5	2.5	0.5	2.0
DNMG 1506.. BM	f _n	0.20	0.40	0.20	0.40	0.20	0.35	0.20	0.35	0.20	0.40	0.20	0.40	0.20	0.40	-	-	0.20	0.35	0.20	0.30
	a _p	0.5	3.5	0.5	3.5	0.5	3.0	0.5	3.0	0.5	3.5	0.5	3.5	0.5	3.5	-	-	0.5	3.0	0.5	2.5
DNMG 1506.. MM	f _n	0.15	0.35	0.15	0.35	0.15	0.30	0.15	0.30	0.15	0.35	-	-	-	-	-	-	0.15	0.30	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	-	-	-	-	-	-	0.5	1.5	-	-
DNMG 1506.. BC	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	-	-	-	-	-	-	0.20	0.30	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	-	-	-	-	-	-	0.5	1.5	-	-
DNMG 1506.. BR	f _n	0.25	0.45	0.25	0.45	0.25	0.40	0.25	0.40	0.25	0.45	0.25	0.45	0.25	0.45	-	-	0.25	0.40	-	-
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	1.0	3.5	1.0	3.5	-	-	1.0	3.0	-	-
KNUX 1604.. BF	f _n	0.30	0.50	0.30	0.50	0.30	0.45	0.30	0.45	0.30	0.50	0.30	0.50	0.30	0.50	-	-	0.30	0.45	0.30	0.40
	a _p	1.5	4.0	1.5	4.0	1.5	3.5	1.5	3.5	1.5	4.0	1.5	4.0	1.5	4.0	-	-	1.5	3.5	1.5	3.0
KNUX 1604.. BL	f _n	0.10	0.40	0.10	0.40	0.10	0.35	0.10	0.35	0.10	0.40	0.10	0.40	0.10	0.40	-	-	0.10	0.35	0.10	0.30
	a _p	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SNMA 1204.. BF	f _n	0.20	0.40	0.20	0.40	0.20	0.35	-	-	-	-	0.20	0.40	0.20	0.40	-	-	-	-	-	-
	a _p	1.0	5.0	1.0	5.0	1.0	4.5	-	-	-	-	1.0	5.0	1.0	5.0	-	-	-	-	-	-
SNMG 1204.. BL	f _n	0.05	0.20	0.05	0.20	0.05	0.15	0.05	0.15	0.05	0.20	0.05	0.20	0.05	0.20	-	-	0.05	0.15	0.05	0.10
	a _p	0.5	1.5	0.5	1.5	0.5	1.2	0.5	1.2	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.2	0.5	1.0
SNMG 1204.. BG	f _n	0.10	0.30	0.10	0.30	0.10	0.25	0.10	0.25	0.10	0.30	0.10	0.30	0.10	0.30	-	-	0.10	0.25	0.10	0.22
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	1.0	2.5	1.0	3.0	1.0	3.0	1.0	3.0	-	-	1.0	2.5	1.0	2.0
SNMG 1204.. BG	f _n	0.30	0.55	0.30	0.55	0.30	0.50	0.30	0.50	0.30	0.55	0.30	0.55	0.30	0.55	-	-	0.30	0.50	0.30	0.45
	a _p	1.0	4.0	1.0	4.0	1.0	3.5	1.0	3.5	1.0	4.0	1.0	4.0	1.0	4.0	-	-	1.0	3.5	1.0	3.0

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy stee	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
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EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
VC (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET21P	-	-	-	130 -230	100 - 200	-	-	-	30 - 90	-
	ET23P	-	-	-	110 - 180	40 - 130	-	-	-	20 - 40	-
	ET801	120 - 200	70 - 230	70 - 180	-	-	60 - 160	60 - 120	-	-	40 - 80

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
SNMG 1204.. BC	f _n	0.20	0.45	0.20	0.45	0.20	0.40	0.20	0.40	0.20	0.45	0.20	0.45	0.20	0.45	-	-	0.20	0.40	-	-
	a _p	1.0	4.5	1.0	4.5	1.0	4.0	1.0	4.0	1.0	4.5	1.0	4.5	1.0	4.0	-	-	1.0	4.0	-	-
SNMG 1204.. BR	f _n	0.30	0.60	0.30	0.60	0.30	0.55	0.30	0.55	0.30	0.60	0.30	0.60	0.30	0.60	-	-	0.30	0.55	0.30	0.50
	a _p	1.0	5.0	1.0	5.0	1.0	4.5	1.0	4.5	1.0	5.0	1.0	5.0	1.0	5.0	-	-	1.0	4.5	1.0	4.0
TNMA 1604..	f _n	0.15	0.45	0.15	0.45	0.15	0.40	-	-	-	-	0.15	0.45	0.15	0.45	-	-	-	-	-	-
	a _p	1.0	4.0	1.0	4.0	1.0	3.5	-	-	-	-	1.0	4.0	1.0	4.0	-	-	-	-	-	-
TNMG 1604.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.05	0.25	-	-	0.05	0.20	0.05	0.15
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	1.0	3.5	1.0	3.5	-	-	1.0	3.0	1.0	2.5
TNMG 1604.. BL	f _n	0.10	0.25	0.10	0.25	0.10	0.20	0.10	0.20	0.10	0.25	-	-	-	-	-	-	0.10	0.20	-	-
	a _p	1.5	3.5	1.5	3.5	1.5	3.0	1.5	3.0	1.5	3.5	-	-	-	-	-	-	1.5	3.0	-	-
TNMG 1604.. BG	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	0.20	0.25
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	0.5	2.0
TNMG 1604.. BM	f _n	0.15	0.35	0.15	0.35	0.15	0.30	0.15	0.30	0.15	0.35	0.15	0.35	0.15	0.35	-	-	0.15	0.30	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
TNMG 1604.. BC	f _n	0.25	0.45	0.25	0.45	0.25	0.40	0.25	0.40	0.25	0.45	0.25	0.45	0.25	0.45	-	-	0.25	0.40	-	-
	a _p	0.5	3.5	0.5	3.5	0.5	3.0	0.5	3.0	0.5	3.5	0.5	3.5	0.5	3.5	-	-	0.5	3.0	-	-
TNMG 1604.. BR	f _n	0.30	0.50	0.30	0.50	0.30	0.45	0.30	0.45	0.30	0.50	-	-	-	-	-	-	0.30	0.45	0.30	0.40
	a _p	1.5	3.0	1.5	3.0	1.5	2.5	1.5	2.5	1.5	3.0	-	-	-	-	-	-	1.5	2.5	1.5	2.0
TNMG 2204.. BF	f _n	0.05	0.20	0.05	0.20	0.05	0.12	0.05	0.15	0.05	0.20	0.05	0.20	0.05	0.20	-	-	0.05	0.15	0.05	0.12
	a _p	1.0	4.0	1.0	4.0	1.0	3.5	1.0	3.5	1.0	4.0	1.0	4.0	1.0	4.0	-	-	1.0	3.5	1.0	3.0
TNMG 2204.. BG	f _n	0.20	0.30	0.20	0.30	0.20	0.28	0.20	0.28	0.20	0.30	0.20	0.30	0.20	0.30	-	-	0.20	0.28	0.20	0.25
	a _p	1.0	4.0	1.0	4.0	1.0	3.5	1.0	3.5	1.0	4.0	1.0	4.0	1.0	4.0	-	-	1.0	3.5	1.0	3.0
TNMG 2204.. BR	f _n	0.30	0.50	0.30	0.50	0.30	0.45	-	-	-	-	0.30	0.50	0.30	0.50	-	-	-	-	-	-
	a _p	1.5	4.0	1.5	4.0	1.0	3.5	-	-	-	-	1.0	4.0	1.0	4.0	-	-	-	-	-	-
TNUX 1604..	f _n	0.10	0.40	0.10	0.40	0.10	0.35	0.10	0.35	0.10	0.40	0.10	0.40	0.10	0.40	-	-	0.10	0.38	0.10	0.30
	a _p	0.5	6.0	0.5	6.0	0.5	5.0	0.5	5.0	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.0	0.5	4.5
VNMA 1604..	f _n	0.15	0.35	0.15	0.35	0.15	0.30	-	-	-	-	0.15	0.35	0.15	0.35	-	-	-	-	-	-
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	-	-	-	-	1.0	3.0	1.0	3.0	-	-	-	-	-	-
VNMG 1604.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.05	0.25	-	-	0.05	0.20	0.05	0.15
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	0.5	1.5

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
VC (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET21P	-	-	-	130 -230	100 - 200	-	-	-	30 - 90	-
	ET23P	-	-	-	110 - 180	40 - 130	-	-	-	20 - 40	-
	ET801	120 - 200	70 - 230	70 - 180	-	-	60 - 160	60 - 120	-	-	40 - 80

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
VNMG 1604.. BL	f _n	0.10	0.25	0.10	0.25	0.10	0.20	-	-	-	-	0.10	0.25	0.10	0.25	-	-	-	-	-	-
	a _p	1.0	2.5	1.0	2.5	1.0	2.0	-	-	-	-	1.0	2.5	1.0	2.5	-	-	-	-	-	-
VNMG 1604.. BG	f _n	0.20	0.30	0.20	0.30	0.20	0.25	0.20	0.25	0.20	0.30	0.20	0.30	0.20	0.30	-	-	0.20	0.25	0.20	0.23
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	1.0	2.5	1.0	3.0	1.0	3.0	1.0	3.0	-	-	1.0	2.5	1.0	2.0
VNMG 1604.. BC	f _n	0.25	0.40	0.25	0.40	0.25	0.35	0.25	0.35	0.25	0.40	0.25	0.40	0.25	0.40	-	-	0.25	0.35	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
VNMG 1604.. BR	f _n	0.25	0.35	0.25	0.35	0.25	0.31	0.25	0.31	0.25	0.35	0.25	0.35	0.25	0.35	-	-	0.25	0.31	0.25	0.29
	a _p	1.2	3.0	1.2	3.0	1.2	2.5	1.2	2.5	1.2	3.0	1.2	3.0	1.2	3.0	-	-	1.2	2.5	1.2	2.0
WNMG 0604.. BF	f _n	0.05	0.20	0.05	0.20	0.05	0.15	0.05	0.15	0.05	0.20	0.05	0.20	0.05	0.20	-	-	0.05	0.15	0.05	0.12
	a _p	0.5	1.5	0.5	1.5	0.5	1.2	0.5	1.2	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.2	0.5	1.0
WNMG 0604.. BL	f _n	0.10	0.30	0.10	0.30	0.10	0.25	0.10	0.25	0.10	0.30	0.10	0.30	0.10	0.30	-	-	0.10	0.25	-	-
	a _p	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5	1.0	2.5	-	-	1.0	2.0	-	-
WNMG 0604.. BG	f _n	0.20	0.40	0.20	0.40	0.20	0.35	0.20	0.35	0.20	0.40	0.20	0.40	0.20	0.40	-	-	0.20	0.35	0.20	0.30
	a _p	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5	1.0	2.5	-	-	1.0	2.0	1.0	1.8
WNMA 0804.. 	f _n	0.15	0.50	0.15	0.50	0.15	0.40	-	-	-	-	0.15	0.50	0.15	0.50	-	-	-	-	-	-
	a _p	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	0.5	5.0	0.5	5.0	-	-	-	-	-	-
WNMG 0804.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.05	0.25	-	-	0.05	0.20	0.05	0.15
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	0.5	1.8
WNMG 0804.. BL	f _n	0.10	0.30	0.10	0.30	0.10	0.25	0.10	0.25	0.10	0.30	0.10	0.30	0.10	0.30	-	-	0.10	0.25	0.10	0.20
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	1.0	2.5	1.0	3.0	1.0	3.0	1.0	3.0	-	-	1.0	2.5	1.0	2.0
WNMG 0804.. BG	f _n	0.20	0.40	0.20	0.40	0.20	0.35	0.20	0.35	0.20	0.40	0.20	0.40	0.20	0.40	-	-	0.20	0.35	0.20	0.30
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	1.0	3.5	1.0	3.5	-	-	1.0	3.0	1.0	2.5
WNMG 0804.. BM	f _n	0.15	0.30	0.15	0.30	0.15	0.25	0.15	0.25	0.15	0.30	0.15	0.30	0.15	0.30	-	-	0.15	0.25	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
WNMG 0804.. MM	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	-	-	-	-	-	-	0.20	0.30	-	-
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	1.0	2.5	1.0	3.0	-	-	-	-	-	-	1.0	2.5	-	-
WNMG 0804.. BC	f _n	0.25	0.55	0.25	0.55	0.25	0.50	0.25	0.50	0.25	0.55	0.25	0.55	0.25	0.55	-	-	0.25	0.50	-	-
	a _p	0.5	4.5	0.5	4.5	0.5	4.0	0.5	4.0	0.5	4.5	0.5	4.5	0.5	4.5	-	-	0.5	4.0	-	-
WNMG 0804.. BR	f _n	0.30	0.60	0.30	0.60	0.30	0.55	0.30	0.55	0.30	0.60	0.30	0.60	0.30	0.60	-	-	0.30	0.55	0.30	0.50
	a _p	1.5	5.0	1.5	5.0	1.5	4.5	1.5	4.5	1.5	5.0	1.5	5.0	1.5	5.0	-	-	1.5	4.5	1.5	4.0

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
VC (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET10D	-	-	-	-	-	-	-	350 - 1200	-	-
	ET10U	-	-	-	-	-	-	-	250 - 800	-	-
	ET801	120 - 200	70 - 230	70 - 180	60 - 180	60 - 150	60 - 160	60 - 120	-	35 - 60	40 - 80

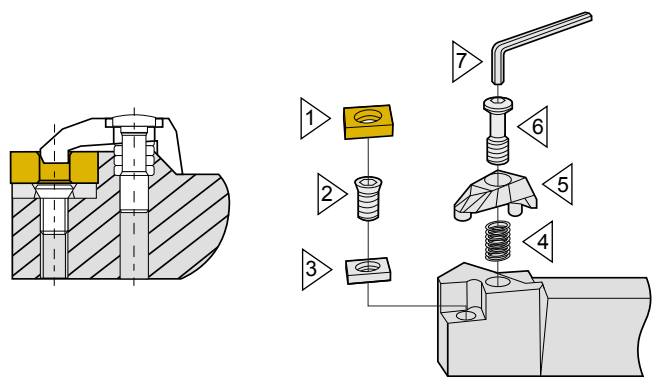
Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
CCGT 09T3.. AL	f _n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.35	-	-	-	-
	a _p	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	3.0	-	-	-	-
CCGT 1204.. AL	f _n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.35	-	-	-	-
	a _p	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	3.5	-	-	-	-
CCMT 0602.. BF	f _n	0.05	0.15	0.05	0.15	0.05	0.12	0.05	0.12	0.05	0.15	0.05	0.15	0.05	0.15	-	-	0.05	0.12	-	-
	a _p	0.5	1.5	0.5	1.5	0.5	1.0	0.5	1.0	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.0	-	-
CCMT0602.. BG	f _n	0.15	0.25	0.15	0.25	0.15	0.20	0.15	0.20	0.15	0.25	0.15	0.25	0.15	0.25	-	-	0.15	0.20	-	-
	a _p	0.8	2.0	0.8	2.0	0.8	1.5	0.8	1.5	0.8	2.0	0.8	2.0	0.8	2.0	-	-	0.8	1.5	-	-
CCMT 09T3.. BF	f _n	0.05	0.20	0.05	0.20	0.05	0.15	0.05	0.15	0.05	0.20	0.05	0.20	0.05	0.20	-	-	0.05	0.15	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
CCMT 09T3.. BG	f _n	0.15	0.30	0.15	0.30	0.15	0.25	0.15	0.25	0.15	0.30	0.15	0.30	0.15	0.30	-	-	0.15	0.25	-	-
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	-	-
CCMT 1204.. BG	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	-	-
	a _p	0.5	3.5	0.5	3.5	0.5	3.0	0.5	3.0	0.5	3.5	0.5	3.5	0.5	3.5	-	-	0.5	3.0	-	-
DCGT 11T3.. AL	f _n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.30	-	-	-	-
	a _p	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	2.5	-	-	-	-
DCMT 0702.. BF	f _n	0.05	0.15	0.05	0.15	0.05	0.12	0.05	0.12	0.05	0.15	0.05	0.15	0.05	0.15	-	-	0.05	0.12	-	-
	a _p	0.5	1.5	0.5	1.5	0.5	1.0	0.5	1.0	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.0	-	-
DCMT 11T3.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.02	0.25	-	-	0.05	0.20	-	-
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	-	-
DCMT 11T3.. BG	f _n	0.15	0.35	0.15	0.35	0.15	0.30	0.15	0.30	0.15	0.35	0.15	0.35	0.15	0.35	-	-	0.15	0.30	-	-
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	-	-
RCMT 0602..	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.02	0.25	-	-	0.05	0.20	-	-
	a _p	0.2	1.2	0.2	1.2	0.2	1.0	0.2	1.0	0.2	1.2	0.2	1.2	0.2	1.2	-	-	0.2	1.0	-	-
RCMT 0803..	f _n	0.05	0.30	0.05	0.30	0.05	0.25	0.05	0.25	0.05	0.30	0.05	0.30	0.05	0.30	-	-	0.05	0.25	-	-
	a _p	0.5	1.5	0.5	1.5	0.5	1.0	0.5	1.0	0.5	1.5	0.5	1.5	0.5	1.5	-	-	0.5	1.0	-	-
RCMT 10T3..	f _n	0.10	0.35	0.10	0.35	0.10	0.30	0.10	0.30	0.10	0.35	0.10	0.35	0.10	0.35	-	-	0.10	0.30	-	-
	a _p	0.5	2.5	0.5	2.5	0.5	2.0	0.5	2.0	0.5	2.5	0.5	2.5	0.5	2.5	-	-	0.5	2.0	-	-
RCMT 1204..	f _n	0.15	0.45	0.15	0.45	0.15	0.40	0.15	0.40	0.15	0.45	0.15	0.45	0.15	0.45	-	-	0.15	0.40	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
Vc (m/min)	ET1001	220 - 480	220 - 420	-	-	-	170 - 420	120 - 410	-	-	-
	ET31C	170 - 450	180 - 380	100 - 330	-	-	120 - 300	120 - 280	-	-	-
	ET32C	180 - 380	110 - 350	60 - 300	-	-	-	-	-	-	-
	ET33C	150 - 350	90 - 300	70 - 250	120 - 220	50 - 180	-	-	-	35 - 80	-
	ET10D	-	-	-	-	-	-	-	350 - 1200	-	-
	ET10U	-	-	-	-	-	-	-	250 - 800	-	-
	ET801	120 - 200	70 - 230	70 - 180	60 - 180	60 - 150	60 - 160	60 - 120	-	35 - 60	40 - 80

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
SCMT 09T3.. BF	f _n	0.10	0.25	0.10	0.25	0.10	0.20	0.10	0.20	0.10	0.25	0.10	0.25	0.10	0.25	-	-	0.10	0.20	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
SCMT 09T3.. BG	f _n	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	-	-
	a _p	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5	1.0	2.5	-	-	1.0	2.0	-	-
SCMT 1204.. BG	f _n	0.20	0.40	0.20	0.40	0.20	0.35	0.20	0.35	0.20	0.40	0.20	0.40	0.20	0.40	-	-	0.20	0.35	-	-
	a _p	1.0	3.5	1.0	3.5	1.0	3.0	1.0	3.0	1.0	3.5	1.0	3.5	1.0	3.5	-	-	1.0	3.0	-	-
TCGT 16T3.. AL	f _n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.35	-	-	-	-
	a _p	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	3.0	-	-	-	-
TCMT 1102.. BF	f _n	0.05	0.20	0.05	0.20	0.05	0.15	0.05	0.15	0.05	0.20	0.05	0.20	0.05	0.20	-	-	0.05	0.15	-	-
	a _p	0.5	2.0	0.5	2.0	0.5	1.5	0.5	1.5	0.5	2.0	0.5	2.0	0.5	2.0	-	-	0.5	1.5	-	-
TCMT 16T3.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.02	0.25	-	-	0.05	0.20	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
TCMT 16T3.. BG	f _n	0.15	0.35	0.15	0.35	0.15	0.30	0.15	0.30	0.15	0.35	0.15	0.35	0.15	0.35	-	-	0.15	0.30	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
VBMT 1604.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.02	0.25	-	-	0.05	0.20	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
VBMT 1604.. BG	f _n	0.15	0.40	0.15	0.40	0.15	0.35	0.15	0.35	0.15	0.40	0.15	0.40	0.15	0.40	-	-	0.15	0.35	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
VCGT 1604.. AL	f _n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	0.35	-	-	-	-
	a _p	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	3.0	-	-	-	-
VCMT 1604.. BF	f _n	0.05	0.25	0.05	0.25	0.05	0.20	0.05	0.20	0.05	0.25	0.05	0.25	0.02	0.25	-	-	0.05	0.20	-	-
	a _p	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	-	-
VCMT 1604.. BG	f _n	0.20	0.40	0.20	0.40	0.20	0.35	0.20	0.35	0.20	0.40	0.20	0.40	0.20	0.40	-	-	0.20	0.35	-	-
	a _p	1.0	3.0	1.0	3.0	1.0	2.5	1.0	2.5	1.0	3.0	1.0	3.0	1.0	3.0	-	-	1.0	2.5	-	-

TOOLHOLDER SPARE PART BREAK DOWN

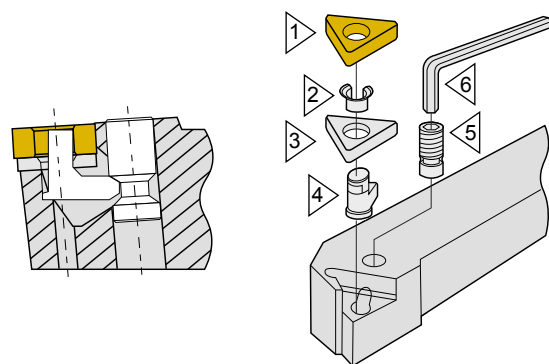
DOUBLE CLAMP TYPE



- 1 Insert
- 2 Shim screw
- 3 Shim
- 4 Spring
- 5 Clamp
- 6 Clamp screw
- 7 Key

For negative inserts. Highly secure clamping mechanism with excellent index repeatability

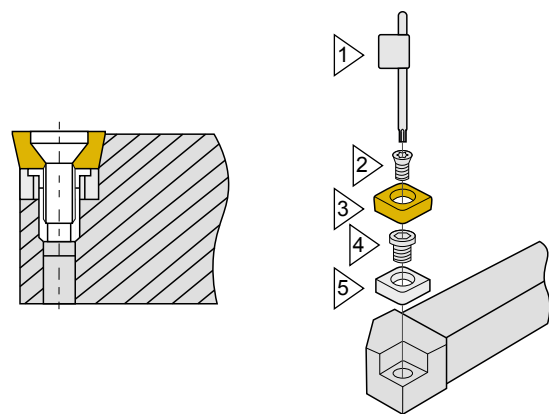
LEVER LOCK TYPE



- 1 Insert
- 2 Shim pin
- 3 Shim
- 4 Lever
- 5 Screw
- 6 Key

For negative inserts. Lever system allows for easy indexing and gives a more free chip flow.

SCREW LOCK TYPE



- 1 Wrench
- 2 Insert screw
- 3 Insert
- 4 Shim screw
- 5 Shim

For positive inserts. Secure clamping with high index accuracy.

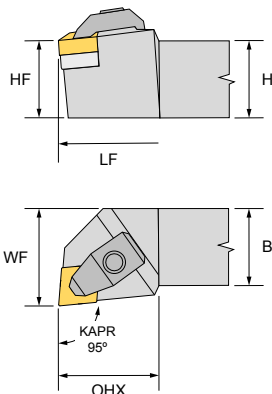
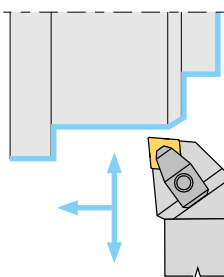
TOOLHOLDERS



DOUBLE CLAMP EXTERNAL TOOL HOLDER

For CN.. negative inserts

DCLNR/L



Insert Type	
	CNMG 1204..
	CNMA 1204..

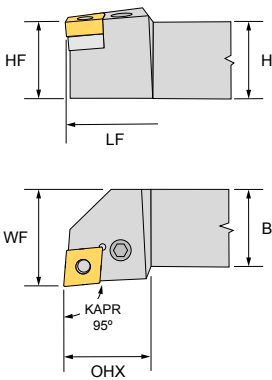
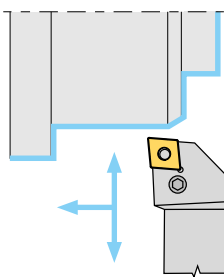
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Key
TTH0041	DCLNR 2020 K12	●		20	20	20	125	30	25	TTBP-2	HMBV6M	HPC12NA	HBI4	HCY6	HA4
TTH0041L	DCLNL 2020 K12		●	20	20	20	125	30	25						
TTH0042	DCLNR 2525 M12	●		25	25	25	150	30	32						
TTH0042L	DCLNL 2525 M12		●	25	25	25	150	30	32						
TTH0043	DCLNR 3232 P12	●		32	32	32	170	35	40						
TTH0043L	DCLNL 3232 P12		●	32	32	32	170	35	40						
TTH0044	DCLNR 4040 R12	●		40	40	40	200	40	48						
TTH0044L	DCLNL 4040 R12		●	40	40	40	200	40	48						

● : Stock ○ : Available to order

LEVER LOCK EXTERNAL TOOL HOLDER

For CN.. negative inserts

PCLNR/L



Insert Type	
	CNMG 1204..
	CNMA 1204..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Lever	Screw	Shim	Shim Pin	Wrench
TTH0089	PCLNR/L 2020 K12	●	○	20	20	20	125	30	25	HL441	HLV441	HPC12NA	HAY461	HA3
TTH0090	PCLNR/L 2525 M12	●	○	25	25	25	150	30	32					

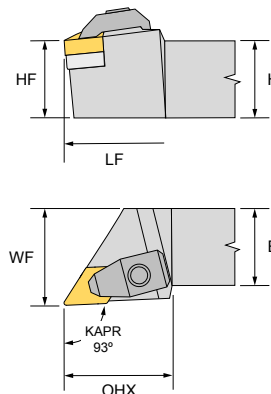
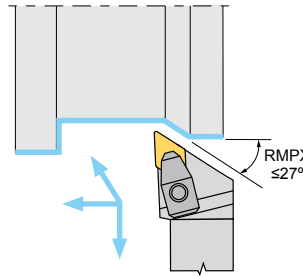
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: PCLNL 2020 K06 = TTH0089L

DOUBLE CLAMP EXTERNAL TOOL HOLDER

For DN.. negative inserts

DDJNR/L



Insert Type	
	DNMG 1506..
	DNMA 1506..

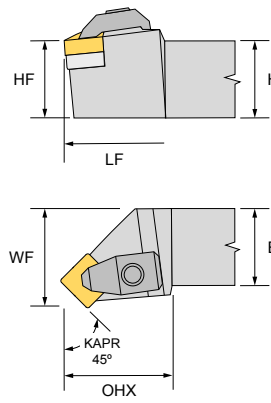
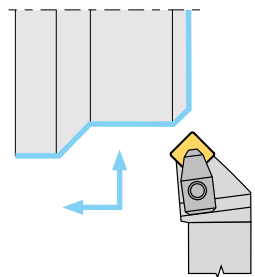
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Key
TTH0045	DDJNR 2020 K15	●		20	20	20	125	30	25	TTBP-2	HMBV6M	HPD15NA	HBI4	HCY6	HA4
TTH0045L	DDJNL 2020 K15		●	20	20	20	125	30	25						
TTH0046	DDJNR 2525 M15	●		25	25	25	150	30	32						
TTH0046L	DDJNL 2525 M15		●	25	25	25	150	30	32						
TTH0047	DDJNR 3232 P15	●		32	32	32	170	35	40						
TTH0047L	DDJNL 3232 P15		●	32	32	32	170	35	40						
TTH0048	DDJNR 4040 R15	●		40	40	40	200	40	48						
TTH0048L	DDJNL 4040 R15		●	40	40	40	200	40	48						

● : Stock ○ : Available to order

DOUBLE CLAMP EXTERNAL TOOL HOLDER

For SN.. negative inserts

DSSNR/L



Insert Type	
	SNMG 1204..
	SNMA 1204..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Key
TTH0049	DSSNR/L 2020 K12	●	○	20	20	20	125	35	25	TTBP-2	HMBV6M	HPS12NA	SP12M4	HY22	HA4
TTH0050	DSSNR/L 2525 M12	●	○	25	25	25	150	40	32						

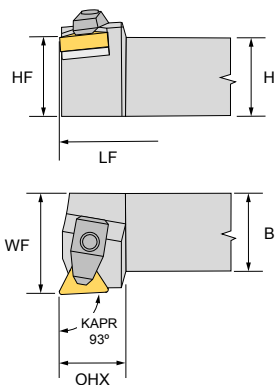
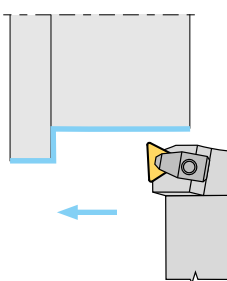
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: DSSNL 2020 K12 = TTH0049L

DOUBLE CLAMP EXTERNAL TOOL HOLDER

For TN.. negative inserts

DTJNR/L



Insert Type	
	TNMG 1604.. TNMG 2204..
	TNMA 1604..

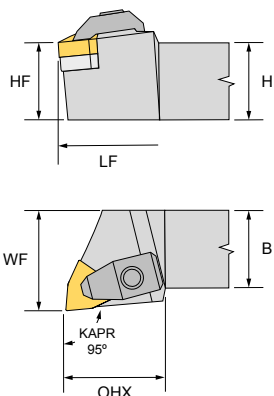
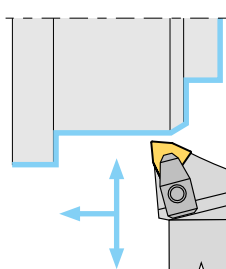
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Hex Key
TTH0051	DTJNR/L 2020 K16	●	○	20	20	20	125	30	25	TTBP-1	HMBV5M	HPT16NA	SP12M4	HCY5	HA3
TTH0052	DTJNR/L 2525 M16	●	○	25	25	25	150	30	32						
TTH0053	DTJNR/L 2525 M22	●	○	25	25	25	150	40	32	TTBP-2	HMBV6M	HPT22NA	SP12M4	HY22	HA4
TTH0054	DTJNR/L 3232 P22	●	○	32	32	32	170	40	40						
TTH0055	DTJNR/L 4040 R22	●	○	40	40	40	200	45	50						

● : Stock ○ : Available to order
To order left hand add L to EDP code. Example: DTJNL 2020 K16 = TTH0051L

DOUBLE CLAMP EXTERNAL TOOL HOLDER

For WN.. negative inserts

DWLNR/L



Insert Type	
	WNMG 0804..
	WNMA 0804..

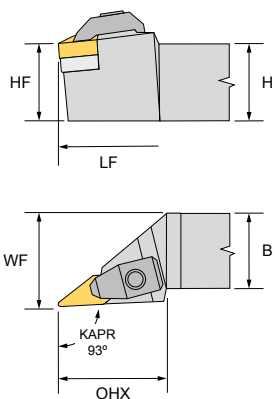
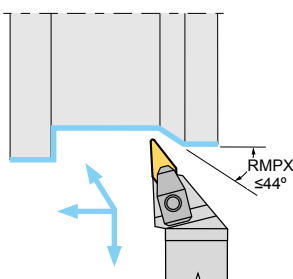
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Key
TTH0058	DWLNR 2020 K08	●		20	20	20	125	30	25	TTBP-2	HMBV6M	HPW08NA	HB14	HCY6	HA4
TTH0058L	DWLNL 2020 K08		●	20	20	20	125	30	25						
TTH0059	DWLNR 2525 M08	●		25	25	25	150	30	32						
TTH0059L	DWLNL 2525 M08		●	25	25	25	150	30	32						
TTH0060	DWLNR 3232 P08	●		32	32	32	170	35	40						
TTH0060L	DWLNL 3232 P08		●	32	32	32	170	35	40						
TTH0061	DWLNR 4040 R08	●		40	40	40	200	40	48						
TTH0061L	DWLNL 4040 R08		●	40	40	40	200	40	48						

● : Stock ○ : Available to order

DOUBLE CLAMP EXTERNAL TOOL HOLDER

For VN.. negative inserts

DVJNR/L



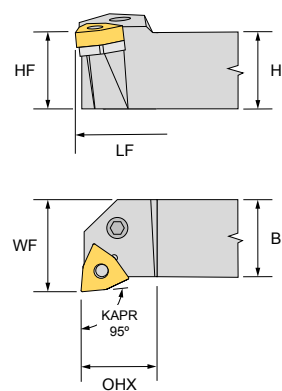
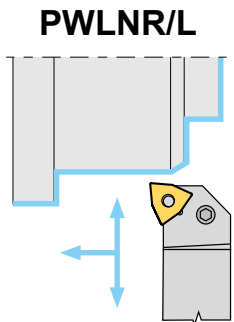
Insert Type	
	VNMG 1604..
	VNMA 1604..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Clamp	Clamp Screw	Shim	Shim Screw	Spring	Hex Key
TTH0084	DVJNR/L 2020 K16	●	○	20	20	20	125	35	25	TTBP-3	HMBV6M	HPV16NA	SP10M4	HY22	HA4
TTH0085	DVJNR/L 2525 M16	●	○	25	25	25	150	40	32						

● : Stock ○ : Available to order
To order left hand add L to EDP code. Example: DVJNL 2020 K16 = TTH0084L

LEVER LOCK EXTERNAL TOOL HOLDER

For WN.. negative inserts



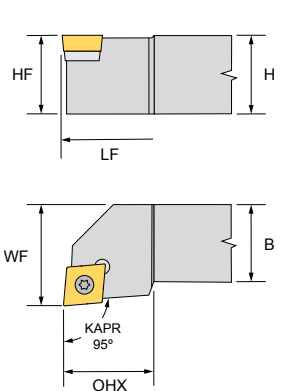
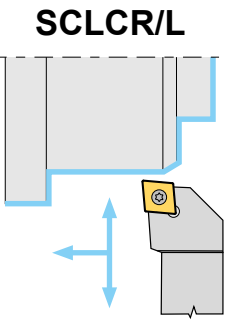
Insert Type	
	WNMG 0604..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Lever	Screw	Shim	Shim Pin	Wrench
TTH0056	PWLNR 1616 H06	●		16	16	16	100	20	20	HL440	HLV420	HPW06NA	HAY463	HA2.5
TTH0056L	PWLNL 1616 H06		●	16	16	16	100	20	20					
TTH0057	PWLNR 2020 K06	●		16	16	16	125	20	25					
TTH0057L	PWLNL 2020 K06		●	16	16	16	125	20	25					

● : Stock ○ : Available to order

SCREW LOCK EXTERNAL TOOL HOLDER

For CC.. positive inserts



Insert Type	
	CCGT 09T3.. CCGT 1204..
	CCMT 0602.. CCMT 09T3.. CCMT 1204..

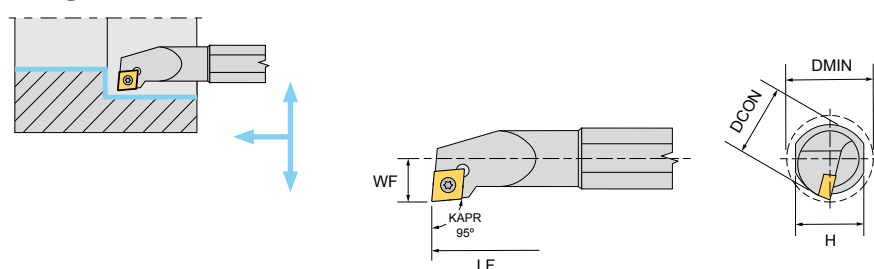
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0001	SCLCR 0808 F06	●		8	8	8	80	11	10	CCMT 06	TXS2506	-	-	TXW09	-
TTH0001L	SCLCL 0808 F06		●	8	8	8	80	11	10						
TTH0002	SCLCR 1010 F06	●		10	10	10	80	11	12						
TTH0002L	SCLCL 1010 F06		●	10	10	10	80	11	12						
TTH0003	SCLCR 1212 F09	●		12	12	12	80	16	16	CCGT 09 CCMT 09	TXS3509	-	-	TXW15	-
TTH0003L	SCLCL 1212 F09		●	12	12	12	80	16	16						
TTH0004	SCLCR 1616 H09	●		16	16	16	100	17	20						
TTH0004L	SCLCL 1616 H09		●	16	16	16	100	17	20						
TTH0005	SCLCR 2020 K09	●		20	20	20	125	18	25						
TTH0005L	SCLCL 2020 K09		●	20	20	20	125	18	25						
TTH0006	SCLCR 2525 M09	●		25	25	25	150	25	32	CCGT 12 CCMT 12	TXS4511	HSC12PA	HSAV4.5	TXW15	HA4.5
TTH0006L	SCLCL 2525 M09		●	25	25	25	150	25	32						
TTH0007	SCLCR 2020 K12	●		20	20	20	125	22	25						
TTH0007L	SCLCL 2020 K12		●	20	20	20	125	22	25						
TTH0008	SCLCR 2525 M12	●		25	25	25	150	25	32	CCGT 12 CCMT 12	TXS4511	HSC12PA	HSAV4.5	TXW15	HA4.5
TTH0008L	SCLCL 2525 M12		●	25	25	25	150	25	32						

● : Stock ○ : Available to order

SCREW LOCK BORING BAR

For CC.. positive inserts

- SCLCR/L



Insert Type	
	CCGT 09T3..
	CCMT 0602.. CCMT 09T3..

EDP Code	Description	●	R	L	DCON	DMIN	H	LF	WF	Insert	Screw	Wrench
TTH0062	A08F SCLCR/L 06	●	●	○	8	10	7	80	5	CCMT 06	TXS2506	TXW09
TTH0019	S08H SCLCR/L 06	x	●	○	8	11	7	100	6			
TTH0063	A10H SCLCR/L 06	●	●	○	10	12	9	100	6			
TTH0020	S10K SCLCR/L 06	x	●	○	10	13	9	125	7			
TTH0064	A12H SCLCR/L 06	●	●	○	12	16	11	100	9			
TTH0021	S12M SCLCR/L 06	x	●	○	12	16	11	150	9			
TTH0022	S16Q SCLCR/L 06	x	●	○	16	20	15	180	11	CCGT 09 CCMT 09	TXS3508	TXW15
TTH0065	A12H SCLCR/L 09	●	●	○	12	16	11	100	9			
TTH0023	S12M SCLCR/L 09	x	●	○	12	16	11	150	9			
TTH0066	A16M SCLCR/L 09	●	●	○	16	20	15	150	11			
TTH0024	S16Q SCLCR/L 09	x	●	○	16	20	15	180	11			
TTH0067	A20P SCLCR/L 09	●	●	○	20	25	18	170	13			
TTH0025	S20R SCLCR/L 09	x	●	○	20	25	18	200	13			
TTH0026	S25S SCLCR/L 09	x	●	○	25	32	23	250	17			

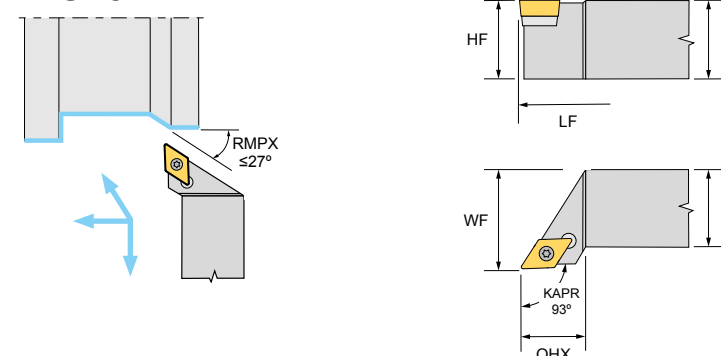
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: S08H SCLCL 06 = TTH0019L

SCREW LOCK EXTERNAL TOOL HOLDER

For DC.. positive inserts

SDJCR/L



Insert Type	
	DCGT 11T3..
	DCMT 0702.. DCMT 11T3..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0068	SDJCR/L 1010 H07	●	○	10	10	10	100	14	12	DCMT 07	TXS2506	-	-	TXW09	-
TTH0069	SDJCR/L 1212 F07	●	○	12	12	12	80	14	16						
TTH0070	SDJCR/L 1212 F11	●	○	12	12	12	80	20	16	DCGT 11 DCMT 11	TXS3511	HSD11PA	HSAV3.5	TXW15	HA3.5
TTH0071	SDJCR/L 1616 H11	●	○	16	16	16	100	20	20						
TTH0072	SDJCR/L 2020 K11	●	○	20	20	20	125	25	25						
TTH0073	SDJCR/L 2525 M11	●	○	25	25	25	150	25	32						

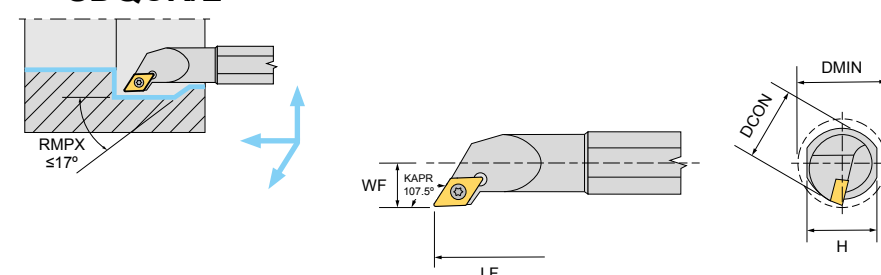
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: SDJCL 2020 K11 = TTH0072L

SCREW LOCK BORING BAR

For DC.. positive inserts

- SDQCR/L



Insert Type	
	DCGT 11T3..
	DCMT 0702.. DCMT 11T3..

EDP Code	Description	R	L	DCON	DMIN	H	LF	WF	Insert	Screw	Wrench
TTH0074	S10K SDQCR/L 07	●	○	10	13	9	125	7	DCMT 07	TXS2506	TXW09
TTH0075	S12M SDQCR/L 07	●	○	12	16	11	150	9			
TTH0076	S16Q SDQCR/L 11	●	○	16	20	15	180	11	DCGT 11 DCMT 11	TXS3509	TXW15
TTH0077	S20R SDQCR/L 11	●	○	20	25	18	200	13			
TTH0078	S25S SDQCR/L 11	●	○	25	32	23	250	17			

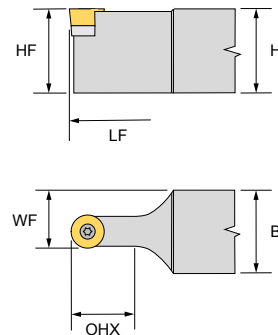
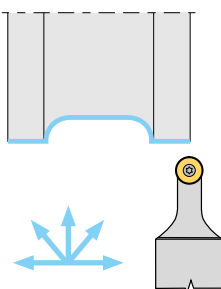
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: S10K SDQCL 07 = TTH0074L

SCREW LOCK EXTERNAL TOOL HOLDER

For RC.. positive inserts

SRDCN



Insert Type	
	RCMT 10T3.. RCMT 1204..

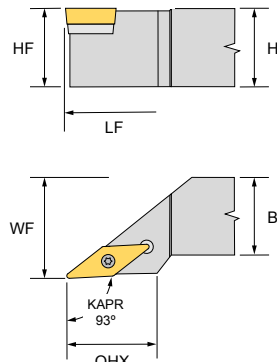
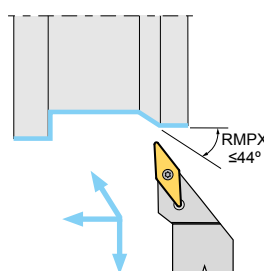
EDP Code	Description		H	HF	B	LF	OHX	WF	Insert	Screw	Wrench
TTH0009	SRDCN 1616 H10	●	16	16	16	100	20	13	RCMT 10	TXS4010	TXW15
TTH0010	SRDCN 2020 K10	●	20	20	20	125	20	15			
TTH0011	SRDCN 2525 M12	●	25	25	25	150	28	18.5	RCMT 12	TXS4511	TXW15

● : Stock ○ : Available to order

SCREW LOCK EXTERNAL TOOL HOLDER

For VB.. positive inserts

SVJBR/L



Insert Type	
	VBMT 1604..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0086	SVJBR/L 1616 H16	●	○	16	16	16	100	25	20	VBMT 16	TXS3511	HSV16PA	HSAV3.5	TXW15	HA3.5
TTH0087	SVJBR/L 2020 K16	●	○	20	20	20	125	35	25						
TTH0088	SVJBR/L 2525 M16	●	○	25	25	25	150	35	32						

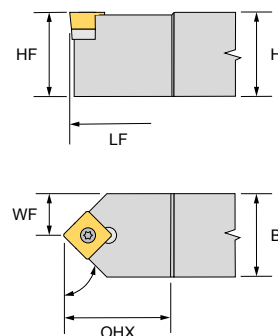
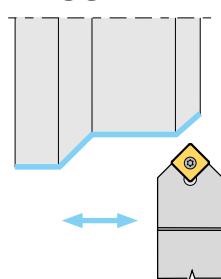
● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: SVJBL 2020 K16 = TTH0087L

SCREW LOCK EXTERNAL TOOL HOLDER

For SC.. positive inserts

SSDCN



Insert Type	
	SCMT 09T3.. SCMT 1204..

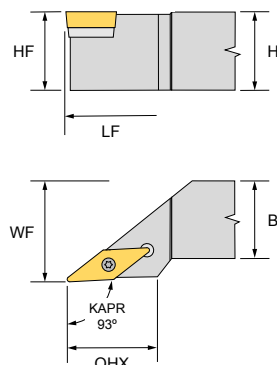
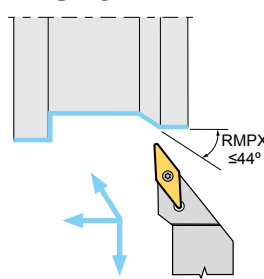
EDP Code	Description		H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0012	SSDCN 1212 F09	●	12	12	12	80	25	6	SCMT 09	TXS3509	-	-	TXW15	
TTH0013	SSDCN 1616 H09	●	16	16	16	100	25	8						
TTH0014	SSDCN 2020 K12	●	20	20	20	125	30	10	SCMT 12	TXS4511	HSS12PA	HSAV4.5	TXW15	HA4.5
TTH0015	SSDCN 2525 M12	●	25	25	25	150	30	12.5						

● : Stock ○ : Available to order

SCREW LOCK EXTERNAL TOOL HOLDER

For VC.. positive inserts

SVJCR/L



Insert Type	
	VCGT 1604..
	VCMT 1604..

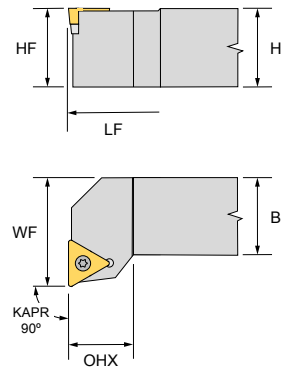
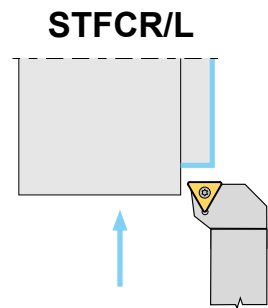
EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0016	SVJCR/L 2020 K16	●	○	20	20	20	125	35	25	VCGT 16 VCMT 16	TXS3511	HSV16PA	HSAV3.5	TXW15	HA3.5
TTH0017	SVJCR/L 2525 M16	●	○	25	25	25	150	35	32						
TTH0018	SVJCR/L 3232 P16	●	○	32	32	32	170	40	40						

● : Stock ○ : Available to order

To order left hand add L to EDP code. Example: SVJCL 2020 K16 = TTH0016L

SCREW LOCK EXTERNAL TOOL HOLDER

For TC.. positive inserts



Insert Type	
	TCGT 16T3..
	TCMT 1102.. TCMT 16T3..

EDP Code	Description	R	L	H	HF	B	LF	OHX	WF	Insert	Screw	Shim	Shim Screw	Wrench	Key
TTH0079	STFCR/L 1212 F11	●	○	12	12	12	80	20	16	TCMT 11	TXS2506	-	-	TXW09	-
TTH0080	STFCR/L 1616 H11	●	○	16	16	16	100	25	20		TXS3509	-	-	TXW15	
TTH0081	STFCR/L 1616 H16	●	○	16	16	16	100	25	20	TCGT 16 TCMT 16	TXS3511	HST16PA	HSAV3.5	TXW15	HA3.5
TTH0082	STFCR/L 2020 K16	●	○	20	20	20	125	35	25						
TTH0083	STFCR/L 2525 M16	●	○	25	25	25	150	40	32						

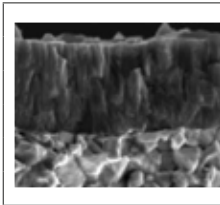
● : Stock ○ : Available to order
To order left hand add L to EDP code. Example: STFCL 1616 H11 = TTH0080L

GROOVING



INSERT GRADE GUIDE

		P	STEEL				M	STAINLESS STEEL				K	CAST IRON			
			05	15	25	35		05	15	25	35		05	15	25	35
PVD	ET602					602					602					602
			HARDER ← → TOUGHER					HARDER ← → TOUGHER					HARDER ← → TOUGHER			
		N	NON-FERROUS				S	HRSA				H	HARDENED STEEL			
			05	15	25	35		05	15	25	35		05	15	25	35
PVD	ET602					602					602					
			HARDER ← → TOUGHER					HARDER ← → TOUGHER					HARDER ← → TOUGHER			



P20 - P35 ET602

M20 - M40 Ultra dense PVD coating optimised for grooving applications, suitable for most materials

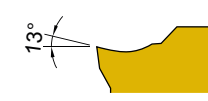
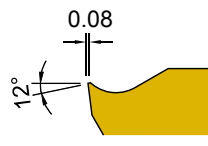
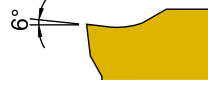
K20 - K40

N05 - N35

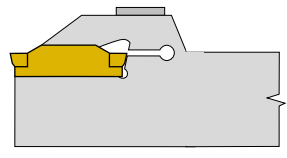
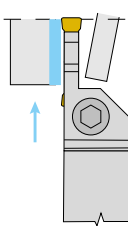
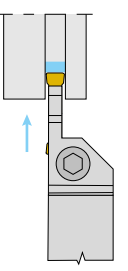
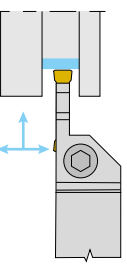
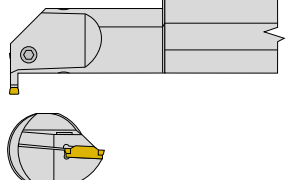
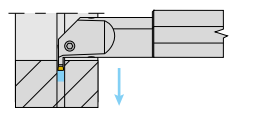
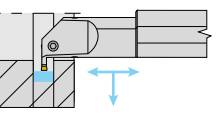
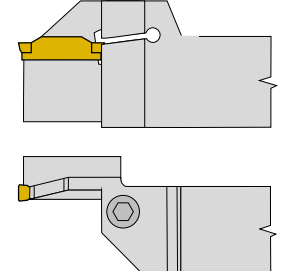
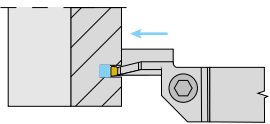
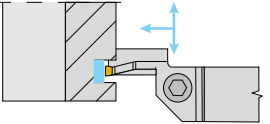
S15 - S25

PVD - TiAlN

INSERT GEOMETRY

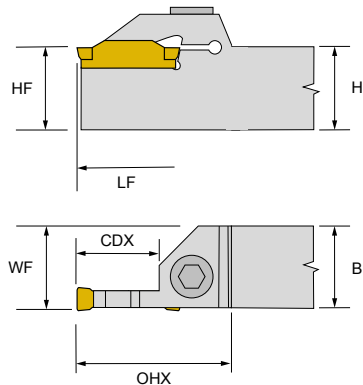
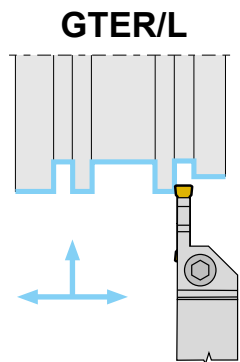
P	M	K	N	S	H	Edge Preparation Guide	
•	•	•	•	•	•		TDP For Aluminium, Stainless Steel and HRSA
•	•	•	•	•	•		TDN General machining
•	•	•	•	•	•		TDY Grooving and Turning

APPLICATION GUIDE & INDEX

TOOL TYPE	PARTING	GROOVING	TURNING
 GTER/L P.60			
 GTIR/L P.61			
 GTFR/L P.62			

CUTTING DATA	P.65-66
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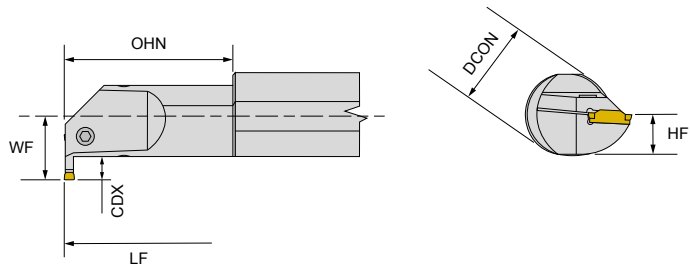
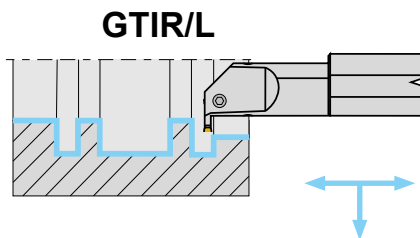
EXTERNAL GROOVING HOLDER



EDP Code	Description	R	L	CDX	H	HF	B	LF	OHX	WF	Insert	Screw	Key
PGH0001	GTER 2020-2	●	○	12	20	20	20	125	31	19.1	TDP2 TDN2	M6X20IMB	HA5
PGH0002	GTER 2525-2	●	○	12	25	25	25	150	31	24.1		M6X25IMB	
PGH0003	GTER 2020-3	●	○	12	20	20	20	125	31	18.8	TDP3 TDN3 TDY3	M6X20IMB	
PGH0004	GTER 2525-3	●	○	12	25	25	25	150	31	23.8		M6X25IMB	
PGH0005	GTER 2020-4	●	○	15	20	20	20	125	33	18.4	TDP4 TDN4 TDY4	M6X20IMB	
PGH0006	GTER 2525-4	●	○	15	25	25	25	150	33	23.4		M6X25IMB	

● : Stock ○ : Available to order
To order left hand add L to EDP code. Example: GTER 2020-2 = PGH0001L

INTERNAL GROOVING HOLDER

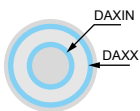
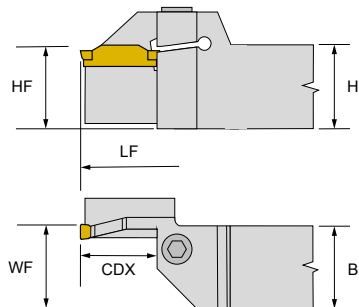
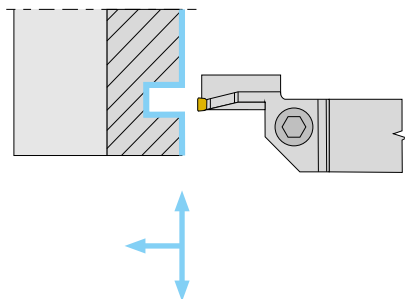


EDP Code	Description	R	L	CDX	DCON	HF	LF	OHN	WF	Insert	Screw	Key
PGH0007	GTIR 0016-2	●	○	8.5	16	7.5	125	-	16.5	TDP2 TDN2	M5X10IMB	HA4
PGH0008	GTIR 0020-2	●	○	6	20	9	160	40	15.8		M6X12IMB	HA5
PGH0009	GTIR 0020-3	●	○	6	20	9	160	40	15.8	TDP3 TDN3 TDY3	M6X12IMB	HA5
PGH0010	GTIR 0025-3	●	○	5.1	25	11.5	200	40	17.5		M6X15IMB	
PGH0011	GTIR 0020-4	●	○	6	20	9	160	40	15.8	TDP4 TDN4 TDY4	M6X12IMB	
PGH0012	GTIR 0025-4	●	○	5.2	25	11.5	200	40	17.5		M6X15IMB	

● : Stock ○ : Available to order
To order left hand add L to EDP code. Example: GTIL 0020-3 = PGH0009L

FACE GROOVING HOLDER

GTFR/L

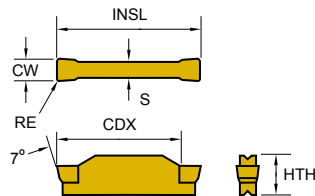


EDP Code	Description	R	L	DAXIN	DAXX	CDX	H	HF	B	LF	WF	Insert	Screw	Key
PGH0013L	GTFL 320 29/40	○	●	29	40	10	20	20	20	140	19	TDP3 TDN3 TDY3	M6X20IMB	HA5
PGH0014L	GTFL 320 34/50	○	●	34	50	10	20	20	20	140	19			
PGH0015L	GTFL 320 44/70	○	●	44	70	15	20	20	20	140	19			
PGH0016L	GTFL 320 64/100	○	●	64	100	15	20	20	20	140	19			
PGH0017L	GTFL 325 29/40	○	●	29	40	10	25	25	25	150	24		M6X25IMB	
PGH0018L	GTFL 325 34/50	○	●	34	50	10	25	25	25	150	24			
PGH0019L	GTFL 325 44/70	○	●	44	70	15	25	25	25	150	24			
PGH0020L	GTFL 325 64/100	○	●	64	100	15	25	25	25	150	24			
PGH0021L	GTFL 420 28/42	○	●	28	42	16	20	20	20	140	18.6	TDP4 TDN4 TDY4	M6X20IMB	
PGH0022L	GTFL 420 34/50	○	●	34	50	16	20	20	20	140	18.6			
PGH0023L	GTFL 420 42/70	○	●	42	70	16	20	20	20	140	18.6			
PGH0024L	GTFL 420 62/120	○	●	62	120	16	20	20	20	140	18.6			
PGH0025L	GTFL 425 28/42	○	●	28	42	19	25	25	25	150	23.6		M6X25IMB	
PGH0026L	GTFL 425 34/50	○	●	34	50	19	25	25	25	150	23.6			
PGH0027L	GTFL 425 42/70	○	●	42	70	19	25	25	25	150	23.6			
PGH0028L	GTFL 425 62/120	○	●	62	120	19	25	25	25	150	23.6			

● : Stock ○ : Available to order
To order right hand remove L from EDP code. Example: GTFR 320 29/40 = PGH0013

▶ Cutting Conditions: page 65-66

INSERT	CW	INSL	HTH	S
TD.. 2	2.0	20	4.7	1.7
TD.. 3	3.0	20	4.7	2.4
TD.. 4	4.0	20	4.7	3.0



TDP/N/Y	ORD CODE	ISO DESIGNATION	RE (mm)	CDX (mm)	ET602	P	M	K	N	S	H
	PG00017	TDP 2002	0.2	19	●	●	●	○	●	●	○
	PG00018	TDP 3002	0.2	19	●	●	●	○	●	●	○
	PG00019	TDP 4003	0.3	19	●	●	●	○	●	●	○
	PG00020	TDN 2002	0.2	19	●	●	●	●			○
	PG00021	TDN 3002	0.2	19	●	●	●	●			○
	PG00022	TDN 4003	0.3	19	●	●	●	●			○
	PG00023	TDY 3E-0.4	0.4	19	●	●	●	●	○	●	○
	PG00024	TDY 4E-0.4	0.4	19	●	●	●	●	○	●	○

CUTTING DATA



GROOVING & PARTING

ISO		P						M				K				N		S		H	
MATERIAL		Non-alloy steel		Low alloy steel		High alloy steel		Ferritic / Martensitic Stainless steel		Austenitic Stainless steel		Grey Cast iron		Nodular Cast iron		Aluminium		Heat Resistant and Super Alloys		Hardened steel	
VDI GROUP (VDI 3323 Material Group)		1-5		6-9		10-11		12-13		14		15-16		17-18		21-25		31-37		38	
EMG GROUP (Europa Material Group)		11-12		13-14		15		21, 23		22		31-32		33		71-74		41-53		16	
VC (m/min)	ET602	90 - 180		80 - 120		80 - 110		70 - 160		55 - 140		110 - 185		110 - 140		250 - 440		25 - 45		25 - 50	
Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
TDP 2002	f _n	0.04	0.12	0.04	0.12	0.04	0.09	0.04	0.09	0.04	0.12	0.04	0.12	0.04	0.12	0.04	0.12	0.04	0.09	0.04	0.07
TDP 3002	f _n	0.05	0.16	0.05	0.16	0.05	0.12	0.05	0.12	0.05	0.16	0.05	0.16	0.15	0.16	0.05	0.16	0.05	0.12	0.05	0.10
TDP 4004	f _n	0.06	0.18	0.06	0.18	0.06	0.15	0.06	0.15	0.06	0.18	0.06	0.18	0.06	0.18	0.06	0.18	0.06	0.15	0.06	0.12
TDN 2002	f _n	0.06	0.18	0.06	0.18	0.06	0.15	0.06	0.15	0.06	0.18	0.06	0.18	0.06	0.18	-	-	-	-	0.06	0.12
TDN 3002	f _n	0.07	0.22	0.07	0.22	0.07	0.18	0.07	0.18	0.07	0.22	0.07	0.22	0.07	0.22	-	-	-	-	0.07	0.15
TDN 4004	f _n	0.08	0.25	0.08	0.25	0.08	0.20	0.08	0.20	0.08	0.25	0.08	0.25	0.08	0.25	-	-	-	-	0.08	0.18
TDY 3E-0.4	f _n	0.10	0.20	0.10	0.20	0.10	0.16	0.10	0.16	0.10	0.20	0.10	0.20	0.10	0.20	-	-	-	-	0.10	0.14
TDY 4E-0.4	f _n	0.15	0.26	0.15	0.26	0.15	0.20	0.15	0.20	0.15	0.26	0.15	0.26	0.15	0.26	-	-	-	-	0.15	0.18

► f_n - feed (mm/rev)

GROOVE TURN

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
TDY 3E-0.4	f _n	0.10	0.38	0.10	0.38	0.10	0.33	0.10	0.33	0.10	0.38	0.10	0.38	0.10	0.38	0.10	0.38	0.10	0.33	0.10	0.30
	a _p	0.5	2.2	0.5	2.2	0.5	2.0	0.5	2.0	0.5	2.2	0.5	2.2	0.5	2.2	0.5	2.2	0.5	2.0	0.5	1.8
TDY 4E-0.4	f _n	0.10	0.40	0.10	0.40	0.10	0.35	0.10	0.35	0.10	0.40	0.10	0.40	0.10	0.40	0.10	0.40	0.10	0.35	0.10	0.30
	a _p	0.5	2.8	0.5	2.8	0.5	2.5	0.5	2.5	0.5	2.8	0.5	2.8	0.5	2.8	0.5	2.8	0.5	2.5	0.5	2.2

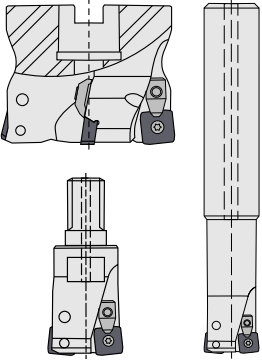
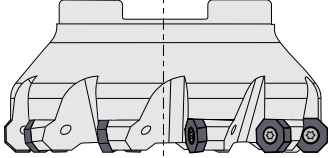
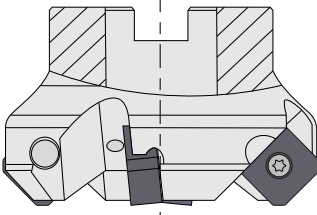
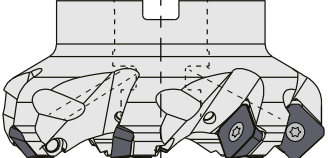
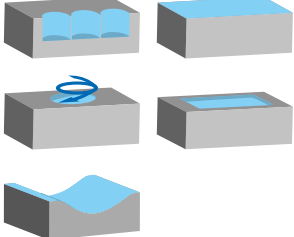
► f_n - feed (mm/rev)

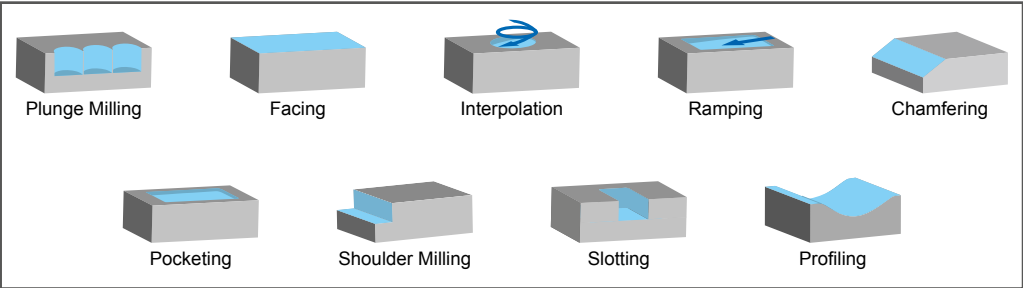
► a_p - depth of cut (mm)

MILLING

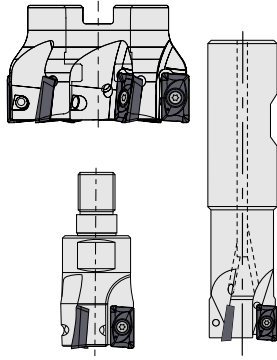
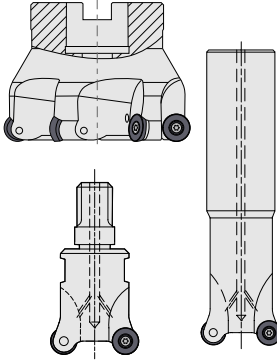
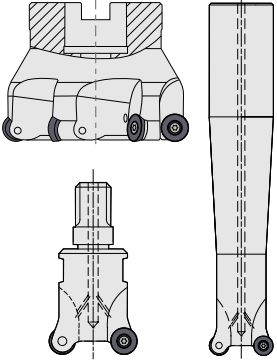
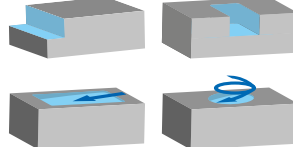
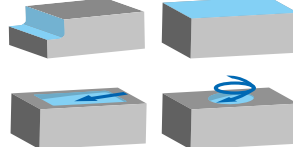
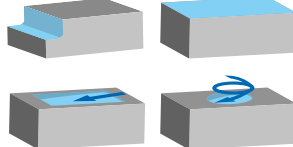


APPLICATION GUIDE & INDEX

M15H	M1645	M845	G45S
HIGH FEED MILLING	16 EDGE FACE MILLING	8 EDGE FACE MILLING	45° FACE MILLING
			
P.74-76	P.78	P.80	P.82
DC(mm) 32 - 100	DC(mm) 63 - 160	DC(mm) 50 - 160	DC(mm) 40 - 160
			
SDMT/W P.77	ONMU P.79	SNMX P.81	SEKT P.83
KAPR 15°	KAPR 45°	KAPR 45°	KAPR 45°
			
			



APPLICATION GUIDE & INDEX

G90A	G90RK	G90R
SHOULDER MILLING	PROFILE MILLING	PROFILE MILLING
		
P.84-86	P.88-90	P.92-94
DC(mm) 16 - 160	DC(mm) 16 - 63	DC(mm) 20 - 80
		
APKT P.87	RDKT/W P.91	RDMT/W P.95
KAPR 90°	KAPR 0°	KAPR 0°
		
		

MISCELLANEOUS MILLING INSERTS	P.97-98
MODULAR SHANKS	P.96
CUTTING DATA	P.99-103

INSERT CODE GUIDE

1	2	3	4	5	6	7
A	P	K	T	16	04	08
Shape	Relief Angle (AN)	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness (S)	Corner Radius

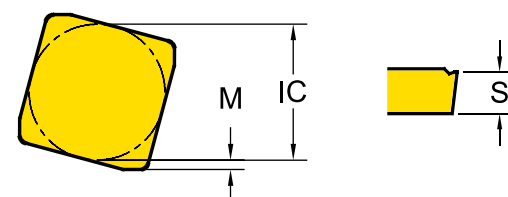
8	9	10
PDTR	-HC	ET602
Corner Geometry	Chipbreaker	Grade

1 - Shape

Symbol	Shape
H	Hexagonal
O	Octagonal
P	Pentagonal
S	Square
T	Triangular
V	Rhombic 35°
W	Trigon
L	Rectangular
A	Parallelogram 80°
R	Round

2 - Relief Angle (AN)

Symbol	Relief Angle (AN)
N	No Relief Angle
C	Relief 7°
P	Relief 11°
D	Relief 15°
E	Relief 20°
F	Relief 25°
O	Special



3 - Tolerance Class

Symbol	Inner Circle IC (mm)	Nose Height M (mm)	Thickness S (mm)
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
K	±0.05~0.15	±0.013	±0.025
M	±0.05~0.15	±0.08~0.2	±0.13
U	±0.08~0.25	±0.13~0.38	±0.13

4 - Clamping & Chipbreaker

Symbol	Clamping	Chipbreaker	Figure
N	No clamping hole	X	
R		One Face	
W	Screw Hole	X	
T		One Face	
U		Both Faces	
X	Special		

5 - Insert Size

* No Standard for milling insert size

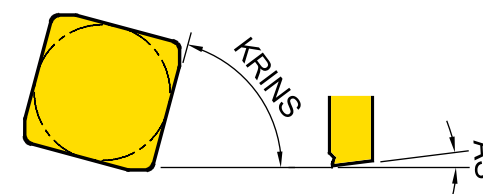
6 - Insert Thickness

* No Standard for milling insert thickness

7 - Corner Radius (RE)

Symbol	Corner Radius - RE (mm)	Symbol	Corner Radius - RE (mm)
04	0.4	16	1.6
08	0.8	20	2.0
12	1.2	24	2.4

8 - Corner Geometry



8-1	8-2	8-3	8-4
P	D	T	R
Cutting Edge Angle (KRINS)	Wiper Edge Clearance (AS)	Edge Condition	Feed Direction

8-1 - Cutting Edge Angle (KRINS)

Symbol	Cutting Edge Angle (KRINS)
P	90°
A	45°
D	60°
E	75°
F	85°
Z	Special

8-3 - Edge Condition

Symbol	Edge Condition
F	Sharp
E	Rounded
T	Chamfered
S	Chamfered and Rounded

8-2 - Wiper Edge Clearance (AS)

Symbol	Wiper Edge Clearance (AS)
N	0°
P	11°
D	15°
E	20°
F	25°
Z	Special

8-4 - Feed Direction

Symbol	Feed Direction
R	Right-hand Insert
N	Neutral Insert
L	Left-hand Insert

TERMINOLOGY

n = Spindle speed in RPM
v_c = Cutting speed in m/min
v_f = Table feed rate in mm/min
z_n = Number of teeth/flutes
a_p = Axial depth of cut in mm
a_e = Radial depth of cut in mm
D_c = Cutter body diameter in mm
k_c = Specific cutting force in N/mm²
P_c = Power consumption in kW

USEFUL FORMULAE

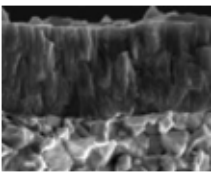
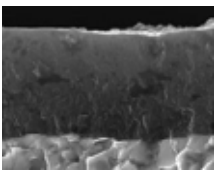
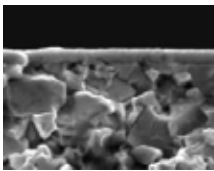
SPINDLE SPEED (n) $n = \frac{v_c \times 1000}{\pi \times D_c} \text{ (rev/min)}$	CUTTING SPEED (v_c) $v_c = \frac{D_c \times \pi \times n}{1000} \text{ (m/min)}$	TABLE FEED RATE (v_f) $v_f = f_z \times z_n \times n \text{ (mm/min)}$
FEED PER TOOTH (f_z) $f_z = \frac{v_f}{n \times z_n} \text{ (mm)}$	POWER CONSUMPTION (P_c) $P_c = \frac{a_p \times a_e \times v_f \times k_c}{60 \times 10^6} \text{ (kW)}$	METAL REMOVAL RATE (Q) $Q = \frac{a_p \times a_e \times v_f}{1000} \text{ (cm}^3\text{/min)}$

INSERT EDGE PREPARATION GUIDE

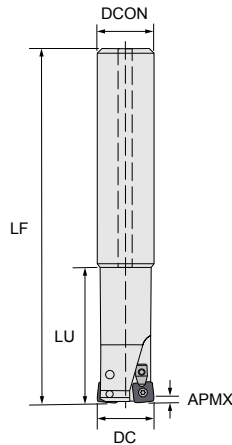
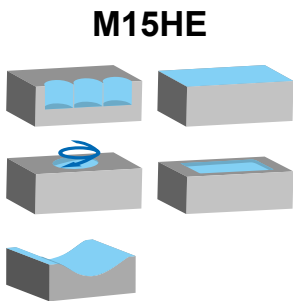
P	M	K	N	S	H	Edge Preparation Guide	
•	•	•					Standard Edge Preparation General machining, first choice
			•				AL Very sharp geometry for Aluminium
	•			•			MS Sharp geometry for Stainless Steel and HRSA
•		•			•		HC Reinforced geometry for Hardened Steels
•		•			•		...W/...N Flat insert for Hardened Material and Cast Iron

INSERT GRADE GUIDE

		P	STEEL				M	STAINLESS STEEL				K	CAST IRON			
			05	15	25	35		05	15	25	35		05	15	25	35
PVD	ET602				602					602					602	
	ET62P				62P										62P	
	ET20P															
			HARDER ← → TOUGHER					HARDER ← → TOUGHER					HARDER ← → TOUGHER			
		N	NON-FERROUS				S	HRSA				H	HARDENED STEEL			
			05	15	25	35		05	15	25	35		05	15	25	35
PVD	ET602									602					602	
	ET62P															
	ET20P		20P													
			HARDER ← → TOUGHER					HARDER ← → TOUGHER					HARDER ← → TOUGHER			

	P20 - P35 M20 - M30 K20 - K30 S15 - S25 H20 - H30	ET602 Ultra dense PVD coating with optimal thermal resistance, suitable for most materials. PVD - TiAlN
	P20 - P40 K20 - K40	ET62P Hard coating for tough applications with excellent wear and oxidation resistance. PVD - AlCrN
	N05 - N35	ET20P Optimised grade for aluminium with unique CrN based coating. PVD - CrN

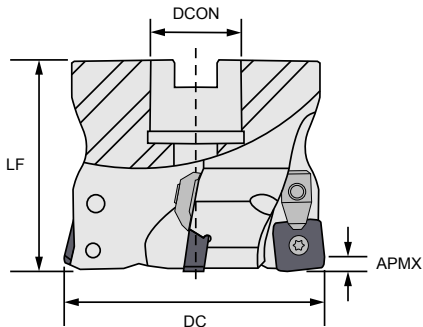
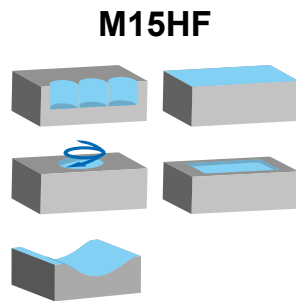
HIGH FEED MILLING
4 Corner Positive Insert



Insert Type	
	SDMT 1204..
	SDMW 1204..

EDP Code	TOOL CODE	⚡	DC	DCON	LU	LF	APMX	ZEFP	Shank	Insert	Screw	Clamp	Clamp Screw	Wrench
MTH0079	M15HE.32322-12	💧	32	32	70	150	1.8	2	FLAT	SDMT12	TXS4010	HFBP3	TXS3511	TXW15
MTH0080	M15HE.40403-12	💧	40	40	70	150	1.8	3	FLAT	SDMW12				

HIGH FEED MILLING
4 Corner Positive Insert



Insert Type	
	SDMT 1204..
	SDMW 1204..

EDP Code	TOOL CODE	⚡	DC	DCON	LF	APMX	ZEFP	Insert	Screw	Clamp	Clamp Screw	Wrench
MTH0081	M15HF.63225-12	💧	63	22	40	1.8	5	SDMT12 SDMW12	TXS4010	HFBP3	TXS3511	TXW15
MTH0082	M15HF.63226-12	💧	63	22	40	1.8	6					
MTH0083	M15HF.80275-12	💧	80	27	50	1.8	5					
MTH0084	M15HF.80277-12	💧	80	27	50	1.8	7					
MTH0085	M15HF.100326-12	💧	100	32	50	1.8	6					
MTH0086	M15HF.100328-12	💧	100	32	50	1.8	8					

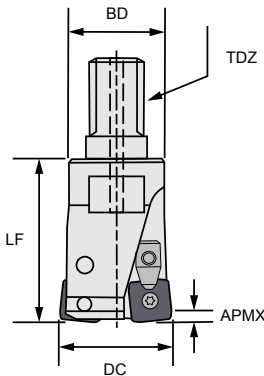
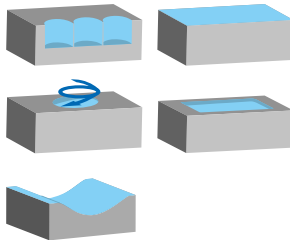
► Cutting Conditions: page 102

HIGH FEED MILLING

4 Corner Positive Insert

► Modular Shanks: page 108

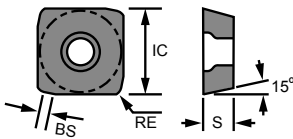
M15HM



Insert Type	
	SDMT 1204..
	SDMW 1204..

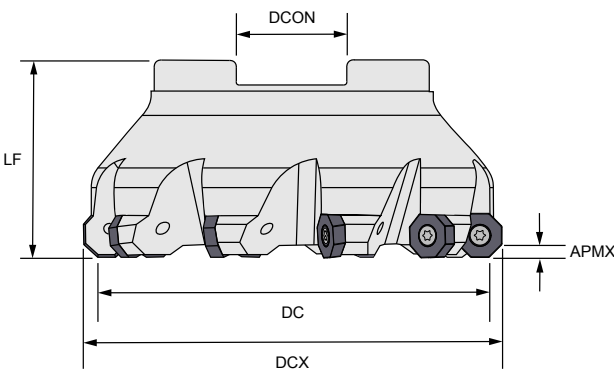
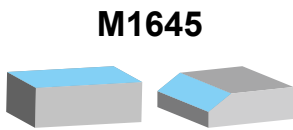
EDP Code	TOOL CODE	DC	TDZ	BD	LF	APMX	ZEFP	Insert	Screw	Clamp	Clamp Screw	Wrench
MTH0087	M15HM.32452M16-12	32	M16	30	45	1.8	2	SDMT12 SDMW12	TXS4010	HFBP3	TXS3511	TXW15
MTH0089	M15HM.35452M16-12	35	M16	30	45	1.8	2					
MTH0088	M15HM.40453M16-12	40	M16	30	45	1.8	3					

INSERT	IC	S
SDMT/W 1204	12.7	4.76



SDMT SDMW	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
	MI00070	SDMT 120420-MS	1.9	1.45	●			○	●			●	
	MI00071	SDMW 120420	1.9	1.45	●			●		●			○
	MI00102		1.9	1.45		●		●		●			●

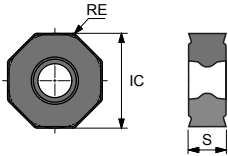
45° FACE MILLING
16 Corner Negative Insert



Insert Type	
	ONMU 0806..

EDP Code	TOOL CODE		DC	DCX	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
MTH0014	M1645.63225-08	♦	63	75	22	40	5.5	5	ONMU 08	TXS5013	TXW20
MTH0015	M1645.80276-08	♦	80	92	27	50	5.5	6			
MTH0016	M1645.80278-08	♦	80	92	27	50	5.5	8			
MTH0017	M1645.100327-08	♦	100	112	32	50	5.5	7			
MTH0018	M1645.1003210-08	♦	100	112	32	50	5.5	10			
MTH0019	M1645.125408-08	X	125	137	40	63	5.5	8			
MTH0020	M1645.1254012-08	X	125	137	40	63	5.5	12			
MTH0021	M1645.1604010-08	X	160	172	40	63	5.5	10			
MTH0022	M1645.1604015-08	X	160	172	40	63	5.5	15			

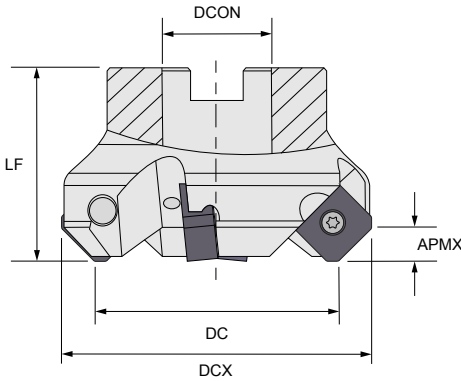
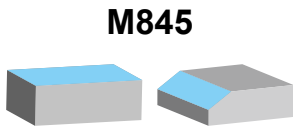
INSERT	IC	S
ONMU 0806	20.2	5.8



ONMU	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
	MI00023	ONMU 080608	0.8	-	●			●	○	●		○	○

► Cutting Conditions: page 103

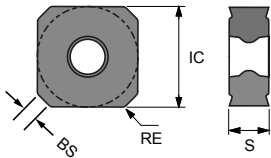
45° FACE MILLING
8 Corner Negative Insert



Insert Type	
	SNMX 1206..

EDP Code	TOOL CODE	⚙	DC	DCX	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
MTH0056	M845.50224-12	💧	50	64	22	40	6	4	SNMX 12	TXS4010	TXW15
MTH0057	M845.63226-12	💧	63	77	22	40	6	6			
MTH0058	M845.80277-12	💧	80	94	27	50	6	7			
MTH0059	M845.100328-12	💧	100	114	32	50	6	8			
MTH0060	M845.1254010-12	✖	125	139	40	63	6	10			
MTH0061	M845.1604012-12	✖	160	174	40	63	6	12			

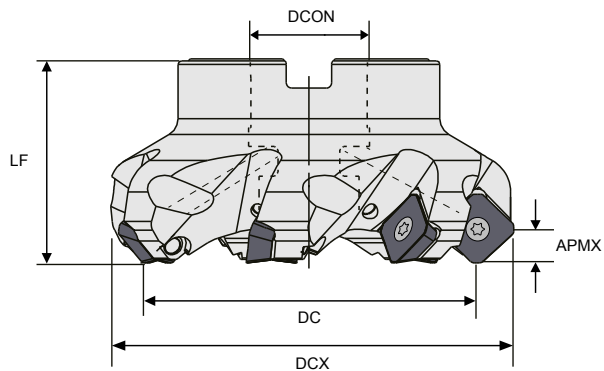
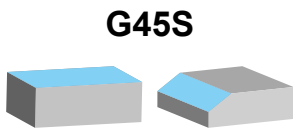
INSERT	IC	S
SNMX 1206	12.7	6.25



SNMX	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
								●	○	●		○	○
	MI00048	SNMX 1206ANN	0.8	1.7	●								

► Cutting Conditions: page 103

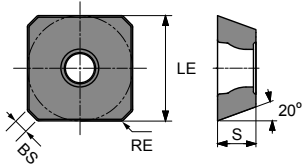
45° FACE MILLING
4 Corner Positive Insert



Insert Type	
	SEKT 1204..

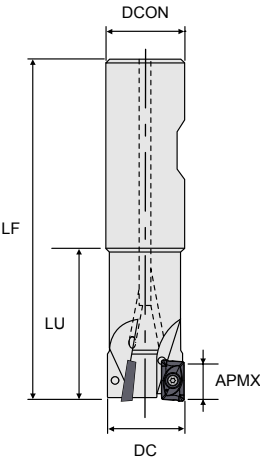
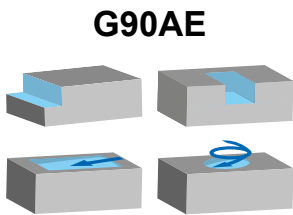
EDP Code	TOOL CODE	⬆	DC	DCX	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
MTH0039	G45S.40164-12	💧	40	54	16	40	6	4	SEKT 1204	TXS4512	TXW15
MTH0040	G45S.50225-12	💧	50	64	22	40	6	5			
MTH0041	G45S.63224-12	💧	63	77	22	40	6	4			
MTH0042	G45S.63226-12	💧	63	77	22	40	6	6			
MTH0043	G45S.80274-12	💧	80	94	27	50	6	4			
MTH0044	G45S.80277-12	💧	80	94	27	50	6	7			
MTH0045	G45S.100328-12	💧	100	114	32	50	6	8			
MTH0046	G45S.1254010-12	✖	125	139	40	63	6	10			
MTH0047	G45S.1604012-12	✖	160	174	40	63	6	12			

INSERT	LE	S
SEKT 1204	12.7	4.76
SEKT 13T3	13.4	3.97



SEKT	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
	MI00074	SEKT 1204-AL	1.1	1.18			●				●		
	MI00075	SEKT 1204-MS	1.1	1.18	●			○	●			●	
	MI00045	SEKT 1204AFTN	1.1	1.18	●			●	○	●		○	○
	MI00072	SEKT 13T3-AL	1.5	1.30			●				●		
	MI00073	SEKT 13T3-MS	1.5	1.30	●			○	●			●	
	MI00047	SEKT 13T3AGTN	1.5	1.30	●			●	○	●		○	○

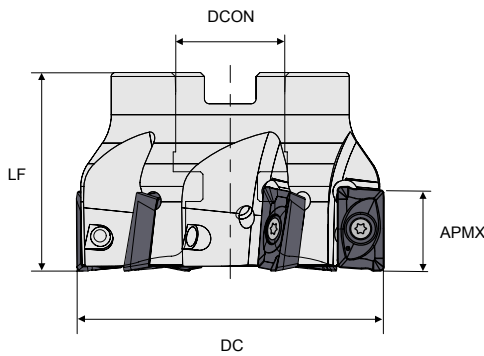
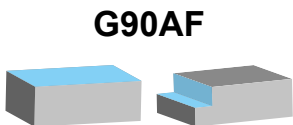
90° SHOULDER MILLING
2 Corner Positive Insert



Insert Type	
	APKT 1003.. APKT 1604..

EDP Code	TOOL CODE		DC	DCON	LU	LF	APMX	ZEFP	Shank	Insert	Screw	Wrench
HS16162FWS	G90AE.16162FS-10		16	16	37	85	10	2	FLAT	APKT10	TXS2506	TXW09
MTH0001	G90AE.16162PL-10		16	16	37	100	10	2	PLAIN			
HS20203FWS	G90AE.20203FS-10		20	20	40	90	10	3	FLAT			
HS20203FPM	G90AE.20203PL-10		20	20	40	150	10	3	PLAIN			
HS25202FWS	G90AE.25202FS-16		25	20	40	110	16	2	FLAT	APKT16	TXS4009	TXW15
MTH0003	G90AE.25202PL-16		25	20	40	150	16	2	PLAIN			
HS32253FWS	G90AE.32253FS-16		32	25	50	110	16	3	FLAT			
MTH0004	G90AE.32253PL-16		32	25	50	150	16	3	PLAIN			

90° SHOULDER MILLING
2 Corner Positive Insert



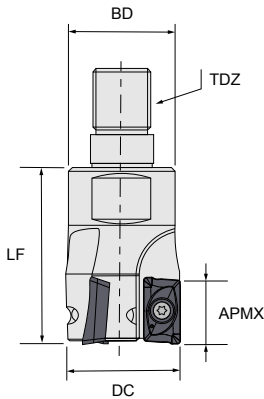
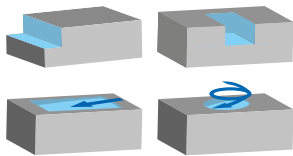
Insert Type	
	APKT 1003.. APKT 1604..

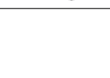
EDP Code	TOOL CODE		DC	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
FM4090AP104	G90AF.40164-10		40	16	40	10	4	APKT10	TXS2506	TXW09
FM5090AP107	G90AF.50227-10		50	22	40	10	7			
MTH0005	G90AF.63227-10		63	22	40	10	7			
MTH0006	G90AF.50225-16		50	22	40	16	5			
FM6390AP166	G90AF.63226-16		63	22	40	16	6	APKT16	TXS4009	TXW15
FM8090AP167	G90AF.80277-16		80	27	50	16	7			
MTH0007	G90AF.100328-16		100	32	50	16	8			
MTH0008	G90AF.125408-16	X	125	40	63	16	8			
MTH0009	G90AF.1604010-16	X	160	40	63	16	10			

90° SHOULDER MILLING
2 Corner Positive Insert

▶ Modular Shanks: page 108

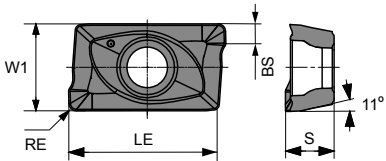
G90AM



Insert Type	
	APKT 1003..
	APKT 1604..

EDP Code	TOOL CODE	◆	DC	BD	LF	TDZ	APMX	ZEFP	Insert	Screw	Wrench
M8-APKT10-2-16	G90AM.16232M8-10	X	16	13	23	M8	10	2	APKT10	TXS2506	TXW09
M10-APKT10-3-20	G90AM.20303M10-10	X	20	18	30	M10	10	3			
M12-APKT10-3-25	G90AM.25353M12-10	X	25	21	35	M12	10	3			
M16-APKT10-4-32	G90AM.32434M16-10	X	32	29	43	M16	10	4			
M16-APKT10-5-40	G90AM.40435M16-10	X	40	29	43	M16	10	5			
M12-APKT16-2-25	G90AM.25352M12-16	X	25	21	35	M12	16	2	APKT16	TXS4009	TXW15
M16-APKT16-3-32	G90AM.32433M16-16	X	32	29	43	M16	16	3			
M16-APKT16-3-40	G90AM.40433M16-16	X	40	29	43	M16	16	3			

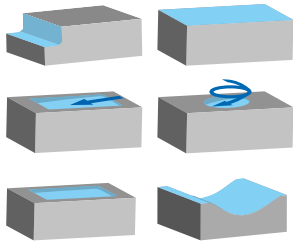
INSERT	LE	W1	S
APKT 1003	9.9	6.7	3.6
APKT 1604	15.2	9.4	5.3

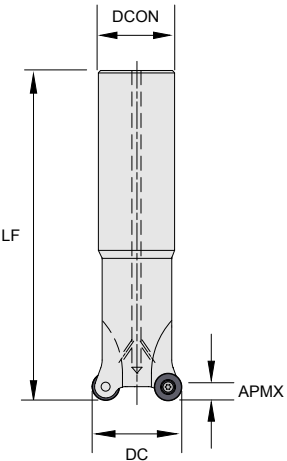


APKT	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
 	MI00065	APKT 100305-AL	0.5	0.86			●				●		
	MI00067	APKT 100305-MS	0.5	0.86	●			○	●			●	
	MI00002	APKT 100305PDTR	0.5	0.86	●			●	○	●		○	○
	MI00003	APKT 100308PDTR	0.8	0.90	●			●	○	●		○	○
	MI00066	APKT 160408-AL	0.8	1.32			●				●		
	MI00069	APKT 160408-HC	0.8	1.32	●			●					●
	MI00068	APKT 160408-MS	0.8	1.32	●			○	●			●	
	MI00061	APKT 160404PDTR	0.4	1.11	●			●	○	●		○	○
	MI00004	APKT 160408PDTR	0.8	1.32	●			●	○	●		○	○
	MI00062	APKT 160412PDTR	1.2	1.13	●			●	○	●		○	○
	MI00005	APKT 160416PDTR	1.6	1.13	●			●	○	●		○	○
	MI00064	APKT 160424PDTR	2.4	-	●			●	○	●		○	○

PROFILE MILLING
Round Positive Insert

G90RKE



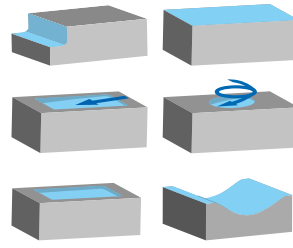


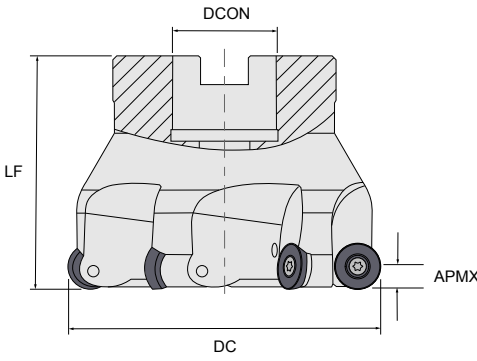
Insert Type	
	RDKT 0802.. RDKT 10T3.. RDKT 1204..
	RDKW 0802.. RDKW 10T3.. RDKW 1204..

EDP Code	TOOL CODE	⬆	DC	DCON	LF	APMX	ZEFP	Shank	Insert	Screw	Wrench
MTH0097	G90RKE.16162PL-08	⬆	16	16	160	4	2	PLAIN	RDKT08 RDKW08	TXS25055	TXW08
MTH0090	G90RKE.20202PL-08	⬆	20	20	180	4	2	PLAIN			
MTH0091	G90RKE.25203PL-08	⬆	25	25	180	4	3	PLAIN			
MTH0092	G90RKE.20202PL-10	⬆	20	20	180	5	2	PLAIN	RDKT10 RDKW10	TXS4008	TXW15
MTH0093	G90RKE.25252PL-10	⬆	25	25	180	5	3	PLAIN			
MTH0094	G90RKE.25252PL-12	⬆	32	32	180	6	2	PLAIN	RDKT12 RDKW12	TXS4010	TXW15
MTH0095	G90RKE.32323PM-12	⬆	32	32	160	6	3	PLAIN			
MTH0096	G90RKE.32322PL-12	⬆	32	32	200	6	2	PLAIN			

PROFILE MILLING
Round Positive Insert

G90RKF





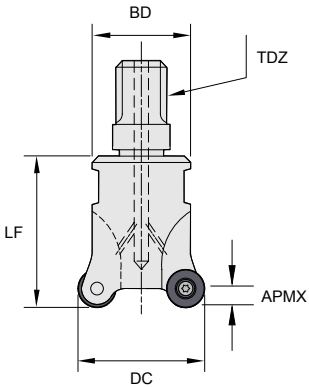
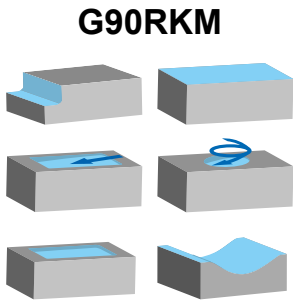
Insert Type	
	RDKT 10T3.. RDKT 1204..
	RDKW 10T3.. RDKW 1204..

EDP Code	TOOL CODE	⬆	DC	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
MTH0102	G90RKF.40165-10	⬆	40	16	40	5	5	RDKT10 RDKW10	TXS4008	TXW15
MTH0098	G90RKF.50226-10	⬆	50	22	40	5	6			
MTH0099	G90RKF.40164-12	⬆	40	16	40	6	4	RDKT12 RDKW12	TXS4010	TXW15
MTH0100	G90RKF.50225-12	⬆	50	22	50	6	5			
MTH0101	G90RKF.63226-12	⬆	63	22	50	6	6			

PROFILE MILLING

Round Positive Insert

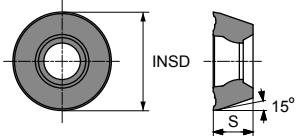
► Modular Shanks: page 108



Insert Type	
	RDKT 0802.. RDKT 10T3.. RDKT 1204..
	RDKW 0802.. RDKW 10T3.. RDKW 1204..

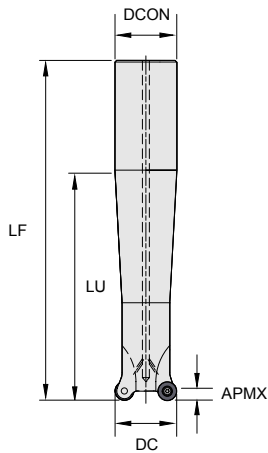
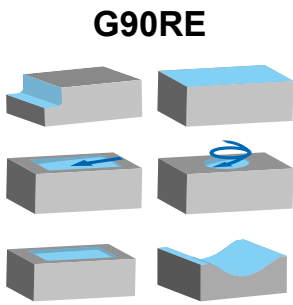
EDP Code	TOOL CODE	DC	BD	LF	TDZ	APMX	ZEFP	Insert	Screw	Wrench
MTH0109	G90RKM.16232M08-08	16	13	23	M8	4	2	RDKT08 RDKW08	TXS25055	TXW08
MTH0108	G90RKM.20302M10-08	20	18	30	M10	4	2			
MTH0103	G90RKM.25353M12-08	25	21	35	M12	4	3			
MTH0104	G90RKM.20302M10-10	20	18	30	M10	5	2	RDKT10 RDKW10	TXS4008	TXW15
MTH0105	G90RKM.25353M12-10	25	21	35	M12	5	3			
MTH0106	G90RKM.25352M12-12	25	21	35	M12	6	2	RDKT12 RDKW12	TXS4010	TXW15
MTH0107	G90RKM.32423M16-12	32	29	42	M16	6	3			

INSERT	INSD	S
RDKW 0501	5.0	1.40
RDKW 0702	7.0	2.38
RDKT/W 0802	8.0	2.38
RDKT/W 10T3	10.0	3.97
RDKT/W 1204	12.0	4.76



RDKT RDKW	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
	MI00083	RDKT 0802MO-HC	-	-	●			○					●
	MI00085		-	-		●		●		●			●
	MI00082	RDKT 0802MO-MS	-	-	●			○	●			●	
	MI00084	RDKT 0802MO	-	-	●			●	●	●		○	○
	MI00087	RDKT 10T3MO-HC	-	-	●			○					●
	MI00089		-	-		●		●		●			●
	MI00086	RDKT 10T3MO-MS	-	-	●			○	●			●	
	MI00088	RDKT 10T3MO	-	-	●			●	●	●		○	○
	MI00091	RDKT 1204MO-HC	-	-	●			○					●
	MI00093		-	-		●		●		●			●
	MI00090	RDKT 1204MO-MS	-	-	●			○	●			●	
	MI00092	RDKT1204MO	-	-	●			●	●	●		○	○
	MI00094	RDKW 0501MO	-	-	●			○		●			●
	MI00095	RDKW 0702MO	-	-	●			○		●			●
	MI00096	RDKW 0802MO	-	-	●			○		●			●
	MI00097	RDKW 10T3MO	-	-	●			○		●			●
	MI00098	RDKW 1204MO	-	-	●			○		●			●

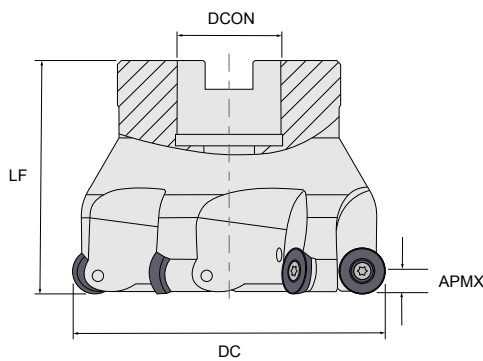
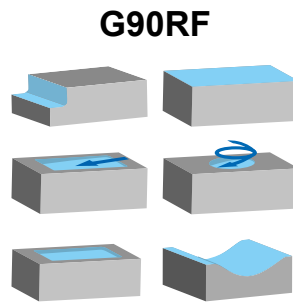
PROFILE MILLING
Round Positive Insert



Insert Type	
	RDMT 0803.. RDMT 10T3.. RDMT 1204..
	RDMW 0803.. RDMW 10T3.. RDMW 1204..

EDP Code	TOOL CODE		DC	DCON	LU	LF	APMX	ZEFP	Shank	Insert	Screw	Wrench
HR20202FPS	G90RE.20202PS-08	🔵	20	20	30	100	4	2	PLAIN	RDMT08 RDMW08	TXS3006	TXW08
HR20202FPM	G90RE.20202PL-08	🔵	20	20	30	150	4	2	PLAIN			
HR25253FPS	G90RE.25253PS-10	🔵	25	25	35	107	5	3	PLAIN	RDMT10 RDMW10	TXS3507	TXW15
HR32323FPS	G90RE.32323PS-10	🔵	32	32	40	100	5	3	PLAIN			
HR32323FPM	G90RE.32323PM-10	🔵	32	32	60	250	5	3	PLAIN			
HR32323FPL	G90RE.32323PL-10	🔵	32	32	70	300	5	3	PLAIN	RDMT12 RDMW12	TXS3508	TXW15
HR32322FPS	G90RE.32322PS-12	🔵	32	32	50	200	6	2	PLAIN			
HR32322FPM	G90RE.32322PM-12	🔵	32	32	60	250	6	2	PLAIN			
HR32322FPL	G90RE.32322PL-12	🔵	32	32	70	300	6	2	PLAIN			

PROFILE MILLING
Round Positive Insert



Insert Type	
	RDMT 10T3.. RDMT 1204..
	RDMW 10T3.. RDMW 1204..

EDP Code	TOOL CODE		DC	DCON	LF	APMX	ZEFP	Insert	Screw	Wrench
FM4090RD104	G90RF.40164-10	🔵	40	16	40	5	4	RDMT10 RDMW10	TXS3507	TXW15
FM5090RD104	G90RF.50224-10	🔵	50	22	40	5	4			
MTH0078	G90RF.52224-10	🔵	52	22	40	5	4			
FM5090RD124	G90RF.50224-12	🔵	50	22	40	6	4	RDMT12 RDMW12	TXS3508	TXW15
FM6390RD125	G90RF.63225-12	🔵	63	22	40	6	5			
FM8090RD126	G90RF.80276-12	🔵	80	27	50	6	6			

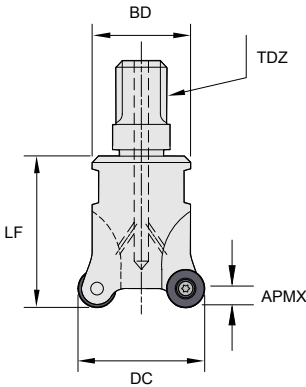
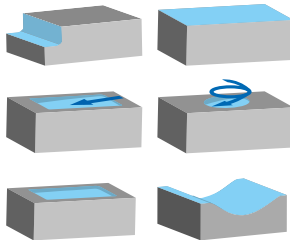
► Cutting Conditions: page 101-102

PROFILE MILLING

Round Positive Insert

► Modular Shanks: page 108

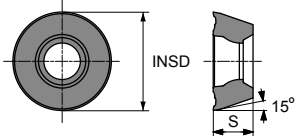
G90RM



Insert Type	
	RDMT 10T3.. RDMT 1204..
	RDMW 10T3.. RDMW 1204..

EDP Code	TOOL CODE		DC	BD	LF	TDZ	APMX	ZEFP	Insert	Screw	Wrench
M12RDMT10325	G90RM.25353M12-10	🔵	25	20.7	35	M12	5	3	RDMT10 RDMW10	TXS3507	TXW15
M16RDMT10432	G90RM.32424M16-10	🔵	32	28.7	42	M16	5	4			
M16RDMT10435	G90RM.35424M16-10	🔵	35	28.7	42	M16	5	4			
M16RDMT10542	G90RM.42425M16-10	🔵	42	28.7	42	M16	5	5			
M16RDMT12232	G90RM.32422M16-12	🔵	32	28.7	42	M16	6	2	RDMT12 RDMW12	TXS3508	TXW15
M16RDMT12235	G90RM.35422M16-12	🔵	35	28.7	42	M16	6	2			
M16RDMT12442	G90RM.42424M16-12	🔵	42	28.7	42	M16	6	4			

INSERT	INS D	S
RDMT/W 0602	6.0	2.38
RDMT/W 0803	8.0	3.18
RDMT/W 10T3	10.0	3.97
RDMT/W 1204	12.0	4.76



RDMT RDMW	ORD CODE	ISO DESIGNATION	RE (mm)	BS (mm)	ET602	ET62P	ET20P	P	M	K	N	S	H
	MI00024	RDMT 0602MO	-	-	●			●	●	●		○	○
	MI00025	RDMT 0803MO	-	-	●			●	●	●		○	○
	MI00026	RDMT 10T3MO	-	-	●			●	●	●		○	○
	MI00027	RDMT 1204MO	-	-	●			●	●	●		○	○
	MI00028	RDMW 0602MO	-	-	●			○		●			●
	MI00029	RDMW 0803MO	-	-	●			○		●			●
	MI00030	RDMW 10T3MO	-	-	●			○		●			●
	MI00031	RDMW 1204MO	-	-	●			○		●			●

SHANKS FOR MODULAR HEADS

STRAIGHT NECK

EDP Code	TOOL CODE	Head Ø	DCF	DMM	LF	OAL	TDZ	HEAD TYPE
207350SNM6R	MSSN.2080M6	10.0, 12.0	9.7	10	20	80	M6	M15HM G90AM G90RKM G90RM
207350SNM8R	MSSN.2080M8	16.0	15.7	16	20	80	M8	
207350SNM8L	MSSN.40110M8	16.0	15.7	16	40	110	M8	
207350SNM10R	MSSN.3090M10	20.0	19.7	20	30	90	M10	
207350SNM10L	MSSN.50110M10	20.0	19.7	20	50	110	M10	
207350SNM12R	MSSN.3090M12	25.0	24.7	25	30	90	M12	
207350SCM12R	MSSN.40115M12	25.0	24.7	25	40	115	M12	
207350SNM12L	MSSN.55125M12	25.0	24.7	25	55	125	M12	
207350SNM16R	MSSN.2590M16	32.0 - 42.0	29.7	32	25	90	M16	
207350SCM16R	MSSN.40125M16	32.0 - 42.0	29.7	32	40	125	M16	
207350SNM16L	MSSN.55125M16	32.0 - 42.0	29.7	32	55	125	M16	
207350SNM16E	MSSN.80160M16	32.0 - 42.0	29.7	32	80	160	M16	

TAPERED NECK

EDP Code	TOOL CODE	Head Ø	DCF	DMM	LF	OAL	TDZ	PSIR	HEAD TYPE
207350TNM6R	MSTN.10105M6	10.0, 12.0	9.7	10	20	105	M6	1°36'	M15HM G90AM G90RKM G90RM
207350TNM6L	MSTN.16125M6	10.0, 12.0	9.7	16	40	125	M6	3°	
207350TNM8R	MSTN.20110M8	16.0	15.7	20	30	110	M8	4°19'	
207350TNM8L	MSTN.20140M8	16.0	15.7	20	30	140	M8	2°57'	
207350TNM10R	MSTN.25140M10	20.0	19.7	25	70	140	M10	2°48'	
207350TNM10L	MSTN.25160M10	20.0	19.7	25	80	160	M10	2°25'	
207350TCM12R	MSTN.25200M12	20.0	19.7	25	110	200	M12	2°36'	
207350TNM12R	MSTN.32125M12	25.0	24.7	32	55	125	M12	6°	
207350TNM12L	MSTN.32150M12	25.0	24.7	32	80	150	M12	3°40'	
207350TNM12E	MSTN.32180M12	25.0	24.7	32	100	180	M12	4°	
207350TNM16R	MSTN.32160M16	32.0 - 42.0	29.7	32	80	160	M16	4°	
207350TCM16R	MSTN.32200M16	32.0 - 42.0	29.7	32	110	200	M16	2°36'	
207350TNM16L	MSTN.40200M16	32.0 - 42.0	29.7	40	110	200	M16	2°36'	

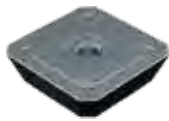
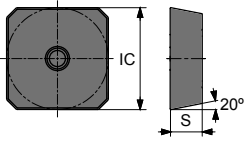
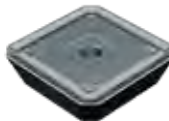
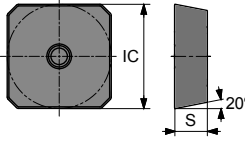
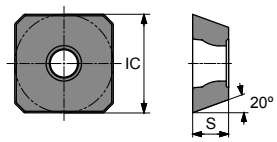
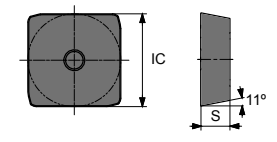
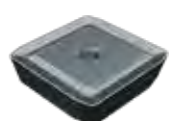
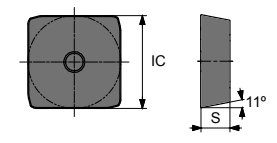
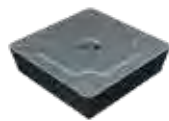
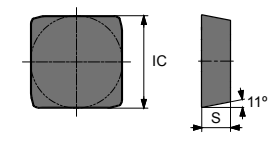
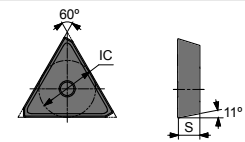
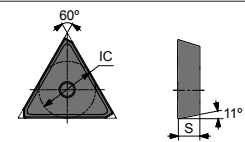
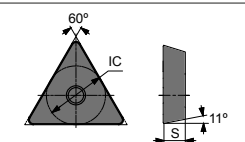
VIBRATION DAMPENED

EDP Code	TOOL CODE	Head Ø	DCF	DMM	LF	OAL	TDZ	PSIR	HEAD TYPE
207350VCM6	MSVD.40130M6	10.0, 12.0	9.7	16	40	130	M6	2°	M15HM G90AM G90RKM G90RM
207350VDM8	MSVD.50190M8	16.0	15.7	20	50	190	M8	3°	
207350VDM10	MSVD.50190M10	20.0	19.7	25	50	190	M10	3°	
207350VDM12	MSVD.90190M12	25.0	24.7	32	90	190	M12	3°	
207350VDM16	MSVD.100230M16	32.0 - 42.0	29.7	40	100	230	M16	3°	

MISCELLANEOUS INSERTS

SHAPE	ORD CODE	ISO DESIGNATION	ET602	ET62P	ET20P	DIMENSIONS				GEOMETRY
						LE	W1/IC	S	RE	
	MI00077	ADKT 150508PDTR	●			13.7	9.7	5.8	0.8	
	MI00076	AOMT 123604PDTR	●			10.5	6.6	3.6	0.4	
	MI00001	AOMT 123608PDTR	●			10.5	6.6	3.6	0.8	
	MI00007	APMT 1135PDTR	●			9.5	6.2	3.5	0.4	
	MI00008	APMT 113508PDTR	●			9.5	6.2	3.5	0.8	
	MI00009	APMT 1604PDTR	●			14.6	9.2	4.76	0.8	
	MI00018	ODMT 060508	●			-	15.9	5.6	0.8	
	MI00019	ODMW 060508	●			-	15.9	5.6	0.8	
	MI00081	OFER 070405	●			-	18.05	4.78	0.5	
	MI00021	OFMT 05T308	●			-	12.7	4.06	0.8	
	MI00037	RPMT 08T2MO	●			-	8.0	2.78	-	
	MI00038	RPMT 10T3MO	●			-	10.0	3.97	-	
	MI00039	RPMT 1204MO	●			-	12.0	4.76	-	
	MI00063	RPMT 1204MO-MS	●			-	12.0	4.76	-	
	MI00040	RPMW 1003MO	●			-	10.0	3.18	-	
	MI00041	RPMW 1204MO	●			-	12.0	4.76	-	
	MI00100	SDKN 1203AFTN	●			-	12.7	3.18	-	
	MI00101	SDKN 1504AFTN	●			-	12.7	3.18	-	

MISCELLANEOUS INSERTS

SHAPE	ORD CODE	ISO DESIGNATION	ET602	ET62P	ET20P	DIMENSIONS				GEOMETRY
						LE	IC	S	RE	
	MI00042	SEKN 1203AFTN	●			-	12.7	3.18	-	
	MI00044	SEKR 1203AFTN	●			-	12.7	3.18	-	
	MI00103	SEMT 1204AFTN	●			-	12.7	4.76	-	
	MI00104	SEMT 13T3AFTN	●			-	13.4	3.97	-	
	MI00105	SEMT 13T3AGSN	●			-	13.4	3.97	-	
	MI00049	SPKN 1203EDTR	●			-	12.7	3.2	-	
	MI00051	SPKN 1504EDTR	●			-	15.88	4.8	-	
	MI00052	SPKR 1203EDTR	●			-	12.7	3.2	-	
	MI00054	SPUN 120308	●			-	12.7	3.2	-	
	MI00055	TPKN 1603PDTR	●			-	9.52	3.18	-	
	MI00056	TPKN 2204PDTR	●			-	12.7	4.76	-	
	MI00057	TPKR 1603PDTR	●			-	9.52	3.18	-	
	MI00058	TPKR 2204PDTR	●			-	12.7	4.76	-	
	MI00059	TPUN 160308	●			-	9.52	3.18	-	

CUTTING DATA

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
vc (m/min)	ET602	140 - 240	120 - 220	70 - 150	120 - 200	140 - 250	140 - 220	150 - 240	-	25 - 45	40 - 80
	ET62P	140 - 240	120 - 220	70 - 150	-	-	140 - 220	150 - 240	-	-	40 - 80
	ET20P	-	-	-	-	-	-	-	300 - 800	-	-

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
ADKT 1505..	fz	0.16	0.30	0.16	0.30	0.16	0.25	0.16	0.25	0.16	0.30	0.16	0.30	0.16	0.30	-	-	0.16	0.25	0.16	0.20
	ap	0.5	14.0	0.5	14.0	0.5	13.0	0.5	13.0	0.5	14.0	0.5	14.0	0.5	14.0	-	-	0.5	13.0	0.5	12.0
AOMT 1236..	fz	0.08	0.24	0.08	0.24	0.08	0.20	0.08	0.20	0.08	0.24	0.08	0.24	0.08	0.24	-	-	0.08	0.20	0.08	0.18
	ap	0.5	11.0	0.5	11.0	0.5	10.0	0.5	10.0	0.5	11.0	0.5	11.0	0.5	11.0	-	-	0.5	10.0	0.5	9.0
APKT 1003..	fz	0.15	0.24	0.15	0.24	0.15	0.20	0.15	0.20	0.15	0.24	0.15	0.24	0.15	0.24	-	-	0.15	0.20	0.15	0.18
	ap	0.5	9.0	0.5	9.0	0.5	8.0	0.5	8.0	0.5	9.0	0.5	9.0	0.5	9.0	-	-	0.5	8.0	0.5	7.0
APKT 10.. AL	fz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.50	-	-	-	-
	ap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	9.0	-	-	-	-
APKT 10.. MS	fz	-	-	-	-	-	-	0.08	0.18	0.08	0.22	-	-	-	-	-	-	0.08	0.18	-	-
	ap	-	-	-	-	-	-	0.5	8.0	0.5	9.0	-	-	-	-	-	-	0.5	9.0	-	-
APKT 1604..	fz	0.15	0.28	0.15	0.28	0.15	0.23	0.15	0.23	0.15	0.28	0.15	0.28	0.15	0.28	-	-	0.15	0.23	0.15	0.20
	ap	0.5	15.0	0.5	15.0	0.5	14.0	0.5	14.0	0.5	15.0	0.5	15.0	0.5	15.0	-	-	0.5	14.0	0.5	13.0
APKT 16.. AL	fz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.50	-	-	-	-
	ap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	15.0	-	-	-	-
APKT 16.. MS	fz	-	-	-	-	-	-	0.08	0.22	0.08	0.25	-	-	-	-	-	-	0.08	0.22	-	-
	ap	-	-	-	-	-	-	0.5	14.0	0.5	15.0	-	-	-	-	-	-	0.5	14.0	-	-
APKT 16.. HC	fz	0.26	0.40	0.26	0.40	0.26	0.35	-	-	-	-	-	-	-	-	-	-	-	-	0.26	0.30
	ap	0.5	15.0	0.5	15.0	0.5	14.0	-	-	-	-	-	-	-	-	-	-	-	-	0.5	13.0
APMT 1135..	fz	0.15	0.25	0.15	0.25	0.15	0.20	0.15	0.20	0.15	0.25	0.15	0.25	0.15	0.25	-	-	0.15	0.20	0.15	0.18
	ap	0.5	10.0	0.5	10.0	0.5	9.0	0.5	9.0	0.5	10.0	0.5	10.0	0.5	10.0	-	-	0.5	9.0	0.5	8.0
APMT 1604..	fz	0.16	0.30	0.16	0.30	0.16	0.25	0.16	0.25	0.16	0.30	0.16	0.30	0.16	0.30	-	-	0.16	0.25	0.16	0.20
	ap	0.5	15.0	0.5	15.0	0.5	14.0	0.5	14.0	0.5	15.0	0.5	15.0	0.5	15.0	-	-	0.5	14.0	0.5	13.0
ODMT 0605..	fz	0.21	0.35	0.21	0.35	0.21	0.30	0.21	0.30	0.21	0.35	0.21	0.35	0.21	0.35	-	-	0.21	0.30	0.21	0.28
	ap	0.5	3.5	0.5	3.5	0.5	3.0	0.5	3.0	0.5	3.5	0.5	3.5	0.5	3.5	-	-	0.5	3.0	0.5	2.5
ODMW 0605..	fz	0.26	0.40	0.26	0.40	0.26	0.35	-	-	-	-	0.26	0.40	0.26	0.40	-	-	-	-	0.26	0.30
	ap	0.5	3.5	0.5	3.5	0.5	3.0	-	-	-	-	0.5	3.5	0.5	3.5	-	-	-	-	0.5	2.5
OFER 0704..	fz	0.22	0.50	0.22	0.50	0.22	0.45	-	-	-	-	0.22	0.50	0.22	0.50	-	-	-	-	0.22	0.40
	ap	0.5	4.0	0.5	4.0	0.5	3.5	-	-	-	-	0.5	4.0	0.5	4.0	-	-	-	-	0.5	3.0
OFMT 05T3..	fz	0.15	0.25	0.15	0.25	0.15	0.20	0.15	0.20	0.15	0.25	0.15	0.25	0.15	0.25	-	-	0.15	0.20	0.15	0.18
	ap	0.5	3.0	0.5	3.0	0.5	2.5	0.5	2.5	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.5	0.5	2.0
ONMU 0806..	fz	0.22	0.50	0.22	0.50	0.22	0.45	0.22	0.45	0.22	0.50	0.22	0.50	0.22	0.50	-	-	0.22	0.45	0.22	0.40
	ap	0.5	5.5	0.5	5.5	0.5	5.0	0.5	5.0	0.5	5.5	0.5	5.5	0.5	5.5	-	-	0.5	5.0	0.5	4.5

► fz - feed (mm/tooth)
► ap - axial depth of cut (mm)

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
VC (m/min)	ET602	140 - 240	120 - 220	70 - 150	120 - 200	140 - 250	140 - 220	150 - 240	-	25 - 45	40 - 80
	ET62P	140 - 240	120 - 220	70 - 150	-	-	140 - 220	150 - 240	-	-	40 - 80
	ET20P	-	-	-	-	-	-	-	300 - 800	-	-

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
RDKT 0802..	fz	0.15	0.25	0.15	0.25	0.15	0.20	0.15	0.20	0.15	0.25	0.15	0.25	0.15	0.25	-	-	0.15	0.20	0.15	0.18
	ap	0.5	4.0	0.5	4.0	5.0	3.5	0.5	3.5	0.5	4.0	0.5	4.0	0.5	4.0	-	-	0.5	3.5	0.5	3.0
RDKT 08.. MS	fz	-	-	-	-	-	-	0.08	0.20	0.08	0.25	-	-	-	-	-	-	0.08	0.20	-	-
	ap	-	-	-	-	-	-	0.5	3.5	0.5	4.0	-	-	-	-	-	-	0.5	3.5	-	-
RDKT 08.. HC	fz	0.18	0.35	0.18	0.35	0.18	0.30	-	-	-	-	-	-	-	-	-	-	-	-	0.18	0.25
	ap	0.5	4.0	0.5	4.0	0.5	3.5	-	-	-	-	-	-	-	-	-	-	-	-	0.5	3.0
RDKT 10T3..	fz	0.15	0.28	0.15	0.28	0.15	0.23	0.15	0.23	0.15	0.28	0.15	0.28	0.15	0.28	-	-	0.15	0.23	0.15	0.20
	ap	0.5	5.0	0.5	5.0	0.5	4.5	0.5	4.5	0.5	5.0	0.5	5.0	0.5	5.0	-	-	0.5	4.5	0.5	4.0
RDKT 10.. MS	fz	-	-	-	-	-	-	0.08	0.23	0.08	0.28	-	-	-	-	-	-	0.08	0.23	-	-
	ap	-	-	-	-	-	-	0.5	4.5	0.5	5.0	-	-	-	-	-	-	0.5	4.5	-	-
RDKT 10.. HC	fz	0.22	0.40	0.22	0.40	0.22	0.35	-	-	-	-	-	-	-	-	-	-	-	-	0.22	0.30
	ap	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	-	-	-	-	-	-	-	-	0.5	4.0
RDKT 1204..	fz	0.20	0.30	0.20	0.30	0.20	0.25	0.20	0.25	0.20	0.30	0.20	0.30	0.20	0.30	-	-	0.20	0.25	0.20	0.23
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
RDKT 12.. MS	fz	-	-	-	-	-	-	0.10	0.25	0.10	0.30	-	-	-	-	-	-	0.10	0.25	-	-
	ap	-	-	-	-	-	-	0.5	5.5	0.5	6.0	-	-	-	-	-	-	0.5	5.5	-	-
RDKT 12.. HC	fz	0.22	0.40	0.22	0.40	0.22	0.35	-	-	-	-	-	-	-	-	-	-	-	-	0.22	0.30
	ap	0.5	6.0	0.5	6.0	0.5	5.5	-	-	-	-	-	-	-	-	-	-	-	-	0.5	5.0
RDKW 0501..	fz	0.10	0.20	0.10	0.20	0.10	0.18	-	-	-	-	0.10	0.20	0.10	0.20	-	-	-	-	0.10	0.15
	ap	0.5	2.5	0.5	2.5	0.5	2.0	-	-	-	-	0.5	2.5	0.5	2.5	-	-	-	-	0.5	1.8
RDKW 0702..	fz	0.12	0.25	0.12	0.25	0.12	0.23	-	-	-	-	0.12	0.25	0.12	0.25	-	-	-	-	0.12	0.20
	ap	0.5	3.5	0.5	3.5	0.5	3.0	-	-	-	-	0.5	3.5	0.5	3.5	-	-	-	-	0.5	2.5
RDKW 0802..	fz	0.13	0.25	0.13	0.25	0.13	0.23	-	-	-	-	0.13	0.25	0.13	0.25	-	-	-	-	0.13	0.20
	ap	0.5	4.0	0.5	4.0	0.5	3.5	-	-	-	-	0.5	4.0	0.5	4.0	-	-	-	-	0.5	3.0
RDKW 10T3..	fz	0.16	0.30	0.16	0.30	0.16	0.28	-	-	-	-	0.16	0.30	0.16	0.30	-	-	-	-	0.16	0.22
	ap	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	0.5	5.0	0.5	5.0	-	-	-	-	0.5	4.0
RDKW 1204..	fz	0.16	0.35	0.16	0.35	0.16	0.30	-	-	-	-	0.16	0.35	0.16	0.35	-	-	-	-	0.16	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	-	-	-	-	0.5	6.0	0.5	6.0	-	-	-	-	0.5	5.0
RDMT 0602..	fz	0.10	0.20	0.10	0.20	0.10	0.18	0.10	0.18	0.10	0.20	0.10	0.20	0.10	0.20	-	-	0.10	0.18	0.10	0.15
	ap	0.5	3.0	0.5	3.0	0.5	2.8	0.5	2.8	0.5	3.0	0.5	3.0	0.5	3.0	-	-	0.5	2.8	0.5	2.5
RDMT 0803..	fz	0.10	0.24	0.10	0.24	0.10	0.20	0.10	0.20	0.10	0.24	0.10	0.24	0.10	0.24	-	-	0.10	0.20	0.10	0.18
	ap	0.5	4.0	0.4	4.0	0.5	3.5	0.5	3.5	0.5	4.0	0.5	4.0	0.5	4.0	-	-	0.5	3.5	0.5	3.2
RDMT 10T3..	fz	0.16	0.30	0.16	0.30	0.16	0.25	0.16	0.25	0.16	0.30	0.16	0.30	0.16	0.30	-	-	0.16	0.25	0.16	0.22
	ap	0.5	5.0	0.5	5.0	0.5	4.5	0.5	4.5	0.5	5.0	0.5	5.0	0.5	5.0	-	-	0.5	4.5	0.5	4.0
RDMT 1204..	fz	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	0.20	0.25
	ap	0.5	6.0	0.5	6.0	0.2	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0

ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
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VC (m/min)	ET602	140 - 240	120 - 220	70 - 150	120 - 200	140 - 250	140 - 220	150 - 240	-	25 - 45	40 - 80
	ET62P	140 - 240	120 - 220	70 - 150	-	-	140 - 220	150 - 240	-	-	40 - 80
	ET20P	-	-	-	-	-	-	-	300 - 800	-	-

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
RDMW 0602..	fz	0.12	0.25	0.12	0.25	0.12	0.23	-	-	-	-	0.12	0.25	0.12	0.25	-	-	-	-	0.12	0.20
	ap	0.5	3.0	0.5	3.0	0.5	2.5	-	-	-	-	0.5	3.0	0.5	3.0	-	-	-	-	0.5	2.0
RDMW 0802..	fz	0.13	0.25	0.13	0.25	0.13	0.23	-	-	-	-	0.13	0.25	0.13	0.25	-	-	-	-	0.13	0.20
	ap	0.5	4.0	0.5	4.0	0.5	3.5	-	-	-	-	0.5	4.0	0.5	4.0	-	-	-	-	0.5	3.0
RDMW 10T3..	fz	0.16	0.30	0.16	0.30	0.16	0.28	-	-	-	-	0.16	0.30	0.16	0.30	-	-	-	-	0.16	0.22
	ap	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	0.5	5.0	0.5	5.0	-	-	-	-	0.5	4.0
RDMW 1204..	fz	0.16	0.35	0.16	0.35	0.16	0.30	-	-	-	-	0.16	0.35	0.16	0.35	-	-	-	-	0.16	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	-	-	-	-	0.5	6.0	0.5	6.0	-	-	-	-	0.5	5.0
RPMT 08T2..	fz	0.10	0.24	0.10	0.24	0.10	0.18	0.10	0.18	0.10	0.24	0.10	0.24	0.10	0.24	-	-	0.10	0.18	0.10	0.15
	ap	0.5	4.0	0.5	4.0	0.5	3.5	0.5	3.5	0.5	4.0	0.5	4.0	0.5	4.0	-	-	0.5	3.5	0.5	3.0
RPMT 10T3..	fz	0.16	0.30	0.16	0.30	0.16	0.25	0.16	0.25	0.16	0.30	0.16	0.30	0.16	0.30	-	-	0.16	0.25	0.16	0.20
	ap	0.5	5.0	0.5	5.0	0.5	4.5	0.5	4.5	0.5	5.0	0.5	5.0	0.5	5.0	-	-	0.5	4.5	0.5	4.0
RPMT1204..	fz	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	0.20	0.35
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
RPMT 12.. MS	fz	-	-	-	-	-	-	0.10	0.25	0.10	0.30	-	-	-	-	-	-	0.10	0.25	-	-
	ap	-	-	-	-	-	-	0.5	5.5	0.5	6.0	-	-	-	-	-	-	0.5	5.5	-	-
RPMW 10T3..	fz	0.16	0.30	0.16	0.30	0.16	0.25	-	-	-	-	0.16	0.30	0.16	0.30	-	-	-	-	0.16	0.20
	ap	0.5	5.0	0.5	5.0	0.5	4.5	-	-	-	-	0.5	5.0	0.5	5.0	-	-	-	-	0.5	4.0
RPMW 1204..	fz	0.16	0.35	0.16	0.35	0.16	0.30	-	-	-	-	0.16	0.35	0.16	0.35	-	-	-	-	0.16	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	-	-	-	-	0.5	6.0	0.5	6.0	-	-	-	-	0.5	5.0
SDMT 12.. MS	fz	-	-	-	-	-	-	0.60	1.15	0.60	1.20	-	-	-	-	-	-	0.60	1.15	-	-
	ap	-	-	-	-	-	-	0.5	0.8	0.5	1.0	-	-	-	-	-	-	0.5	0.8	-	-
SDMW 1204..	fz	0.60	1.40	0.60	1.40	0.60	1.35	-	-	-	-	0.60	1.40	0.60	1.40	-	-	-	-	0.60	1.30
	ap	0.5	1.0	0.5	1.0	0.5	0.8	-	-	-	-	0.5	1.0	0.5	1.0	-	-	-	-	0.5	0.8
SDKN 1203..	fz	0.22	0.35	0.22	0.35	0.22	0.30	0.22	0.30	0.22	0.35	0.22	0.35	0.22	0.35	-	-	0.22	0.30	0.22	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SDKN 1504..	fz	0.22	0.40	0.22	0.40	0.22	0.35	0.22	0.35	0.22	0.40	0.22	0.40	0.22	0.40	-	-	0.22	0.35	0.22	0.30
	ap	0.5	7.5	0.5	7.5	0.5	7.0	0.5	7.0	0.5	7.5	0.5	7.5	0.5	7.5	-	-	0.5	7.0	0.5	6.5
SEKN 1203..	fz	0.22	0.35	0.22	0.35	0.22	0.30	0.22	0.30	0.22	0.35	0.22	0.35	0.22	0.35	-	-	0.22	0.30	0.22	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SEKR 1203..	fz	0.14	0.30	0.14	0.30	0.14	0.25	0.14	0.25	0.14	0.30	0.14	0.30	0.14	0.30	-	-	0.14	0.25	0.14	0.20
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0

► fz - feed (mm/tooth)
► ap - axial depth of cut (mm)

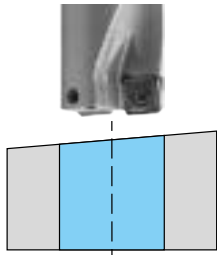
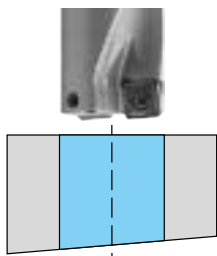
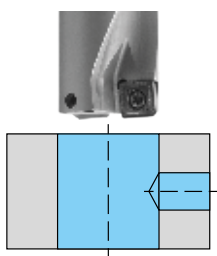
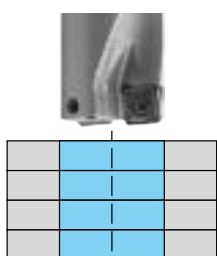
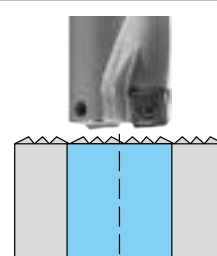
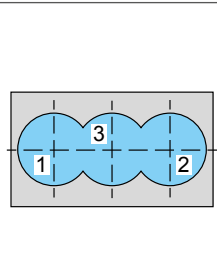
ISO		P			M		K		N	S	H
MATERIAL		Non-alloy steel	Low alloy steel	High alloy steel	Ferritic / Martensitic Stainless steel	Austenitic Stainless steel	Grey Cast iron	Nodular Cast iron	Aluminium	Heat Resistant and Super Alloys	Hardened steel
VDI GROUP (VDI 3323 Material Group)		1-5	6-9	10-11	12-13	14	15-16	17-18	21-25	31-37	38
EMG GROUP (Europa Material Group)		11-12	13-14	15	21, 23	22	31-32	33	71-74	41-53	16
Vc (m/min)	ET602	140 - 240	120 - 220	70 - 150	120 - 200	140 - 250	140 - 220	150 - 240	-	25 - 45	40 - 80
	ET62P	140 - 240	120 - 220	70 - 150	-	-	140 - 220	150 - 240	-	-	40 - 80
	ET20P	-	-	-	-	-	-	-	300 - 800	-	-

Insert	Feed/ d.o.c.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
SEKT 1204..	fz	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	0.20	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SEKT 12.. AL	fz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.55	-	-	-	-
	ap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	6.0	-	-	-	-
SEKT 12.. MS	fz	-	-	-	-	-	-	0.08	0.25	0.08	0.30	-	-	-	-	-	-	0.08	0.25	-	-
	ap	-	-	-	-	-	-	0.5	5.5	0.5	6.0	-	-	-	-	-	-	0.5	5.0	-	-
SEKT 13T3..	fz	0.15	0.30	0.15	0.30	0.15	0.25	0.15	0.25	0.15	0.30	0.15	0.30	0.15	0.30	-	-	0.15	0.25	0.15	0.20
	ap	0.5	6.5	0.5	6.5	0.5	6.0	0.5	6.0	0.5	6.5	0.5	6.5	0.5	6.5	-	-	0.5	6.0	0.5	5.5
SEKT 13.. AL	fz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07	0.55	-	-	-	-
	ap	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	6.5	-	-	-	-
SEKT 13.. MS	fz	-	-	-	-	-	-	0.08	0.25	0.08	0.30	-	-	-	-	-	-	0.08	0.25	-	-
	ap	-	-	-	-	-	-	0.5	6.0	0.5	6.5	-	-	-	-	-	-	0.5	6.0	-	-
SEMT 1204..	fz	0.20	0.35	0.20	0.35	0.20	0.30	0.20	0.30	0.20	0.35	0.20	0.35	0.20	0.35	-	-	0.20	0.30	0.20	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SEMT 13T3..	fz	0.15	0.30	0.15	0.30	0.15	0.25	0.15	0.25	0.15	0.30	0.15	0.30	0.15	0.30	-	-	0.15	0.25	0.15	0.20
	ap	0.5	6.5	0.5	6.5	0.5	6.0	0.5	6.0	0.5	6.5	0.5	6.5	0.5	6.5	-	-	0.5	6.0	0.5	5.5
SNMX 1206..	fz	0.16	0.34	0.16	0.34	0.16	0.28	0.16	0.28	0.16	0.34	0.16	0.34	0.16	0.34	-	-	0.16	0.28	0.16	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SPKN 1203..	fz	0.16	0.34	0.16	0.34	0.16	0.28	-	-	-	-	0.16	0.34	0.16	0.34	-	-	-	-	0.16	0.25
	ap	0.5	9.0	0.5	9.0	0.5	8.5	-	-	-	-	0.5	9.0	0.5	9.0	-	-	-	-	0.5	8.0
SPKN 1504..	fz	0.15	0.34	0.15	0.34	0.15	0.28	-	-	-	-	0.15	0.34	0.15	0.34	-	-	-	-	0.15	0.25
	ap	0.5	12.0	0.5	12.0	0.5	11.0	-	-	-	-	0.5	12.0	0.5	12.0	-	-	-	-	0.5	10.0
SPKR 1203..	fz	0.15	0.35	0.15	0.35	0.15	0.30	0.15	0.30	0.15	0.35	0.15	0.35	0.15	0.35	-	-	0.15	0.30	0.15	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	0.5	5.5	0.5	6.0	0.5	6.0	0.5	6.0	-	-	0.5	5.5	0.5	5.0
SPUN 1203..	fz	0.10	0.34	0.10	0.34	0.10	0.30	-	-	-	-	0.10	0.34	0.10	0.34	-	-	-	-	0.10	0.25
	ap	0.5	6.0	0.5	6.0	0.5	5.5	-	-	-	-	0.5	6.0	0.5	6.0	-	-	-	-	0.5	5.0
TPKN 1603..	fz	0.15	0.30	0.15	0.30	0.15	0.25	-	-	-	-	0.15	0.30	0.15	0.30	-	-	-	-	0.15	0.20
	ap	0.5	12.0	0.5	12.0	0.5	11.0	-	-	-	-	0.5	12.0	0.5	12.0	-	-	-	-	0.5	10.0
TPKN 2204..	fz	0.17	0.30	0.17	0.30	0.17	0.25	-	-	-	-	0.17	0.30	0.17	0.30	-	-	-	-	0.17	0.20
	ap	0.5	18.0	0.5	18.0	0.5	16.0	-	-	-	-	0.5	18.0	0.5	18.0	-	-	-	-	0.5	14.0
TPKR 1603..	fz	0.15	0.28	0.15	0.28	0.15	0.25	0.15	0.25	0.15	0.28	0.15	0.28	0.15	0.28	-	-	0.15	0.25	0.15	0.20
	ap	0.5	12.0	0.5	12.0	0.5	11.0	0.5	11.0	0.5	12.0	0.5	12.0	0.5	12.0	-	-	0.5	11.0	0.5	10.0
TPKR 2204..	fz	0.18	0.35	0.18	0.35	0.18	0.30	0.18	0.30	0.18	0.35	0.18	0.35	0.18	0.35	-	-	0.18	0.30	0.18	0.25
	ap	0.5	18.0	0.5	18.0	0.5	16.0	0.5	16.0	0.5	18.0	0.5	18.0	0.5	18.0	-	-	0.5	16.0	0.5	14.0
TPUN 1603..	fz	0.08	0.27	0.08	0.27	0.08	0.23	-	-	-	-	0.08	0.27	0.08	0.27	-	-	-	-	0.08	0.20
	ap	0.5	12.0	0.5	12.0	0.5	11.0	-	-	-	-	0.5	12.0	0.5	12.0	-	-	-	-	0.5	10.0

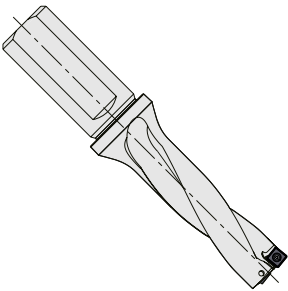
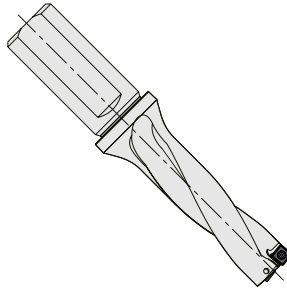
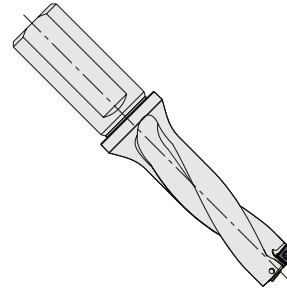
DRILLING



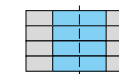
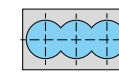
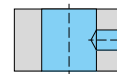
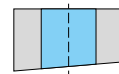
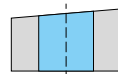
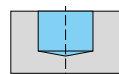
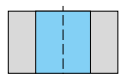
TYPICAL DRILLING ISSUES

	ANGLED SURFACE • Reduce feed when starting • <5° reduce by ≤30% • <10° reduce by ≤40% • <25° reduce by ≤50% • >25° reduce by ≤60% • Use shortest drill possible • If possible, use flat bottom carbide drill or spade drill
	ANGLED EXIT • At point of exit, reduce feed by ≤50%
	CROSS BORE • Reduce feed by ≤50% at start of interrupted cut • Increase feed once cross bore has been cleared • Be wary of chip clogging
	STACKED DRILLING • Plates must be clamped rigidly • Maximum permissible gap 0.5mm - 1.0mm
	UNEVEN SURFACE • Reduce feed when starting by ≤50% depending on depth of unevenness • If possible, spot face surface first
	CHAIN DRILLING • Drill holes 1 & 2 first • When drilling hole 3, reduce feed by ≤50% to cater for interrupted cut • Make overlap <1.5mm on diameter if possible

APPLICATION GUIDE & INDEX

QXF 3xD	QXF 4xD	QXF 5xD
 P.110-111	 P.112-113	 P.114-115
DC(mm) 13 - 50	DC(mm) 16 - 33	DC(mm) 13 - 40
 SPMX P.116	 SPMX P.116	 SPMX P.116

DRILLING ICONS



Through Hole

Blind Hole

Angled Surface

Angled Exit

Cross Bore

Chain Drilling

Stacked Drilling

MISCELLANEOUS DRILLING INSERTS	P.117
CUTTING DATA	P.119-120

QXF

Four cutting edges

- Maximum possible tool life
- Inner and outer inserts identical, no confusion over placement
- High process reliability and economy

New MS Chipbreaker

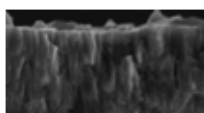
- Designed for sticky and long chipping materials
- Ideal for stainless steel and heat resistant alloys

Insert Grade ET602

- Ultra dense PVD coating
- Optimised for thermal resistance and added strength
- Tough carbide substrate, ideal for demanding applications

INSERT GRADE GUIDE

PVD	ET602	P STEEL				M STAINLESS STEEL				K CAST IRON			
		05	15	25	35	05	15	25	35	05	15	25	35
		602				602				602			
		HARDER ← TOUGHER				HARDER ← TOUGHER				HARDER ← TOUGHER			
PVD	ET602	N NON-FERROUS				S HRSA				H HARDENED STEEL			
		05	15	25	35	05	15	25	35	05	15	25	35
		602				602				602			
		HARDER ← TOUGHER				HARDER ← TOUGHER				HARDER ← TOUGHER			

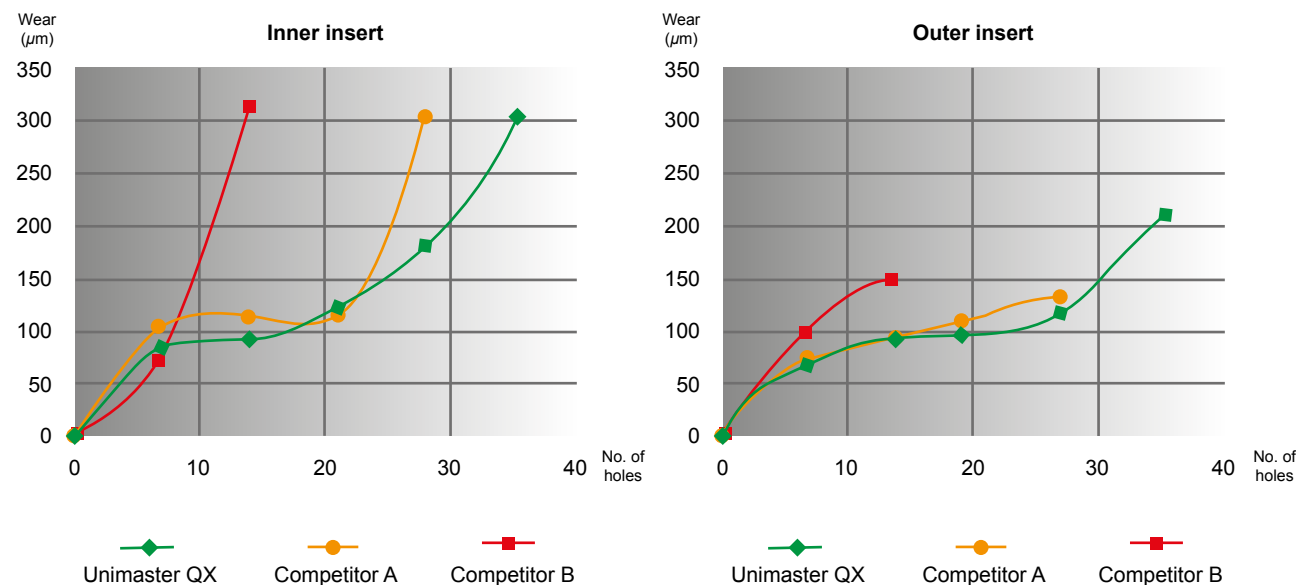
	P20 - P35	ET602 Ultra dense PVD coating optimised for drilling applications, suitable for most materials PVD - TiAlN
	M20 - M40	
	K20 - K40	
	N05 - N35	
	S15 - S25	
	H20 - H40	

INSERT EDGE PREPARATION GUIDE

P	M	K	N	S	H	Edge Preparation Guide	
•		•	•		•		Standard Edge Preparation General machining, first choice
•	•			•			MS Sharp geometry for Stainless Steel and HRSA

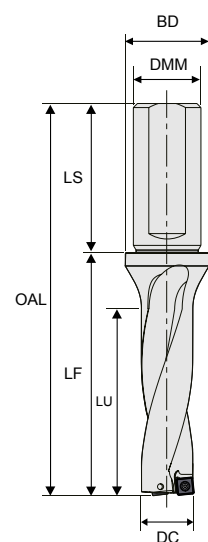
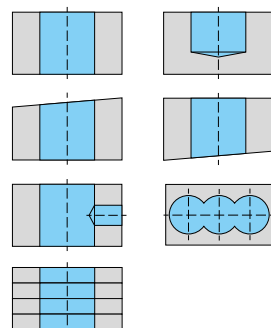
Tool: QXF3D3300 3xD Material: D2 Tool steel Drilling depth: 60mm
Method: Through hole Hardness: 180-190HB Toolholder: Hydraulic chuck
Size: ø33mm vc: 120 m/min Coolant: Through coolant
Insert: SPMX 090408 ET602 fn: 0.1 mm/rev Machine: Vertical Machining Centre

Test was stopped at 300 µm insert flank wear



INDEXABLE DRILLING

QXF 3xD



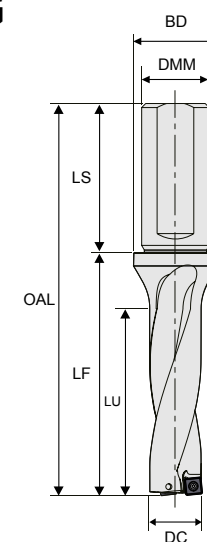
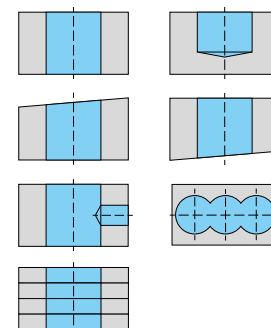
Insert Type	
	SPMX 0502.. SPMX 0602.. SPMX 07T3.. SPMX 0904.. SPMX 1104.. SPMX 1405..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	Wrench
QXF3D1300	QXF3D1300	13.0	20	25	50	39	57	107	SPMX 05	TXS2043	TXW05
QXF3D1400	QXF3D1400	14.0				42	60	110			
QXF3D1500	QXF3D1500	15.0				45	63	113			
QXF3D1600	QXF3D1600	16.0	25	32	56	48	69	125	SPMX 06	TXS2205	TXW07
QXF3D1650	QXF3D1650	16.5				49.5	70.5	126.5			
QXF3D1700	QXF3D1700	17.0				51	72	128			
QXF3D1750	QXF3D1750	17.5				52.5	73.5	129.5			
QXF3D1800	QXF3D1800	18.0				54	75	131			
QXF3D1850	QXF3D1850	18.5				55.5	76.5	132.5			
QXF3D1900	QXF3D1900	19.0				57	78	134			
QXF3D1950	QXF3D1950	19.5				58.5	79.5	135.5			
QXF3D2000	QXF3D2000	20.0				60	82	138			
QXF3D2050	QXF3D2050	20.5				61.5	83.5	139.5			
QXF3D2100	QXF3D2100	21.0				63	85	141			
QXF3D2150	QXF3D2150	21.5				64.5	86.5	142.5			
QXF3D2200	QXF3D2200	22.0	32	45	60	66	96	156	SPMX 07	TXS2507	TXW08
QXF3D2250	QXF3D2250	22.5				67.5	97.5	157.5			
QXF3D2300	QXF3D2300	23.0				69	99	159			
QXF3D2350	QXF3D2350	23.5				70.5	100.5	160.5			
QXF3D2400	QXF3D2400	24.0				72	102	162			
QXF3D2450	QXF3D2450	24.5				73.5	103.5	163.5			
QXF3D2500	QXF3D2500	25.0				75	105	165			
QXF3D2550	QXF3D2550	25.5				76.5	106.5	166.5			
QXF3D2600	QXF3D2600	26.0				78	108	168			
QXF3D2650	QXF3D2650	26.5				79.5	109.5	169.5			
QXF3D2700	QXF3D2700	27.0				81	111	171			
QXF3D2750	QXF3D2750	27.5				82.5	112.5	172.5			

► ABS and Plain shanks available to order

INDEXABLE DRILLING

QXF 3xD



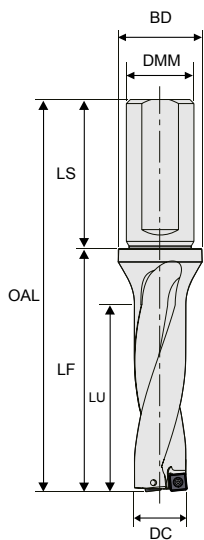
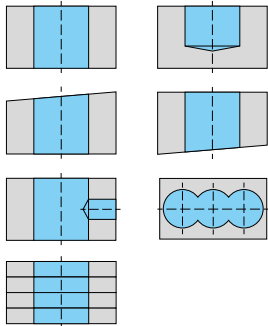
Insert Type	
	SPMX 0502.. SPMX 0602.. SPMX 07T3.. SPMX 0904.. SPMX 1104.. SPMX 1405..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	Wrench
QXF3D2800	QXF3D2800	28.0	32	45	60	84	114	174	SPMX 09	TXS3509	TXW10
QXF3D2850	QXF3D2850	28.5				85.5	115.5	175.5			
QXF3D2900	QXF3D2900	29.0				87	117	177			
QXF3D2950	QXF3D2950	29.5				88.5	118.5	178.5			
QXF3D3000	QXF3D3000	30.0				90	121	181			
QXF3D3050	QXF3D3050	30.5	32	55	60	91.5	122.5	182.5	SPMX 09	TXS3509	TXW10
QXF3D3100	QXF3D3100	31.0				93	124	184			
QXF3D3150	QXF3D3150	31.5				94.5	125.5	185.5			
QXF3D3200	QXF3D3200	32.0				96	127	187			
QXF3D3250	QXF3D3250	32.5				97.5	128.5	188.5			
QXF3D3300	QXF3D3300	33.0	32	55	60	99	130	190	SPMX 09	TXS3509	TXW10
QXF3D3400	QXF3D3400	34.0				102	133	193			
QXF3D3500	QXF3D3500	35.0				105	136	196			
QXF3D3600	QXF3D3600	36.0				108	139	199			
QXF3D3700	QXF3D3700	37.0				111	147	217			
QXF3D3800	QXF3D3800	38.0	40	58	70	114	151	221	SPMX 11	TXS4010	TXW15
QXF3D3900	QXF3D3900	39.0				117	154	224			
QXF3D4000	QXF3D4000	40.0				120	158	228			
QXF3D4100	QXF3D4100	41.0				123	162	232			
QXF3D4200	QXF3D4200	42.0				126	165	235			
QXF3D4300	QXF3D4300	43.0	40	58	70	129	169	239	SPMX 14	TXS5010	TXW20
QXF3D4400	QXF3D4400	44.0				132	172	242			
QXF3D4500	QXF3D4500	45.0				135	177	247			
QXF3D4600	QXF3D4600	46.0				138	181	251			
QXF3D4700	QXF3D4700	47.0				141	184	254			
QXF3D4800	QXF3D4800	48.0				144	188	258			
QXF3D4900	QXF3D4900	49.0				147	191	261			
QXF3D5000	QXF3D5000	50.0				150	195	265			

► ABS and Plain shanks available to order

INDEXABLE DRILLING

QXF 4xD



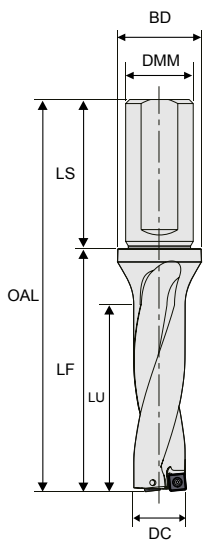
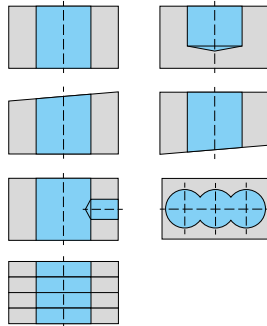
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	SPMX 0602.. SPMX 07T3.. SPMX 0904..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	Wrench
QXF4D1600	QXF4D1600	16.0	25	32	56	64	85	141	SPMX 06	TXS2205	TXW07
QXF4D1700	QXF4D1700	17.0				68	89	145			
QXF4D1750	QXF4D1750	17.5				70	91	147			
QXF4D1800	QXF4D1800	18.0				72	93	149			
QXF4D1850	QXF4D1850	18.5				74	95	151			
QXF4D1900	QXF4D1900	19.0				76	97	153			
QXF4D1950	QXF4D1950	19.5				78	99	155			
QXF4D2000	QXF4D2000	20.0				80	102	158			
QXF4D2050	QXF4D2050	20.5				82	104	160			
QXF4D2100	QXF4D2100	21.0				84	106	162			
QXF4D2150	QXF4D2150	21.5				86	108	164			
QXF4D2200	QXF4D2200	22.0	32	45	60	88	118	178	SPMX 07	TXS2207	TXW08
QXF4D2250	QXF4D2250	22.5				90	120	180			
QXF4D2300	QXF4D2300	23.0				92	122	182			
QXF4D2350	QXF4D2350	23.5				94	124	184			
QXF4D2400	QXF4D2400	24.0				96	126	186			
QXF4D2450	QXF4D2450	24.5				98	128	188			
QXF4D2500	QXF4D2500	25.0				100	130	190			
QXF4D2550	QXF4D2550	25.5				102	132	192			
QXF4D2600	QXF4D2600	26.0				104	134	194			
QXF4D2650	QXF4D2650	26.5				106	136	196			
QXF4D2700	QXF4D2700	27.0				108	138	198			
QXF4D2750	QXF4D2750	27.5				110	140	200			

► ABS and Plain shanks available to order

INDEXABLE DRILLING

QXF 4xD



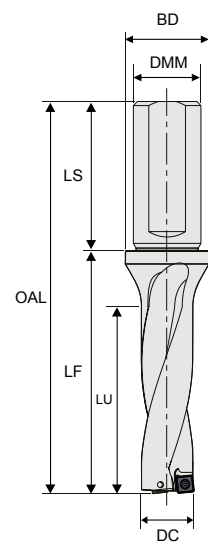
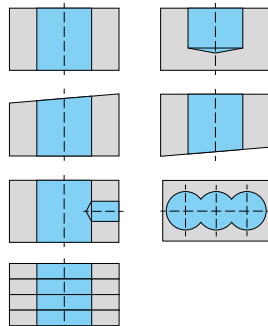
Insert Type	
	SPMX 0602.. SPMX 07T3.. SPMX 0904..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	Wrench
QXF4D2800	QXF4D2800	28.0	32	45	60	112	142	202	SPMX 09	TXS3509	TXW10
QXF4D2850	QXF4D2850	28.5				114	144	204			
QXF4D2900	QXF4D2900	29.0				116	146	206			
QXF4D2950	QXF4D2950	29.5				118	148	208			
QXF4D3000	QXF4D3000	30.0				120	151	211			
QXF4D3050	QXF4D3050	30.5				122	153	213			
QXF4D3100	QXF4D3100	31.0				124	155	215			
QXF4D3150	QXF4D3150	31.5				126	157	217			
QXF4D3200	QXF4D3200	32.0				128	159	219			
QXF4D3250	QXF4D3250	32.5				130	161	221			
QXF4D3300	QXF4D3300	33.0				132	163	223			

► ABS and Plain shanks available to order

INDEXABLE DRILLING

QXF 5xD



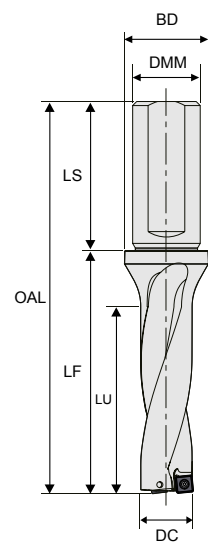
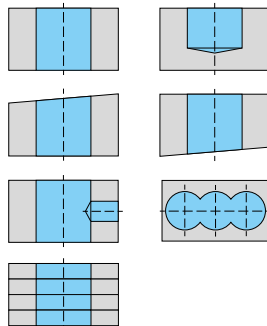
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	SPMX 0502.. SPMX 0602.. SPMX 07T3.. SPMX 0904.. SPMX 1104..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	Wrench
QXF5D1300	QXF5D1300	13.0	20	25	50	65	83	133	SPMX 05	TXS2043	TXW05
QXF5D1400	QXF5D1400	14.0				70	88	138			
QXF5D1500	QXF5D1500	15.0				75	93	143			
QXF5D1600	QXF5D1600	16.0	25	32	56	80	101	157	SPMX 06	TXS2205	TXW07
QXF5D1700	QXF5D1700	17.0				85	106	162			
QXF5D1800	QXF5D1800	18.0				90	111	167			
QXF5D1900	QXF5D1900	19.0				95	116	172			
QXF5D2000	QXF5D2000	20.0				100	122	178			
QXF5D2100	QXF5D2100	21.0				105	127	183			
QXF5D2200	QXF5D2200	22.0	32	45	60	110	140	200	SPMX 07	TXS2507	TXW08
QXF5D2300	QXF5D2300	23.0				115	145	205			
QXF5D2400	QXF5D2400	24.0				120	150	210			
QXF5D2500	QXF5D2500	25.0				125	155	215			
QXF5D2600	QXF5D2600	26.0				130	160	220			
QXF5D2700	QXF5D2700	27.0				135	165	225			
QXF5D2800	QXF5D2800	28.0	32	45	60	140	170	230	SPMX 09	TXS3509	TXW10
QXF5D2900	QXF5D2900	29.0		55		145	175	235			
QXF5D3000	QXF5D3000	30.0				150	181	241			
QXF5D3100	QXF5D3100	31.0				155	186	246			
QXF5D3200	QXF5D3200	32.0				160	191	251			
QXF5D3300	QXF5D3300	33.0				165	196	256			

► ABS and Plain shanks available to order

INDEXABLE DRILLING

QXF 5xD

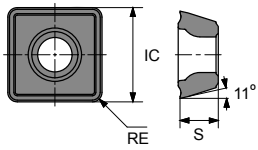


Insert Type	
	SPMX 0502.. SPMX 0602.. SPMX 07T3.. SPMX 0904.. SPMX 1104..

EDP Code	TOOL CODE	DC	DMM	BD	LS	LU	LF	OAL	Insert	Screw	wrench
QXF5D3400	QXF5D3400	34.0	40	54	70	170	203	273	SPMX 11	TXS4010	TXW15
QXF5D3500	QXF5D3500	35.0				175	209	279			
QXF5D3600	QXF5D3600	36.0				180	215	285			
QXF5D3700	QXF5D3700	37.0				185	221	291			
QXF5D3800	QXF5D3800	38.0				190	227	297			
QXF5D3900	QXF5D3900	39.0				195	232	302			
QXF5D4000	QXF5D4000	40.0				200	238	308			

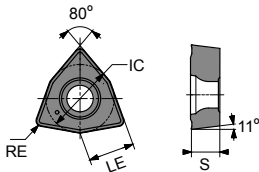
► ABS and Plain shanks available to order

INSERT	IC	S
SPMX 0502	5.0	2.38
SPMX 0602	6.0	2.38
SPMX 07T3	7.94	3.97
SPMX 0904	9.8	4.30
SPMX 1104	11.5	4.90
SPMX 1405	14.3	5.30



SPMX 	ORD CODE	ISO DESIGNATION	RE (mm)	DRILL DIA. (mm)	ET602	P	M	K	N	S	H
	DI00012	SPMX 050204-MS	0.4	<16.0	●	○	●			●	
	DI00013	SPMX 060204-MS	0.4	16.0 - 21.5	●	○	●			●	
	DI00014	SPMX 07T308-MS	0.8	22.0 - 27.5	●	○	●			●	
	DI00015	SPMX 090408-MS	0.8	28.0 - 33.0	●	○	●			●	
	DI00001	SPMX 050204	0.4	< 16.0	●	●	●	●	○	●	○
	DI00002	SPMX 060204	0.4	16.0 - 21.5	●	●	●	●	○	●	○
	DI00003	SPMX 07T308	0.8	22.0 - 27.5	●	●	●	●	○	●	○
	DI00004	SPMX 090408	0.8	28.0 - 33.0	●	●	●	●	○	●	○
	DI00005	SPMX 110408	0.8	34.0 - 41.0	●	●	●	●	○	●	○
	DI00011	SPMX 140512	1.2	> 42.0	●	●	●	●	○	●	○

INSERT	IC	S
WCMX 0402	6.35	2.38
WCMX 0503	7.94	3.18
WCMX 06T3	9.52	3.97
WCMX 0804	12.7	4.76



WCMX 	ORD CODE	ISO DESIGNATION	RE (mm)	LE (mm)	ET602	P	M	K	N	S	H
	DI00007	WCMX 040208	0.8	3.99	●	●	●	●	○	●	○
	DI00008	WCMX 050308	0.8	5.07	●	●	●	●	○	●	○
	DI00009	WCMX 06T308	0.8	6.14	●	●	●	●	○	●	○
	DI00010	WCMX 080412	1.2	8.01	●	●	●	●	○	●	○

CUTTING DATA



QXF

ISO		P						M				K				N		S		H	
MATERIAL		Non-alloy steel		Low alloy steel		High alloy steel		Ferritic / Martensitic Stainless steel		Austenitic Stainless steel		Grey Cast iron		Nodular Cast iron		Aluminium		Heat Resistant and Super Alloys		Hardened steel	
VDI GROUP (VDI 3323 Material Group)		1-5		6-9		10-11		13		12, 14		15-16		17-18		21-25		31-37		38	
EMG GROUP (Europa Material Group)		11-12		13-14		15		23		21-22		31-32		33		71-74		41-53		16	
Vc (m/min)	ET602	140 - 240		120 - 220		70 - 150		120 - 200		140 - 250		140 - 220		150 - 240		250 - 600		25 - 45		40 - 80	

Insert	Feed	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
SPMX 0502..	f _n	0.06	0.12	0.06	0.12	0.05	0.10	-	-	-	-	0.07	0.11	0.06	0.13	0.08	0.14	-	-	0.06	0.1
SPMX 0502.. MS	f _n	-	-	-	-	-	-	0.02	0.1	0.03	0.11	-	-	-	-	-	-	0.02	0.1	-	-
SPMX 0602..	f _n	0.06	0.14	0.06	0.12	0.05	0.10	-	-	-	-	0.07	0.11	0.06	0.13	0.08	0.16	-	-	0.06	0.11
SPMX 0602.. MS	f _n	-	-	-	-	-	-	0.03	0.1	0.04	0.11	-	-	-	-	-	-	0.03	0.1	-	-
SPMX 07T3..	f _n	0.06	0.15	0.06	0.12	0.06	0.10	-	-	-	-	0.08	0.12	0.08	0.14	0.08	0.16	-	-	0.06	0.12
SPMX 07T3.. MS	f _n	-	-	-	-	-	-	0.03	0.1	0.04	0.11	-	-	-	-	-	-	0.03	0.1	-	-
SPMX 0904..	f _n	0.08	0.16	0.08	0.14	0.06	0.10	-	-	-	-	0.08	0.12	0.08	0.16	0.08	0.16	-	-	0.07	0.13
SPMX 0904.. MS	f _n	-	-	-	-	-	-	0.04	0.11	0.05	0.12	-	-	-	-	-	-	0.04	0.11	-	-
SPMX 1104..	f _n	0.08	0.16	0.08	0.14	0.06	0.10	-	-	-	-	0.08	0.14	0.08	0.16	0.08	0.16	-	-	0.08	0.14
SPMX 1405..	f _n	0.08	0.16	0.08	0.14	0.06	0.10	-	-	-	-	0.08	0.16	0.08	0.16	0.08	0.18	-	-	0.08	0.16
WCMX 0402..	f _n	0.06	0.12	0.06	0.12	0.05	0.10	0.04	0.10	0.06	0.12	0.07	0.11	0.06	0.13	-	-	0.08	0.11	0.06	0.10
WCMX 0503..	f _n	0.06	0.14	0.06	0.12	0.05	0.10	0.04	0.10	0.06	0.12	0.08	0.12	0.06	0.13	-	-	0.08	0.13	0.06	0.12
WCMX 06T3..	f _n	0.06	0.14	0.06	0.12	0.06	0.10	0.06	0.10	0.06	0.12	0.08	0.12	0.08	0.14	-	-	0.08	0.13	0.06	0.12
WCMX 0804..	f _n	0.08	0.16	0.08	0.14	0.06	0.10	0.08	0.14	0.08	0.14	0.08	0.14	0.08	0.16	-	-	0.08	0.17	0.06	0.12

► f_n - feed (mm/rev)

INFORMATION

TROUBLESHOOTING - TURNING & MILLING

TROUBLESHOOTING - DRILLING

Fault	Description	Solution
 Rapid flank wear	- Inappropriate feed rate - Cutting speed too high	- Adjust feed rate according to cutting depth and width - Reduce cutting speed
 Thermal cracking	- Insufficient coolant - Cutting speed too high	- Increase coolant flow, or use dry cutting data (for milling) - Reduce cutting speed
 Built-up edge	- Cutting speed too low - Insufficient coolant - Rake angle too low	- Increase cutting speed - Increase coolant flow - Use insert with higher rake angle
 Notch wear	- Scaling or work hardening of workpiece surface area - Burrs in workpiece	- Vary cutting feed and depth of cut - Change tool direction
 Fracture/Chipping	- Feed rate too high - Cutting speed too low - Toolholder vibration - Wrong insert shape or corner radius	- Reduce feed rate - Increase cutting speed - Reduce tool overhang - Choose bigger insert or corner radius
 Cratering	- Insufficient coolant supply - Cutting speed and feed rate too high	- Increase coolant flow or concentration - Reduce cutting speed and feed rate
 Plastic deformation	- Cutting speed too high - Insufficient coolant supply - High stress applied to cutting edge	- Reduce cutting speed - Increase cutting flow - Choose bigger insert or corner radius

Fault	Solution
 Heavy/Rapid flank wear	- Reduce cutting speed - Increase feed rate
 Chipping on cutting edge	- Reduce feed rate - Check spindle and toolholder rigidity - Check workpiece rigidity
 Chipping on corner	- Reduce feed rate - Check workpiece rigidity
 Built-up edge	- Increase cutting speed - Use different chipbreaker
 Scratching on drill body	- Check workpiece rigidity - Reduce feed rate - Increase coolant flow

TERMINOLOGY

- n = Spindle speed in RPM

v_c = Cutting speed in m/min

f_n = Cutting feed in m/min

v_f = Table feed rate in mm/min - Milling

v_f = Penetration rate in mm/min - Drilling

z_n = Number of teeth/flutes

a_p = Axial depth of cut in mm

a_e = Radial depth of cut in mm

D_c = Cutter body diameter in mm
- D_m = Workpiece diameter in mm

l_m = Machined length in mm

k_c = Specific cutting force in N/mm²

P_c = Power consumption in kW

T_c = Tool engagement time in minutes

M_c = Torque in Nm

K_r = Drill point angle/2 in degrees

F_f = Feed force in Newtons

TURNING FORMULAE

SPINDLE SPEED (n)	CUTTING SPEED (v _c)	MACHINING TIME (T _c)	POWER CONSUMPTION (P _c)
$n = \frac{v_c \times 1000}{\pi \times D_m} \text{ (rev/min)}$	$v_c = \frac{D_m \times \pi \times n}{1000} \text{ (m/min)}$	$T_c = \frac{l_m}{f_n \times n} \text{ (min)}$	$P_c = \frac{v_c \times a_p \times f_n \times k_c}{60 \times 10^3} \text{ (kW)}$
METAL REMOVAL RATE (Q)			
$Q = f_n \times v_c \times a_p \text{ (cm}^3\text{/min)}$			

MILLING FORMULAE

SPINDLE SPEED (n)	CUTTING SPEED (v _c)	TABLE FEED RATE (v _f)	TORQUE (M _c)
$n = \frac{v_c \times 1000}{\pi \times D_c} \text{ (rev/min)}$	$v_c = \frac{D_c \times \pi \times n}{1000} \text{ (m/min)}$	$v_f = f_z \times z_n \times n \text{ (mm/min)}$	$M_c = \frac{P_c \times 30 \times 10^3}{\pi \times n} \text{ (Nm)}$
FEED PER TOOTH (f _z)	POWER CONSUMPTION (P _c)	METAL REMOVAL RATE (Q)	
$f_z = \frac{v_f}{n \times z_n} \text{ (mm)}$	$P_c = \frac{a_p \times a_e \times v_f \times k_c}{60 \times 10^6} \text{ (kW)}$	$Q = \frac{a_p \times a_e \times v_f}{1000} \text{ (cm}^3\text{/min)}$	

DRILLING FORMULAE

SPINDLE SPEED (n)	CUTTING SPEED (v _c)	PENETRATION RATE (v _f)	TOOL FEED RATE (f _n)
$n = \frac{v_c \times 1000}{\pi \times D_c} \text{ (rev/min)}$	$v_c = \frac{D_c \times \pi \times n}{1000} \text{ (m/min)}$	$v_f = f_n \times n \text{ (mm/min)}$	$f_n = f_z \times 2 \text{ (mm/rev)}$
FEED FORCE (F _f)	POWER CONSUMPTION (P _c)	TORQUE (M _c)	
$F_f \approx 0.5 \times k_c \times \frac{D_c}{2} f_n \times \sin K_r \text{ (N)}$	$P_c = \frac{f_n \times v_c \times D_c \times k_c}{240 \times 10^3} \text{ (kW)}$	$M_c = \frac{P_c \times 30 \times 10^3}{\pi \times n} \text{ (Nm)}$	

TOOL PARAMETERS ACCORDING TO ISO13399

Parameter	Definition	Parameter	Definition	Parameter	Definition
ALP	Clearance angle axial	L	Cutting edge length	TPX	Maximum thread pitch
ANN	Clearance angle minor	LB	Body length	TQ	Torque
APMX	Depth of cut maximum	LCF	Length chip flute	TSYC	Tool style code
B	Shank width	LE	Cutting edge effective length	ULDR	Usable length diameter ratio
BAWS	Body angle workpiece side	LF	Functional length	WB	Body width
BBD	Balanced by design	LGR	Regrind length	WF	Functional width
BBR	Balanced by rotational test	LH	Head length	WSC	Clamping width
BD	Body diameter	LPR	Protruding length	WT	Weight of item
BHTA	Body half taper angle	LS	Shank length	W1	Insert width
BS	Wiper edge length	LSC	Clamping length	ZEFF	Face effective cutting edge count
BSG	Basic standard group	LSCN	Clamping length minimum	ZEFP	Peripheral effective cutting edge count
CDX	Cutting depth maximum	LSCX	Clamping length maximum	ZWX	Maximum number of Wiper inserts
CHW	Corner chamfer width	LSD	Dead shank length		
CICT	Cutting item count	LU	Usable length (max. recommended)		
CND	Coolant entry diameter	MHD	Mounting hole distance		
CNSC	Coolant entry style code	MIID	Master insert identification		
COATING	Coating	MMCC	Code for preset torque		
CNT	Coolant entry thread size	NOF	Flute count		
CP	Coolant pressure	OAH	Overall height		
CRKS	Connection retention knob thread size	OAL	Overall length		
CTPT	Operation type	OAW	Overall width		
CUTDIA	Work piece parting diameter maximum	OHN	Overhang minimum		
CW	Cutting width	OHX	Overhang maximum		
CWTOLL	Cutting width lower tolerance	PHD	Premachined hole diameter		
CWTOLU	Cutting width upper tolerance	PHDX	Maximum premachined hole diameter		
CXSC	Coolant exit style code	PL	Point length		
CZC	Connection size code	PRFRAD	Profile radius		
CZC MS	Connection size code machine side	PRSPC	Profile specification		
CZC WS	Connection size code workpiece side	PSIR	Tool lead angle		
DAH	Diameter access hole	PSIRL	Cutting edge angle major left hand		
DAXIN	Axial groove inside diameter minimum	PSIRR	Cutting edge angle major right hand		
DAXX	Axial groove outside diameter maximum	RADH	Radial body height		
DBC	Diameter bolt circle	RADW	Radial body width		
DC	Cutting diameter	RE	Corner radius		
DCB	Connection bore diameter	RETOLL	Corner radius lower tolerance		
DCBN	Connection bore diameter minimum	RETOLU	Corner radius upper tolerance		
DCBX	Connection bore diameter maximum	RPMX	Rotational speed maximum		
DCF	Cutting diameter face contact	S	Insert thickness		
DCON	Connection diameter	SDL	Step diameter length		
DCSFMS	Contact surface diameter machine side	SIG	Point angle		
DCSFWS	Contact surface diameter workpiece side	SSC	Insert seat size code		
DCX	Cutting diameter maximum	SUBSTRATE	Substrate		
DIX	Tool changer interference diameter maximum	TCDC	Tolerance class cutting diameter		
DMIN	Minimum bore diameter	TCDMM	Shank diameter tolerance		
DMM	Shank diameter	TCHA	Achievable hole tolerance		
DN	Neck diameter	TCT	Tolerance class tool		
DSGN	Design	TCTR	Thread tolerance class		
D1	Fixing hole diameter	TD	Thread diameter		
FHA	Flute helix angle	TDZ	Thread diameter size		
FLGT	Flange thickness	TFLA	Tap floating length ahead		
FTDZ	For thread diameter size	TFLB	Tap floating length behind		
H	Shank height	THCHT	Threading chamfer type		
HF	Functional height	THFT	Form type		
HRY	Lowest point from reference plain	THLGTH	Thread length		
HTB	Body height	THUB	Hub thickness		
HTH	Height	TP	Thread pitch		
IC	Inscribed circle diameter	TPI	Threads per inch		
INSL	Insert length	TPIN	Threads per inch minimum		
IZC	Insert size code	TPIX	Threads per inch maximum		
KAPR	Tool cutting edge angle	TPN	Thread pitch minimum		
KCH	Corner chamfer	TPX	Maximum thread pitch		



P	VDI 3323 1		Non-alloyed steel		About 0.15% C, Annealed				≤125 HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0037	St 37-2		4360 40 B	S235JR	E24-2	1311	Fe 360 B		
	1.0038	St 37-3	A570.36	4360 40 C	S275J2G3	E28-3	1312	Fe 360 D FF		
	1.0045	S 355 JR			S 1207	E36-2		Fe 510 BFN		
	1.0050	St 50-2	A570 Gr. 50	4360 50 B	E 295	A50-2	2172	Fe 490		
	1.0060	St 60-2	A572 Gr. 65	4360 55 E		A60-2	1650	Fe 60-2		
	1.0114	S 235 J0		En 40C	S 235 J0	E24-3		Fe 360 CFN		
	1.0143	S 275 J0			S 275 J0	E28-3	1414	Fe 430 C		
	1.0144	St 44-3 N	A573 Gr. 81	4360 43C	S 275 J2 G3	E28-3	1412	Fe 430 D FF		
	1.0149	Ro St 44-2		43C	S 275 J0 H		1412	Fe430C		
	1.0301	C10	1010	045M10	C10	34C10, XC10		C10	F.1511	G10100
	1.0330	St 12		DC 01	Fe P01	DC 01/Fe P01	1142	Fe P01		
	1.0335	DD13 (StW 24)	A622(1008)	H S 3	D D 13	3C		FeP13		
	1.0338	St 4	A620(1008)	14491CR	Fe P04	Fe 14	1147	DC04/FeP04		
	1.0345	P235 GH	A516 Gr. 65	P 235 GH	P 235 GH	A 37 CP	1330	Fe E 235		K02503
	1.0401	C15	1015	080M15		C18RR, XC18	1350	C15, C16	F.1110	G10170
	1.0402	C22	1020	050 A 20	1 C 22	C20	1450	C 20	F.1120	G10200
	1.0425	P265GH/H11				A42CP	1430	Fe4101KW		K02801
	1.0443	GS-45	A2765-35	A1		E23-45M	1305			
	1.0539	S355NH				TSE355-4	2134	Fe510B		
	1.0545	S355N		4360-50E		E355R	2334	FeE355KG		
	1.0546	S355NL		4360-50EE		E355FP	2135	FeE355KT		
	1.0547	S355J0H		4360-50C		TSE355-3	2172	Fe510C		
	1.0549	S355NLH					2135	Fe510D		
	1.0533	St52-3U	A14880-10	4360-50C		320-560M	1606	Fe510C		
	1.0562	StE355	A633 Gr.C	P355N		FeE355KGN	2132	FeE355KG		K12000
	1.0565	WStE355		P355NH		P355NH	2106	FeE355KGW		K01600
	1.0566	T St E 355		P 355 NL1		P 355 NL1	2107	Fe E 355 KT		
	1.0570	St 52-3	1	4360-50 C	S355JR	E36-3	2172	Fe 510 B		
	1.0715	9SMn28	1213	230M07		S250	1912	CFSMn28	F.2111	G12130
	1.0718	9SMnPb28	12L13			S250Pb	1914	CF9SMnPb28	F.2112	G12134
	1.0721	10S20	1108	10S20		10S20		CF10S20	F.2121	G11080
	1.0722	10SPb20	11L08			10PbF2		CF10SPb20		G11084
	1.0736	9SMn36	1215			S300		CF9Mn36	F.2113	G12150
	1.0737	9SMnPb36	12L14			S300Pb	1926	CF9SMnPb36	F.2114	G12144
	1.0972	S315MC		1501-40F30		E315D				
	1.0976	S355MC		1501-43F35		E355D	2642	FeE355TM		
	1.0982	S460MC		1501-50F45						
	1.0984	S500MC				E490D	2662	FeE490TM		
	1.0986	S500MC		1501-60F55		E560D		FeE560TM		
	1.1121	Ck10	1010	040A10		XC10	1265	C10	F.1510	G10100
	1.1141	Ck15	1015	040A15	32C	XC15	1370	C15	F.1110	G10150
	1.1151	C22E	1020	055M15		2C22	1450	C20	F.1120	G10230
	1.8900	StE380	A572-60	436055E			2145	FeE390KG		
		St44-2	A36	436043A		NFA35-501E28	1411			
		StE320-3Z		1501160			1421			

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VDI 3323 2		Non-alloyed steel		About 0.45% C, Annealed				≤13 HRC ≤190 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0501	C35	1035	080A32		1C35	1572	C35	F.113	G10350
1.0503	C45	1045	060A47		XC42H1TS	1672	C45	F.114	G10450
1.0511	C40	1040	080M40		1C40		C40	F.114.A	G10400
1.0540	C50					1674	C50		G10500
1.0551	GS-52	A2770-36	A2		280-480M	1505			
1.0553	St52-3U	A14880-40	4360-50C		320-560M	1606	Fe510C		
1.0577	S 355 J 2 G 4	A738	Fe 510 D 2 FF		A52FP	2107			
1.0726	35S20	1140	212M36	8M	35MF6	1957			G11400
1.0727	45S20	1146			45MF4	1973			G11460
1.1157	40Mn4	1039	150M36	15	40M5				G10390
1.1158	C25E	1025	070M25		XC25		C25	F.1120	G10250
1.1166	34Mn5	1536						TO.B	G15360
1.1167	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350
1.1170	28Mn6	1330	150M28	14A	20M5		C28Mn	28Mn6	G13300
1.1178	C30E		080M30		XC32		C30	2C30	G10300
1.1180	C35R	1035	080A35		3C35	1572		F.1135	G10350
1.1181	C35E	1035	080A35		XC38	1572	C36	F.1130	G10340
1.1191	Ck45	1045	080A46		XC45	1672	C45	F.1140	
1.1206	C50E	1050	080M50		2C50	1674	C50		G10500
1.1213	Cf53	1050	070M55		XC48HTS	1674	C53		G10500

VDI 3323 3		Non-alloyed steel		About 0.45% C, Annealed				≤25 HRc ≤250 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0481	17 Mn 4/P 295 GH	A516 Gr. 70	224-460B	P 295 GH	A 48 CP	2102	Fe E 295	A47RCI	K03501
1.0501	C35	1035	080A32		1C35	1572	C35	F.1130	G10350
1.0503	C45	1045	060A47		XC42H1TS	1672	C45	F.1140	G10450
1.0614	C76D	1074			XC75				G10750
1.0616	C86D	1086			XC80		C85		G10860
1.0618	C92D	1095			XC90				G10950
1.0726	35S20	1140	212M36	8M	35MF6	1957			G11400
1.1157	40Mn4	1039	150M36	15	40M5				G10390
1.1165	30Mn5	1036	120M36		35M5		30Mn5	F.8211	K13300
1.1167	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350
1.1186	C40E	1040	060A40		2C40		C40		G10400
1.1191	Ck45	1045	080M46		2C45	1672	C45	F.1140	
1.1201	C45R	1049	080M46		3C45	1660	C45	F.1145	
1.1213	Cf53	1050	070M55		XC48HTS	1674	C53		G10500
1.7242	18CrMo4								
1.7337	16CrMo4-4	A387 Gr.12					A18CrMo45KW		K11564
1.7362	12CrMo195		3606-625		Z10CD5-05		16CrMo205		K41545
	17MnV6	A572-60	436055E		NFA35-501E36	2142			



P	VDI 3323 4		Non-alloyed steel		About 0.75% C, Annealed		≤28 HRc ≤270 HB		
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA
	1.0603	C67	107	080A67		XC65		C67	G10700
	1.0605	C75	1075	144980HS				C75	G10740
	1.1203	Ck55	1055	060A57		2C55	1655	C55	F.1150 G10550
	1.1209	C55R	1055	070M55		3C55		C55	F.1155 G10550
	1.1221	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150 G10640
	1.1231	C67E	1070	060A67		XC68	1770	C70	F.5103 G10700
	1.1248	C75E	1074	060A78		XC75	1774	C75	F.5107 G10800
	1.1269	C85E	1086			XC90		C90	G10900
	1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117 G10950
	1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118
	1.1663	C125W	W112			Y2120			
	VDI 3323 5		Non-alloyed steel		About 0.75% C, Quenched & Tempered		≤32 HRc ≤300 HB		
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA
	1.0070	St70-2	1055	Fe690-2FN		A70-2	1655	Fe690	F.1150
	1.0535	C55	1055	070M55		1C55	1655	C55	J05000
	1.0601	C60	1060	060A62	43D	1C60		C60	G10600
	1.1203	Ck55	1055	060A57		2C55	1655	C55	F.1150 G10550
	1.1221	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150 G10640
	1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117 G10950
	1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118
	1.1663	C125W	W112			Y2120			
	1.5120	38MnSi4							
	1.5710	26NiCr6	3135	640A35	111A	35NC6			
	1.7701	51CrMoV4						51CrMoV4	
	VDI 3323 6		Low-alloyed steel		Annealed		≤10 HRc ≤180 HB		
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA
	1.0116	St37-3	A570Gr.36	4360-40C	S235J2G3	E24-3	1312	Fe360D1(2)	AE235D
	1.0904	55Si7	9255	250A53	45	55S7	2085	55Si8	56Si7 G92550
	1.0961	60SiCr7	9262			60SC6		60SiCr8	60SiCr8 G92620
	1.2067	100Cr6	L3	BL3		Y100C6			100Cr6
	1.2108	90CrSi5	L1				2092	105WCR5	
	1.2210	115CrV3	L2			100C3		107CrV3KU	F.250L
	1.2241	51CrV4							
	1.2330	35CrMo4	4135	708A37		34CD4	2234	35CrMo4	
	1.2419	105WCr6		105WC13		105WC13	2140	10WCr6	
	1.2510	100MnCrW4	01	B01		90MWCV5	2140	95MnWCr5KU	F.5220
	1.2542	45WCrV7	S1	BS1			2710	45WCrV8KU	
	1.2550	60WCrV7	S1			55WC20	2710	58WCr9KU	
	1.2713	55NiCrMoV6	L6			55NCDV7			F.520S
	1.2721	50NiCr13	L6			55NCV6	2550		F.528
	1.2842	90MnCrV8	02	B02		90MV8			T31502
	1.3501	100Cr2	E50100						
	1.3505	100Cr6	52100	2S135	31	100C6	2258	100Cr6	F.1310
	1.5024	46Si7				45S7		46Si7	F.1451

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P	VDI 3323 6		Low-alloyed steel		Annealed		≤10 HRc ≤180 HB		
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA
	1.5025	51Si7	9259H		50Si7	51S7	2090	50Si7	F.1450
	1.5026	55Si7			56Si7	55S7	2085	55Si7	F.1440 G92550
	1.5027	60Si7	9260	251A60	60Si7	60S7		60Si7	F.1441 G92600
	1.5028	65Si7	9260H						
	1.5415	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601 K11820
	1.5419	20Mo4	4419	1503-243-430			2512	G20Mo5	G44190
	1.5423	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602 K11522
	1.5622	14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641
	1.5732	14NiCr10	3415			14NC11		16NiCr11	
	1.5752	14NiCr14	3310	655M13	36A	12NC15			
	1.6511	36NiCrMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)	
	1.6523	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2	
	1.6546	40NiCrMo2-2	8740	311-Type7				40NiCrMo2(KB)	
	1.6566	17NiCrMo6-4							
	1.6587	17NiCrMo6		820A16		18NCD6		14NiCrMo13	
	1.6657	10NiCrMo13-4						14NiCrMo131	
	1.7015	10Cr3	5015	523M15		12C3			G50150
	1.7033	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)	G51300
	1.7035	41Cr4	5140	530M40	18	42C4	2245	41Cr4	G51400
	1.7131	16MnCr5	5115	527M17		16MC5	2511	16MnCr5	G51150
	1.7139	16MnCrS5					2127		
	1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3	
	1.7218	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)	
	1.7220	34CrMo4	4135	708A37		35CD4	2234	34CrMo4	
	1.7223	41CrMo4	4142					41CrMo4	
	1.7225	42CrMo4	4140	708M40	42CrMo4	42CD4	2244	42CrMo4	F.1252
	1.7228	55NiCrMoV6G		823M30	33		2512	655M31	
	1.7262	15CrMo5				12CD4	2216	12CrMo4	
	1.7321	20CrMo4					2625		
	1.7335	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45	
	1.7361	32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A
	1.7380	10CrMo9-10	A182-F22	1501-622		12CD9-10	2218	12CrMo9	
	1.7715	14MoV6-3		1503-660-440				13MoCrV6	
	1.8159	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4	G61500
	1.8161	58CrV4							
	1.8509	41CrAlMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAlMo7	
	1.8523	39CrMoV13-9		897M39	40C			36CrMoV12	
	VDI 3323 7		Low-alloyed steel		Quenched & Tempered		≤29 HRc ≤275 HB		
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA
	1.5415	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601 K11820
	1.5423	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602 K11522
	1.5622	14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641
	1.5732	14NiCr10	3415			14NC11		16NiCr11	
	1.5752	14NiCr14	3310	655M13	36A	12NC15			
	1.5755	31NiCr14		653M31		18NC13	2534		F.1270

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VDI 3323 7		Low-alloyed steel			Quenched & Tempered			≤29 HRc ≤275 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.6565	40NiCrMo6	4340	817M40	24	35NCD6	2541	35NiCrMo6(KB)		
1.6587	17NiCrMo6		820A16		18NCD6		14NiCrMo13		
1.6657	10NiCrMo13-4						14NiCrMo131		
1.6957	26NiCrMoV14-5								
1.7015	10Cr3	5015	523M15		12C3				G50150
1.7262	15CrMo5				12CD4	2216	12CrMo4		
1.7335	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45		
1.7380	10CrMo9-10	A182-F22	1501-622		12CD9-10	2218	12CrMo9		
1.7715	14MoV6-3		1503-660-440				13CrMoV6		
1.7733	24CrMoV55				20CDV6		21CrMoV511		
1.7755	GS-45CrMoV10-4								
1.8070	21CrMoV511						35NiCr9		

VDI 3323 8		Low-alloyed steel			Quenched & Tempered			≤32 HRc ≤300 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.1730	C45W3	C45W			XC48				
1.2332	47CrMo4	4142	708M40	19A	42CD4	2244	42CrMo4		
1.5736	36NiCr10	3435			30NC11				
1.6523	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2		
1.7033	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300
1.7218	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)		
1.8515	32CrMo12		722M24	40B	30CD12	2240	32CrMo12	F.124A	

VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRc ≤350 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0904	55Si7	9255	250A3	45	55S7	2085	55Si8		G92550
1.0961	60SiCr7	9262			60SC6		60SiCr8		G92620
1.2067	100Cr6	L3	BL3		Y100C6		100Cr6		
1.2419	105WCr6		105WC13		105WC13	2140	10WCr6		
1.2542	45WCRV7	S1	BS1			2710	45WCrV8KU		
1.2713	55NiCrMoV6	L6			55NCDV7			F.250S	
1.4882	X50CrMnNiNb219				Z50CMNNb21-09				
1.5120	38MnSi4								
1.5710	36NiCr6	3135	640A35	111A	35NC6				
1.5755	31NiCr14		830M31		18NC13	2534		F.1270	
1.6511	36CrNiMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)		
1.6546	40NiCrMo2-2	8740	311-Type7				40NiCrMo2(KB)		
1.7035	41Cr4	5140	530M40	18	42C4	2245	41Cr4		G51400
1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3		
1.7220	34CrMo4	4135	708A37		35CD4	2234	34CrMo4		
1.7223	41CrMo4	4142					41CrMo4		
1.7225	42CrMo4	4140	708M40	42CrMo4	42CD4	2244	42CrMo4	F.1252	
1.7361	32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A	

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VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRc ≤350 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.8159	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4	51CrV4	G61500
1.8161	58CrV4								
1.8509	41CrAiMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAiMo7		
1.8523	39CrMoV13-9		897M39	40C			36CrMoV12		

VDI 3323 10		High-alloyed steel, Tool steel			Annealed			≤15 HRc ≤200 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0347	RRSt3	A619	CR3	FeP03	F13	1922	DC03/FeP03		
1.0723	15S22		210A15					F.210F	
1.2080	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403
1.2162	21MnCr5				20MC5				
1.2311	40CrMnMo7				40CMD8		35CrMo8KU		
1.2312	40CrMnMoS8.6	P20+S			40CMD8S				
1.2316	X36CrMo17			X38CrMo16					
1.2343	X38CrMoV5-1	H11	BH11		Z38CDV5		X37CrMoV51KU		T20811
1.2344	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV51KU	F.5318	T20813
1.2363	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227	
1.2379	X155CrMoV121	D2	BD2		Z160CDV12	2310	X165CrMoV51KU		T30402
1.2436	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.35213	
1.2510	100MnCrW4	01	B01		90MWCV5	2140	95MnWCr5KU	F.5220	T20821
1.2581	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	
1.2601	X165CrMoV12					2310	X160CrMoV12		
1.2606	X37CrMoW51	H12	BH12		Z35CWDV5		X35CrMoW5KU	F.537	T20812
1.2764	X19NiCrMo4								
1.2767	X45NiCrMo4				45NCD16		40NiCrMoV8KU		
1.2842	90MnCrV8	02	B02		90MV8		90MnCrV8KU		T31502
1.3243	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5		
1.3249	S18-1-2-5	T4	BT4		Z80WKCV18-05-04				
1.3343	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604	
1.3348	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607	
1.3355	S18-0-1	T1	BT1		Z80WCV18-4-01				
1.4718	X45CrSi9-3	HNV3	401S45	52	Z45CS9		X45CrSi8	F.322	
1.5662	X8Ni9	ASMA353	502-650		9Ni		X10Ni9	F.2645	
1.5680	12Ni19	2515	12Ni19		Z18NS				

VDI 3323 11		High-alloyed steel, Tool steel			Quenched & Tempered			≤35 HRc ≤325 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.2080	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403
1.2344	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV51KU	F.5318	T20813
1.2363	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227	
1.2436	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.5213	
1.2581	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821
1.2601	X165CrMoV12					2310	X160CrMoV12		
1.2714	55NiCrMoV7	6F3/L6			55NiCrMoV7			F.520S	
1.3202	S12-1-4-5		BT15				HS12-1-5-5		

CONTINUED



P	VDI 3323 11		High-alloyed steel, Tool steel		Quenched & Tempered			≤35 HRC ≤325 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	1.3207	S10-4-3-10		BT42		Z130WKCDV			
	1.3243	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5	
	1.3246	S7-4-2-5	M35			Z110WKCDV07-05-04		HS7-4-2-5	
	1.3247	S2-10-1-8	M42	BM42		Z110WKCDV09-08-04		HS2-9-1-8	
	1.3255	S18-1-2-5	T4	BT4		Z80WKCV18-05-04			
	1.3343	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604
	1.3348	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607
	1.3355	S18-0-1	T1	BT1		Z80WCV18-4-01			
	1.4718	X45CrSi9-3	HNV3	401S45	52	Z45CS9		X45CrSi8	F.322
	1.4935	X20CrMoWV121	422						S42200
	1.5680	12Ni19	2515	12Ni19		Z18N5			

M	VDI 3323 12		Stainless steel		Ferritic/Martensitic, Annealed			≤15 HRC ≤200 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	1.4000	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110 S40300
	1.4001	X7Cr14	410S	403S7		Z8C13	2301		F.8401
	1.4002	X6CrAl13	405	405S17		Z6CA13	2302	X6CrAl13	S40500
	1.4005	X12CrS13	416	416S21		Z11CF13	2380	X12CrS13	F.3411 S41600
	1.4006	X12Cr13	410	410S21	56A	Z10C13	2302	X12Cr13	F.3401 S41000
	1.4016	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F.3113 S43000
	1.4027	GX20Cr14		420C29		Z20C13M			
	1.4028	X30Cr13	420	420S45		Z30C13	2304		S42020
	1.4034	X46Cr13		420S45		Z40C14		X40Cr14	F.3405
	1.4057	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427 S43100
	1.4086	GX120Cr29		452C11					
	1.4104	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117 S43020
	1.4112	X90CrMoV18	440B						S44003
	1.4113	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17	S43400
	1.4313	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304	J91540
	1.4341	GX40CrNi274							J92615
	1.4417	X2CrNiMoSi195	S31500				2376		S39215
	1.4418	X4CrNiMo165				Z6CND16-04-01	2387		
	1.4510	X6CrTi17	XM8			Z4CT17		X6CrTi17	F.3115 S43035
	1.4511	X6CrNb17				Z4CNb17		X6CrNb17	F.3122
	1.4512	X6CrTi12	409	LW19		Z3CT12		X6CrTi12	S40900
	1.4720	X20CrMo13							
	1.4724	X10CrA113	405	405S17		Z10C13		X10CrA112	F.311 S43000
	1.4742	X10CrA118	430	439S15	60	Z10CAS18		X8Cr17	F.3113
	1.4747	X80CrNiSi20	HNV6	443S65	59	Z80CSN20-02		X80CrNiSi20	F.320B S65006
	1.4749	X18CrNi28	446						
	1.4762	X10CrA124	446			Z10CAS24	2322	X16Cr26	S44600
	1.4871	X53CrMnNi21-9	EV8	349S54		Z52CMN21-09		X53CrMnNi219	S63008
		X10CrNi15	429						
		X12CrNi18-9	302	302S31		Z10CN18-09	2330		

M	VDI 3323 13		Stainless steel		Martensitic, Quenched & Tempered			≤23 HRC ≤240 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	1.4000	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110 S40300
	1.4001	X7Cr14	410S	403S7		Z8C13	2301		F.8401
	1.4006	X12Cr13	410	410S21	56A	Z10C13	2303	X12Cr13	F.3401 S41000
	1.4016	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F.3113 S43000
	1.4021	X20Cr13	420	420S37		Z20C13	2303	14210	F.5261 S42000
	1.4027	GX20Cr14		420C29		Z20C13M			
	1.4031	X40Cr13	420			Z40C14	2304		F.3404 S42080
	1.4034	X46Cr13		420S45		Z40C14		X40Cr14	F.3405
	1.4057	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427 S43100
	1.4104	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117 S43020
	1.4113	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17	S43400
	1.4313	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304	J91540
	1.4544	A700	321	S.524		Z10CNT18-11		X6CrNiTi1811	J92630
	1.4546	X5CrNiNb18-10	348	347S31				X6CrNiNb1811	J92640
	1.4871	X53CrMnNi21-9	EV8	349S54		Z52CMN21-09		X53CrMnNi219	S63008
	1.4922	X20CrMoV12-1					2317	X20CrMoNi1201	
	1.4923	X22CrMoV12-1							

	VDI 3323 14		Stainless steel		Austenitic			≤10 HRC ≤180 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	1.4301	X5CrNi18-10	304	304S15		Z5CN18-09	2332		F.3551 S30409
	1.4305	X10CrNiS18-10	303	303S21	58M	Z8CNF18-09	2346	X10CrNiS1809	F.3508 S30300
	1.4306	X2CrNi1911	304L	304C12	X3CrNi1810KD	Z2CN18-09	2352	GX2CrNi1910	F.3503 S30403
	1.4308	GX6CrNi18-9	CF-8	304C15	58E	Z6CN18-10M	2333		
	1.4310	X10CrNi18-8	301	301S21		Z12CN17-07	2331	X2CrNi1807	F.3517 S30100
	1.4311	X2CrNiN1810	304LN	304S62		Z2CN18-10	2371	X2CrNiN1810	F.3541 S30453
	1.4312	GX10CrNi188	305	302C25		Z10CN18-9M			
	1.4350	X5CrNi18-9	304	304S15	58E	Z6CN18-09	2332	X5CrNi1810	F.3551 S30400
	1.4362	X2CrNiN234	S32304			Z2CN23-04AZ	2327		S32304
	1.4371	X3CrMnNiN18887	202	284S16		Z8CMN18-08-05			
	1.4401	X5CrNiMo17-12-2	316	316S13		Z3CND17-11-01	2347	X5CrNiMo17122	F.3534 S31600
	1.4414	X2CrNiMo17-13-2	316L	316S11		Z2CND17-12	2348	X2CrNiMo1712	F.3533 S31603
	1.4406	X2CrNiMo17-12-2	316LN	316S61		Z2CND17-12AZ		X2CrNiMoN1712	F.3542 S31653
	1.4408	GX6CrNiMo18-10	CF-8M	316C16			2343	X7CrNiMo2010	F.8414 J92900
	1.4410	GX10CrNiMo18-9	Super Duplex			Z5CND20-12M	2328		S32750
	1.4429	X2CrNiMoN17-13-3	316LN	316S62		Z2CND17-13AZ	2375	X2CrNiMoN17133	F.3543
	1.4435	X2CrNiMo18-14-3	316L	316S11		Z3CND17-12-03	2375	X2CrNiMo17132	F.3533 S31603
	1.4436	X3CrNiMo17-13-3	316	316S19		Z6CND18-12-03	2343	X5CrNiMo17122	F.3543 S31600
	1.4438	X2CrNiMo18-16-4	317L	317S12		Z2CND19-15-04	2367	X2CrNiMo18164	F.3539 S31703
	1.4439	X2CrNiMoN17-13-5	S31726			Z3CND18-14-06AZ			
	1.4440	X2CrNiMo18-16							
	1.4449	X5CrNiMo17-13-3	317	317S16				X5CrNiMo1815	S31700
	1.4460	X8CrNiMo275	329				2324		S32900
	1.4462	X2CrNiMoN2253	Duplex	318S13		Z3CND22-05AZ	2377		S31803
	1.4500	X7NiCrMoCuNb25205				Z3NCUDU25-20M			J95150
	1.4521	X2CrMoTi18-2	443/444				2326	X2CrMoTiNb182	F.3123

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M	VDI 3323 14		Stainless steel		Austenitic		≤10 HRc ≤180 HB		
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	1.4539	X1NiCrMoCuN25205				Z2NCDU25-20	2562		N08904
	1.4541	X14CrNiTi18-10	321	321S31		Z6CNT18-10	2337	X6CrNiTi1811	F.3523 S32100
	1.4542	X5CrNiCuNb174	17-4PH						
	1.4545	Z7CNU15.05	15-5PH			Z7CNU15-05			S15500
	1.4547	X1CrNiMoN20187	S31254				2378		S31254
	1.4550	X6CrNiNb18-10	347	347S31	58F	Z6CNNb18-10	2338	X6CrNiNb1811	F.3552 S34700
	1.4552	GX7CrNiNb18-9				Z4CNNb19-10M			J92710
	1.4568	X7CrNiAl177		316S111		Z9CAN17-7	2388	Z8CNA17-07	S17700
	1.4571	X6CrNiMoTi17-12-2	316Ti	320S31	58J	Z6NDT17-12	2350	X6CrNiMoTi1712	F.3535
	1.4581	GX5CrNiMoNb18		318C17		Z4CNDNb18-12M			
	1.4583	X6CrNiMoNb18-12	318	303S21		Z15CNS20-12		X15CrNiSi212	
	1.4585	GX7CrNiMoCuNb1818						X6CrNiMoTi1712	J94651
	1.4821	X20CrNiSi254				Z20CNS25-04			S44635
	1.4823	GX40CrNiSi274							J92604
	1.4828	X15CrNiSi20-12	309	309S24	58C	Z15CNS20-12			F.8414 S30900
	1.4833	X6CrNi2213	309S	309S13		Z15CN24-13			J93400
	1.4845	X12CrNi25-21	310S	310S24		Z12CN25-20	2361	X6CrNi2520	F.331 S31008
	1.4878	X12CrNiTi18-9	321	321S20	58B	Z6CNT18-12(B)	2337	X6CrNiTi1811	F.3553 S32100
	1.4891	X5CrNiNb18-10	S30415				2372		
	1.4893	X8CrNiNb11	S30815				2368		
	1.4948	X6CrNi1811	304H	304S51		Z5CN18-09	2333		S30480
	1.4980	X5NiCrTi2515	660				2570		S33286
		X5NiCrN3525							
		X2CrNiMoN18134	S31753						
		X2CrNiMoN25227							

K	VDI 3323 15		Grey cast iron		Pearlitic/Ferritic		≤10 HRc ≤180 HB		
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	0.6010	GG10	A4820B	Grade 100	GJL-100	Ft10D	0100	G10	FG10
	0.6015	GG15	A4825B	Grade150	GJL-150	Ft15D	0115	G15	FG15 W06020
	0.6020	GG20	A4830B	Grade 220	GJL-200	Ft20D	0120	G20	FG20
	0.6025	GG25	A4840B	Grade 260	GJL-250	Ft25D	0125	G25	FG25
	0.6660	GGL-NiCr202	1050/700/7	Grade F2	GJLA-XNiCr20-2	L-NC202	0523		F41002

VDI 3323 16		Grey cast iron		Pearlitic (Martensitic)		≤26HRc ≤260HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
0.6025	GG25	A4840B	Grade 260	GJL-250	Ft25D	0125	G25	FG25
0.6030	GG30	A4845B	Grade 300	GJL-300	Ft30D	0130	G30	FG30
0.6035	GG35	A4850B	Grade 350	GJL-350	Ft35D	0135	G35	FG35
0.6040	GG40	A4860B	Grade 400	GJL-400	Ft40D	0140	G40	FG40

VDI 3323 17		Nodular cast iron		Ferritic		≤3 HRc ≤160 HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
0.7033	GGG35.3		350-22L40	GJS-350-22-LT	FGS370-17	0717-15		
0.7040	GGG40	60-40-18	SNG420-12	GJS-400-15	FGS400-12	0717-02	GS400-12	FGE38-17 F32800
0.7042	GGG40.3	60-40-18	SNG370-17	GJS-400-18-LT	FGS370-17	0717-12	GSO42-17	

K	VDI 3323 18		Nodular cast iron		Pearlitic		≤25HRc ≤250HB		
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	0.7050	GGG50	80-55-06	SNG500-7	GJS-500-7	FGS500-7	0727-02	GS500-7	FGE50-7 F33100
	0.7060	GGG60	80-55-06	SNG600-3	GJS-600-3	FGS60-3	0732-03	GS600-3	FGE60-2
	0.7070	GGG70	100-70-03	SNG700-2	GJS-700-2	FGS700-2	0737-01	GS700-2	FGE70-2 F34800
	0.7652	GGGNiMn13-7		Grade S6	GJSA-XNiMn13-7	FGSNI13Mn7	0772		
	0.7660	GGGNiCr20-2	A436D2	Grade S2	GJSA-XNiCr20-2	FGSNI20Cr2	0776		

VDI 3323 19		Malleable cast iron		Ferritic		≤130 HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
0.8055	GTW55							
0.8135	GTS-35	32510	B340-12	GJMB350-10	Mn35-10	0815	GMN35	GTS35
0.8145	GTS45	A220-40010	P440-7	GJMB450-6	Mn450-6	0815-00		

VDI 3323 20		Malleable cast iron		Pearlitic		≤21HRc ≤230HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
0.8155	GTS-55	50005	P510-4	GJMB-550-4	MP50-5	0854	GMN55	
0.8165	GTS-65	70003	P570-3	GJMB-650-2	MN650-3	0856	GMN65	
0.8170	GTS-70	90001	P690-2	GJMB-700-2	MN700-2	0862	GMN70	

N	VDI 3323 21		Aluminium wrought, alloyed		Not curable		≤60HB		
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
	3.0205	Al99	Al99						
	3.0255	Al99.5	1000	L31		A59050C			
	3.3315	AlMg1							

VDI 3323 22		Aluminium wrought, alloyed		Curable, hardened		≤100HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
3.1325	AlCuMg1							
3.1655	AlCuSiPb							
3.2314	AlMgSi1							
3.4345	AlZnMgCu0.5	7050	L86		AZ4GU/9051		811-04	
3.4365	AlZnMgCu1.5	7075	7075		7075		AlZn5.8MgCuCr	

VDI 3323 23		Aluminium cast, alloyed		≤12% Si, Not curable		≤75HB		
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA UNS
3.2163	G-AISi9Cu3							
3.2382	GD-AISi10Mg							
3.2383	G-AISi10Mg(Cu)	A360.2	LM9			4253		
3.2581	G-AISi12							
2.3561	G-AlMg5							
3.5101	G-MgZn4sE1Zr1	ZE41	MAG5					
3.5103	MgSE3Zn27r1	EZ33	MAG6		G-TR3Z2			
3.5812	G-MgAl8Zn1	AZ81	NMAG1					
3.5912	G-MgAl9Zn1	AZ91	MAG7					

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VDI 3323 23		Aluminium cast, alloyed		≤12% Si, Not curable				≤75HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
		A356-72	2789		NFA32-201				
		356.1	LM25			4244			
	G-AlSi12	A413.2	LM6			4261			
	G-AlSi12(Cu)	A413.1	LM20			4260			
	GD-AlSi12	A413.0				4247			
	GD-AlSi8Cu3	A380.1	LM24			4250			

VDI 3323 24		Aluminium cast, alloyed		≤12% Si, Curable, hardened				≤90HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.1871	G-AlCu4TiMg								
3.1754	G-AlCu5Ni1.5								
3.2371	G-AlSi7Mg	4218B							
3.2373	G-AlSi9MGWA	SC64D			A-S7G	4251			
3.2381	G-AlSi10Mg								
3.5106	G-MgAg3SE2Zr1	QE22	MAG12						
	G-ALMG5	GD-AlSi12	LM5		A-SU12	4252			

VDI 3323 25		Aluminium, alloyed		>12% Si & Li alloys				≤130HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all Aluminium alloys with >12% Si content and all Aluminium Lithium alloys									

VDI 3323 26		Copper & Cu alloys (Bronze/Brass)		Cutting alloys, >1% Pb				≤110HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0375	CuZn36Pb3								
2.1090	G-CuSn75Pb	C93200			U-E7Z5Pb4				
2.1096	G-CuSn5ZnPb	C83600	LG2						
2.1098	G-CuSn2ZnPb	C83600							
2.1182	G-CuPb15Sn	C2300	LB1		U-Pb15E8				

VDI 3323 27		Copper & Cu alloys (Bronze/Brass)		CuZn, CuSnZn (Brass)				≤90HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0240	CuZn15								
2.0321	CuZn37	C27200	CZ108		CuZn36, CuZn37		C2700		
2.0590	G-CuZn40Fe								
2.0592	G-CuZn35Al1	C86500	U-Z36N3		HTB1				
2.0596	G-CuZn34Al2	C86200	HTB1		U-Z36N3				
2.1293	CuCrZr	C18200	CC102		U-Cr0-8Zr				



N

VDI 3323 28		Copper & Cu alloys (Bronze/Brass)		CuSn, Lead free copper & Electrolytic copper			≤100HB		
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0060	E-Cu57								
2.0966	CuAl10Ni5Fe4	C63000	Ca104		U-A10N				
2.0975	G-CuAl10Ni	B-148-52							
2.1050	G-CuSn10	C90700	CT1						
2.1052	G-CuSn12	C90800	Pb2		UE12P				
2.1292	G-CuCrF35	C81500	CC1-FF						

VDI 3323 29

Thermosetting & reinforced plastics

Acrylics etc.

W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all Acrylics, Nylons, Carbon Fibre reinforced plastics, Glass fibre reinforced plastics									

VDI 3323 30

Non-metals

Hard rubber, Wood etc

W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all non-metal materials such as Graphite, Hard rubber, Wood etc.									

S

VDI 3323 31

Heat resistant super alloys

Fe based, annealed

≤15HRc ≤200HB

W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.4558	X2NiCrAlTi3220	N08800	NA15						
1.4562	X1NiCrMoCu32287	N08031							
1.4563	X1NiCrMoCuN31274	N08028			Z1NCDU31-27-03	2584			
1.4864	X12NiCrSi3616	330	NA17		Z12NCS3718				N08330
1.4865	GX40NiCrSi3818		330C40				XG50NiCr3919		J94605
1.4958	X5NiCrAlTi3120								

VDI 3323 32

Heat resistant super alloys

Fe based, aged

≤30HRc ≤280HB

W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.4977	X40CoCrNi2020				Z42CNKDWNb				

VDI 3323 33

Heat resistant super alloys

Ni or Co based, annealed

≤25HRc ≤250HB

W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.4360	NiCu30Fe	Monel 400	NA13		NU30				N04400
2.4603	NiCr30FeMo	5390A			NC22FeD				
2.4610	NiMo16Cr16Ti	Hastelloy C-4							N26455
2.4630	NiCr20Ti	Nimonic 75	HR5, 203-4		NC20T				N06075
2.4631	NiCr20TiAl		HR40		NC20TA				N07080
2.4642	NiC29Fe	Inconel 690			Nnc30Fe				N06690
2.4856	NiCr22Mo9Nb	Inconel 625	NA21		NC22FeDNb				N06625
2.4858	NiCr21Mo	Inconel 825	NA16		NC21FeDU				N08825

CONTINUED



S	VDI 3323 34Heat resistant super alloysNi or Co based, aged≤38HRc ≤350HB									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4375	NiCu30Al	Monel k-500	NA18		NU30AT				N05500
	2.4662	NiFe35Cr14MoTi	5660			Z5NCDT42				N09901
	2.4668	NiCr19Fe19NbMo	Inconel 718	HR8		NC19eNB				N07718
	2.4670	S-NiCr13A16MoNb	5391	MAR-46		NC12AD				
	2.4694	NiCr16Fe7TiAl	Inconel							N07751
	2.4955	NiFe25Cr20NbTi								
	2.4964	CoCr20W15Ni	5772			KC20WN				
		CoCr22W14Ni	AMS5772			KC22WN				
	VDI 3323 35Heat resistant super alloysNi or Co based, cast≤34HRc ≤320HB									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4669	NiCr15Fe7TiAl	Inconel X-750			NC15TNbA				N07750
	2.4685	G-NiMo28	Hastelloy b							N10665
	2.4810	G-NiMo30	Hastelloy C							
	2.4973	NiCr19Co11MoTi	AMS5399			NC19KDT				
	3.7115	TiAl5SN2								R54520
	VDI 3323 36Titanium alloysPure TitaniumTensile strength 400 Rm									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4674	NiCo15Cr10MoAlTi	AMS5397							N13100
	VDI 3323 37Titanium alloysAlpha + Beta alloys, hardenedTensile strength 1050 Rm									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	3.7025	Ti1	R50250	2TA1						R50250
	3.7225	Ti1pd	R52250	TP1						R52250
	3.7124	TiCu2		2TA21-24						
	3.7145	TiAl6Sn2Zr4Mo2Si	R54620							R54620
	3.7165	TiAl6V4	AMSR56400	TA10-13		T-A6V				
	3.7185	TiAlMo4Sn2		TA45-51						
	3.7195	TiAl3V2.5								R56320
		TiAl4Mo4Sn4Si0.5								
	VDI 3323 38Hardened steelHardened≤55HRc ≤550HB									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.1231	Ck67	1070	060A67	C67S	XC68	1770	C70	F.5103	
	1.1248	Ck75	1078, 1080	060A78	C75S	XC75	1774	C75	F.5107	
	1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117	
	1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118	
	1.2762	75CrMoNiW67								
	1.3401	GX120Mn12	A128(A)			Z120M12	2183	GX120Mn12	F.8251	
	1.6746	32NiCrMo14-5		832M31	32NiCrMo145	35NCD14				
	1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3		
	VDI 3323 39Hardened steelHardened>55HRc									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	To this group belong all steels hardened higher than 55HRc									
	VDI 3323 40Chilled cast ironCast≤42HRc ≤400HB									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.9620	GX260NiCr42	Ni-Hard 2	Grade 2A	GJN-HV250	FBNi4Cr2BC	0512			F45001
	0.9625	GX330NiCr42	Ni.Hard 1	Grade 2B	GJN-HV550	FBNi4Cr2HC	0513			F45000
	0.9630	GX300CrNiSi952	Ni-Hard 4	Grade 2C	GJN-HV600	FBCr9Ni5	0457			F45003
	09640	GX300CrMoNi1521								F45005
	0.9650	GX260Cr27		Grade 3D			0466			
	VDI 3323 41Hardened cast ironHardened≤55HRc ≤550HB									
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.9635	GX300CrMo153								
	0.9645	GX260CrMoNi2021							107WCr5KU	F45007
	0.9655	GX300CrNM0271								

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