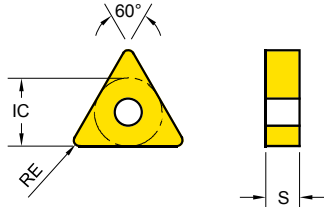


Turning Inserts - Negative

TNMA / TNMG (60° Triangle)



Series	IC	S
TN** 1604	9.525	4.76
TN** 2204	12.700	4.76

EDP 2200..

● : Stock item ○ : Order made item

TNMA TNMG	Designation	RE	Fn (mm/rev.)	Ap (mm)	YG1010	YG1001	YG3010	YG3015	YG3115	YG3020	YG3030	YG801	YG2025	YG211	YG213	YG214	YG401	YT100	YG100	YG10
..MA  Cast iron	TNMA 160404	0.4	0.15 ~ 0.50	0.5 ~ 5.0	● 1582	○ 1446	○ 1448													
	TNMA 160408	0.8	0.15 ~ 0.50	1.0 ~ 5.0	● 1486	○ 0035	○ 1191													
	TNMA 160412	1.2	0.15 ~ 0.50	1.5 ~ 5.0	● 1485	○ 0036	○ 1192													
-UF  Finishing	TNMG 160404 - UF	0.4	0.05 ~ 0.25	0.5 ~ 2.5			○ 0270		● 2363	● 0271	● 0272	○ 0039								
	TNMG 160408 - UF	0.8	0.05 ~ 0.25	1.0 ~ 2.5			○ 0276		● 2217	● 0277	● 0278									
	TNMG 160412 - UF	1.2	0.05 ~ 0.25	1.5 ~ 2.5			○ 0721		● 2645	● 0588	● 1197									
	TNMG 220404 - UF	0.4	0.10 ~ 0.35	0.5 ~ 4.0			○ 0407		● 2409	● 1203	● 1205	○ 0042								
-UL  Light Machining and Sticky Material	TNMG 160404 - UL	0.4	0.10 ~ 0.30	0.5 ~ 3.0			○ 1605		● 2643	● 1606	● 1607									
	TNMG 160408 - UL	0.8	0.10 ~ 0.30	1.0 ~ 3.0			○ 0279	○ 0752	○ 2374	● 0280	● 0281									
	TNMG 160412 - UL	1.2	0.10 ~ 0.30	1.5 ~ 3.0			○ 0884	○ 0868	● 2586	● 0621	● 1198									
-UM  Medium Machining Unstable condition	TNMG 160404 - UM	0.4	0.15 ~ 0.30	0.5 ~ 3.0	○ 1669	○ 0949	○ 0948	○ 0844	● 2644	● 0952	● 0954									
	TNMG 160408 - UM	0.8	0.15 ~ 0.30	1.0 ~ 3.0	○ 1141	○ 1053	○ 0282	○ 0758	● 2195	● 0283	● 0284									
	TNMG 160412 - UM	1.2	0.15 ~ 0.30	1.5 ~ 3.0	○ 1143	○ 0596	○ 0597	○ 0760	● 2587	● 0586	● 0710									
-UG  Medium Machining at stable condition	TNMG 160404 - UG	0.4	0.20 ~ 0.40	0.5 ~ 3.0	● 1620	○ 0458	○ 0273		● 2171	● 0274	● 0275									
	TNMG 160408 - UG	0.8	0.20 ~ 0.40	1.0 ~ 3.0	● 1140	○ 0459	○ 0144	○ 0757	● 2182	● 0145	○ 0146	○ 0037								
	TNMG 160412 - UG	1.2	0.20 ~ 0.40	1.5 ~ 3.0	● 1142	○ 0605	○ 0606	○ 0759	● 2200	● 0587	● 0939									
	TNMG 220408 - UG	0.8	0.25 ~ 0.60	1.0 ~ 6.0	● 1641	○ 1061	○ 0285		● 2394	● 0286	○ 0287	○ 0040								
	TNMG 220412 - UG	1.2	0.25 ~ 0.60	1.5 ~ 6.0	● 1642	○ 1526	○ 1527		● 2694	● 1528	● 1529									
	TNMG 220416 - UG	1.6	0.25 ~ 0.60	2.0 ~ 6.0	● 1647	○ 1209	○ 0851	○ 0863	● 2695	● 0852	● 1263									
-UC  Cast iron and Medium roughing	TNMG 160404 - UC	0.4	0.20 ~ 0.40	0.5 ~ 4.0	● 1316	○ 0399	○ 0400		● 2423	● 0401	● 0402									
	TNMG 160408 - UC	0.8	0.20 ~ 0.40	1.0 ~ 4.0	● 0901	○ 0075	○ 0129		● 2382	● 0108	● 0130									
	TNMG 160412 - UC	1.2	0.20 ~ 0.40	1.5 ~ 4.0	● 0902	○ 0076	○ 0131		● 2413	● 0109	● 0132									
	TNMG 220416 - UC	1.6	0.20~0.40	2.0~4.0						● 1507										
-UR  Roughing	TNMG 160408 - UR	0.8	0.30 ~ 0.50	1.0 ~ 5.0	● 0880	○ 0680	○ 0669		● 2395	● 0670	● 1054									
	TNMG 160412 - UR	1.2	0.30 ~ 0.50	1.5 ~ 5.0	● 1657	○ 0602	○ 0404	○ 0888	● 2406	● 0405	● 0406	○ 0038								
	TNMG 220412 - UR	1.2	0.30 ~ 0.65	1.5 ~ 7.0	● 1639	○ 0408	○ 0409		● 2403	● 0410	○ 0411	○ 0041								
	TNMG 220416 - UR	1.6	0.30 ~ 0.65	2.0 ~ 7.0	● 1658	○ 0460	○ 0461		● 2696	● 0696	○ 0711									

Turning Inserts - Negative TNMG (60° Triangle)

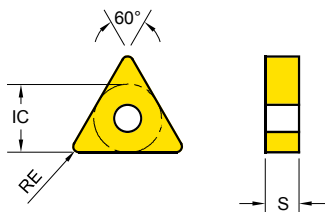
TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION



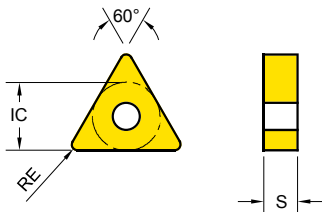
Series	IC	S
TN** 1604	9.525	4.76
TN** 2204	12.700	4.76

EDP 2200..

● : Stock item ○ : Order made item

TNMG	Designation	RE	Fn (mm/rev.)	Ap (mm)	K10	P05	P10	P15	P10	P20	P30	P20	M25	M15	M30	M40	S10	P15	M15	N20	N20
					YG1010	K20	K30	YG3010	YG3015	YG3115	YG3020	YG3030	YG801	YG2025	YG211	YG213	YG214	YG401	YT100	YG100	YG10
-MF  Stainless steel Finishing	TNMG 160404 - MF	0.4	0.07 ~ 0.3	0.2 ~ 1.5											●	●	●	○			
	TNMG 160408 - MF	0.8	0.07 ~ 0.3	0.2 ~ 1.5							○			●	●	●	●	○			
											0963			2458	0589	0776	0825	1285			
-MM  Stainless steel Medium	TNMG 160404 - MM	0.4	0.20 ~ 0.35	0.5 ~ 3.5											●	●	●	○			
	TNMG 160408 - MM	0.8	0.20 ~ 0.35	1.0 ~ 3.5											●	●	●	○			
	TNMG 160412 - MM	1.2	0.20 ~ 0.35	1.5 ~ 3.5											●	●	●	○			
-MG  Stainless steel General	TNMG 160404 - MG	0.4	0.20 ~ 0.40	0.5 ~ 4.0										●	●	●	●	●			
	TNMG 160408 - MG	0.8	0.20 ~ 0.40	1.0 ~ 4.0										●	●	●	●	●			
	TNMG 160412 - MG	1.2	0.20 ~ 0.50	2.0 ~ 4.0										●	●	●	●	●			
-MR  Stainless steel Roughing	TNMG 160408 - MR	0.8	0.30 ~ 0.55	2.0 ~ 5.5							○			●	●	●	●				
	TNMG 160412 - MR	1.2	0.30 ~ 0.55	2.0 ~ 5.5							○			●	●	●	●				
											1062			2494	0995	0827	0828				

Turning Inserts - Negative

TNGG / TNMG (60° Triangle)


Series	IC	S
TN** 1604	9.525	4.76
TN** 2204	12.700	4.76

EDP 2200..

● : Stock item ○ : Order made item

	TNGG TNMG	Designation	RE	Fn (mm/rev.)	Ap (mm)	K10	P05 K20	P10 K30	P15	P10	P20	P30	P20	M25	M15	M30	M40 S30	S10	P15 M15 K15	N20	N20
						YG1010	YG1001	YG3010	YG3015	YG3115	YG3020	YG3030	YG801	YG2025	YG211	YG213	YG214	YG401	YT100	YG100	YG10
-SF	 Stainless steel Finishing	TNMG 160408 - SF	0.8	0.10 ~ 0.25	0.5 ~ 3.0													● 1427			
-SM	 Stainless steel Medium	TNMG 160408 - SM	0.8	0.10 ~ 0.25	0.5 ~ 4.0										○	○	○	● 1575 1576 1577 1228			
		TNMG 160412 - SM	1.2	0.10 ~ 0.25	0.5 ~ 4.0										○	○	○	● 1635 1636 1858 1508			
-SR	 HRSR Roughing	TNMG 160408 - SR	0.8	0.10 ~ 0.40	0.5 ~ 4.0													● 1307			
		TNMG 160412 - SR	1.2	0.10 ~ 0.40	0.5 ~ 4.0													● 1306			
NEW -PSF	 Cermet Finishing	TNMG 160404 - PSF	0.4	0.07 ~ 0.30	0.4 ~ 2.5														● 2535		
		TNMG 160408 - PSF	0.8	0.10 ~ 0.30	0.6 ~ 2.5														● 2536		
NEW -C	 Cermet Medium Left Hand Shown	TNGG 160402L - C	0.2	0.10 ~ 0.30	0.8 ~ 3.5														○ 2524		
		TNGG 160404L - C	0.4	0.12 ~ 0.30	1.0 ~ 3.5														○ 2526		
		TNGG 160408L - C	0.8	0.05 ~ 0.35	1.0 ~ 3.5														○ 2528		
NEW -C	 Cermet Medium Right Hand Shown	TNGG 160402R - C	0.2	0.10 ~ 0.30	0.8 ~ 3.5														○ 2525		
		TNGG 160404R - C	0.4	0.12 ~ 0.30	1.0 ~ 3.5														○ 2527		
		TNGG 160408R - C	0.8	0.05 ~ 0.35	1.0 ~ 3.5														○ 2529		

TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION

Insert ISO Code System

*Metric : According to ISO 1832

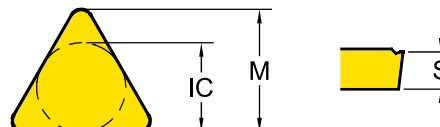
page 14

page 12

1	2	3	4	5	6	7	8	9
C	N	M	G	12	04	08	-UG	YG3115
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	



3 - Tolerance Class

Symbol	Inner Circle IC (mm)	Nose Height M (mm)	Thickness S (mm)
C	± 0.025	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
G	± 0.025	± 0.025	± 0.13
H	± 0.013	± 0.013	± 0.025
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

* Tolerance is different by insert IC size. Please see ISO 1832

4 - Clamping & Chipbreaker

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

2 - Relief Angle (AN)

Symbol	Relief Angle (AN)	
N	No Relief Angle	
B	Relief 5°	
C	Relief 7°	
P	Relief 11°	
D	Relief 15°	
E	Relief 20°	
F	Relief 25°	
O	Special	

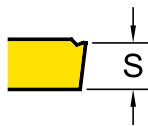
Insert ISO Code System

*Inch

1	2	3	4	5	6	7	8	9
C	N	M	G	4	3	2	-UG	YG3115
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

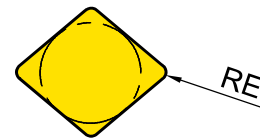
5 - Insert Size

Metric							Inner Circle IC (mm)	Inch
06	11	06	07	11			6.35	2
07	13	08	09	13	15		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	27	16	19	27	10		15.875	5
19	33	19	23	33	13		19.05	6
25		25					25.4	8
						06 (M0)	6	
						08 (M0)	8	
						10 (M0)	10	
						12 (M0)	12	
						16 (M0)	16	



6 - Insert Thickness (S)

Metric	Thickness - S (mm)	Inch
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
09	9.525	6



7 - Corner Radius (RE)

Metric	Corner Radius - RE (mm)	Inch
01	0.1	03
02	0.2	05
04	0.4	1
08	0.8	2
12	1.2	3
16	1.6	4
20	2.0	5
24	2.4	6

Grade Naming System

TURNING	1	2	3	4	5	(6)
	YG	3	1	1	5	(G)
	YG Brand	Workpiece Material	Grade Version	Application Range (1st Digit)	Application Range (2nd Digit)	Minor Variation
	Carbide CVD (4 Digits)	●	●	●	●	YG3115
PARTING & GROOVING	Carbide PVD (3 Digits)	●	●	●		YG211
	Carbide Uncoated (2 Digits)	●	●			YG10

1 - YG Brand

2 - Workpiece Material

Symbol	Workpiece Material	Turning	Milling	Drilling	Parting
1	K Cast Iron or N Non-Ferrous	●			
2	M Stainless Steel	●			
3	P Steel	●			
4	S Superalloys	●			
5	K Cast Iron or N Non-Ferrous		●	●	●
6	M Stainless Steel or Universal		●	●	●
7	P Steel		●	●	●
8	Universal	●			
0	Hardened Steel		●		

3 - Grade Version

4 & 5 - Application Range

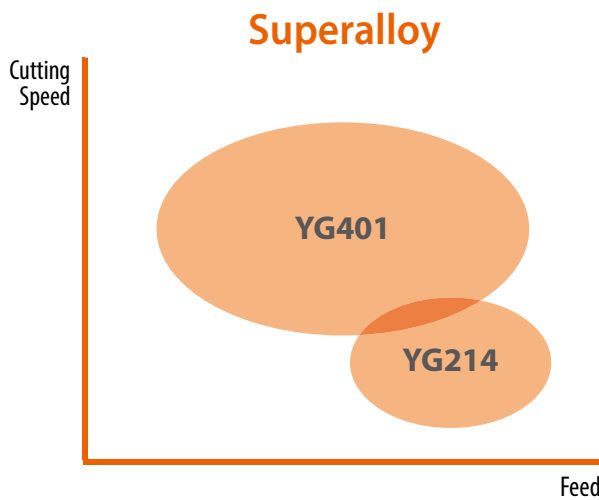
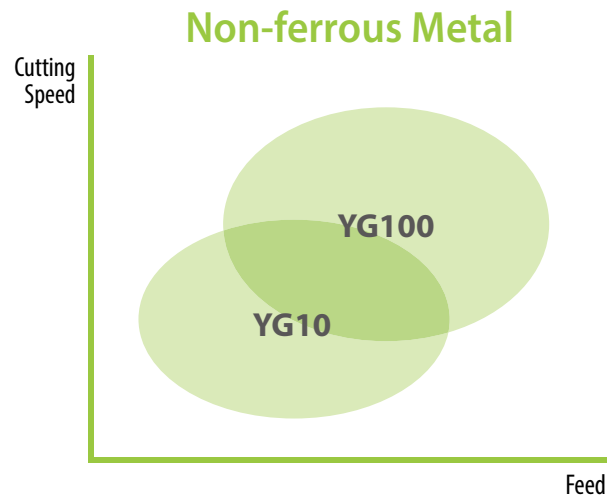
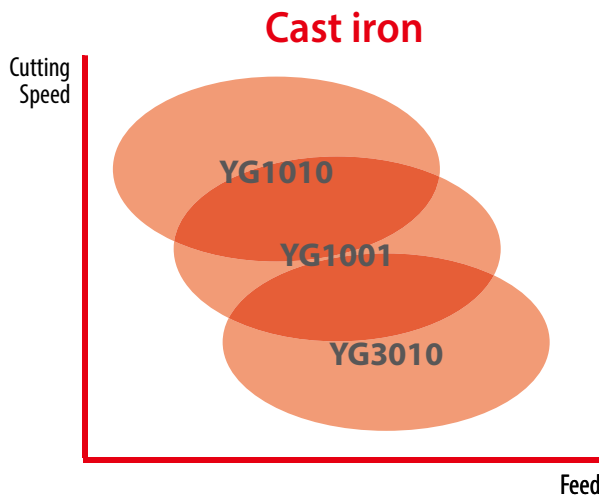
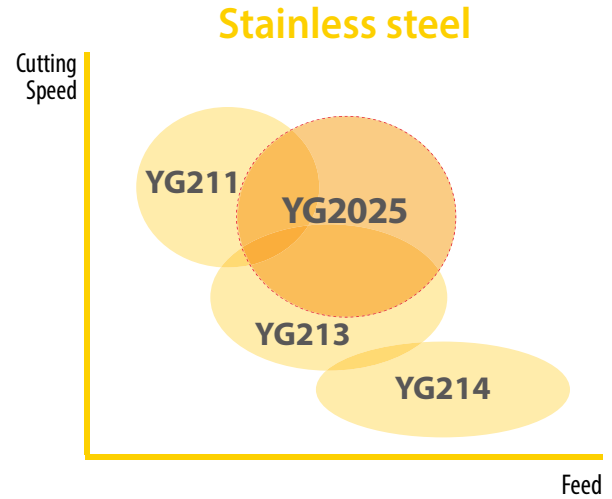
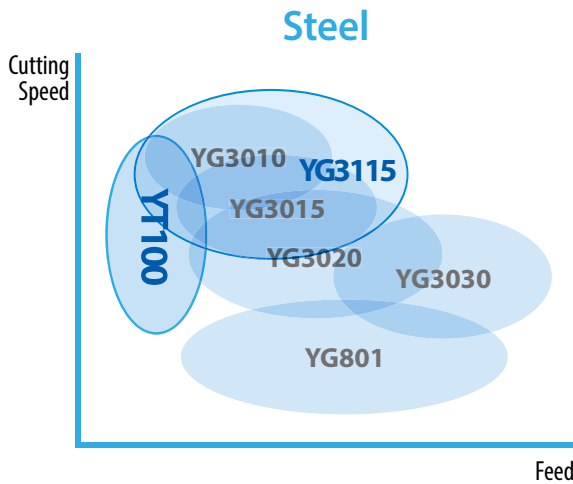
Symbol	
05	Stable Wear Resistant Grade Stable Application Continuous Cut Finishing
10	
15	
20	General Balanced Grade High Versatility General Application
25	
30	
35	Unstable Tougher Grade Unstable Application Interrupted Cut Chipping Resistance Roughing
40	
45	

(6) - (Minor Variation)

G - Gold Coated Version

Turning Grades Map

Speed : Vc (m/min.)
Feed : Fn (mm/rev.)



TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION

Turning Grades

TURNING	Turning Grades	P Steel				M Stainless steel			K Cast iron			N Non-ferrous		S Superalloys	
		P10	P20	P30	P40	M10	M20	M30	K10	K20	K30	N10	N20	S10	S20
CVD	YG1010								1010						
	YG1001	1001							1001						
	YG3010	3010							3010						
	YG3015	3015													
	YG3115	3115													
	YG3020	3020													
	YG3030	3030													
	YG2025					2025									
PVD	YG801	801													
	YG211					211									
	YG213						213								
	YG214							214							214
	YG401													401	
DRILLING	Cermet	YT100	YT100			YT100			YT100						
	DLC	YG100										100			
	-	YG10										10			

TECHNICAL INFORMATION	YG1010 K05 - K15		First Choice for Cast Iron - Effective coating structure enables high speed machining - Special post treatment for improved chipping resistance
	YG1001 P01 - P10 K10 - K25		Stable Machining of Cast Iron - Substrate especially designed for high wear resistance - Thick Al₂O₃ layer ensures good wear resistance at high cutting speeds including dry machining
	YG3010 P05 - P20 K15 - K35		First choice for Finishing Steels, and Ductile Cast iron - Finishing and light machining of steel under in stable condition - New Al₂O₃ coating technology and excellent surface smoothness increase wear resistance and chipping resistance
	YG3015 P10 - P25		Balanced Productivity for Continuous cut High wear resistance and improved toughness ensures high productivity with less trouble
	NEW YG3115 P15 - P25		First choice grade for high cutting speed in Steels - Suitable for mass production due to stable and predictable tool life - Minimizing built up edge due to new post surface treatment in mild steels, low carbon steel and low carbon alloy steel. - Best choice for both continuous as well as interrupted cuts

Turning Grades

YG3020 P15 - P30		First Choice Grade for General Steel Application - Substrate especially designed for good toughness - Excellent surface smoothness increases wear resistance and reliability
YG3030 P20 - P35		Interrupted Cutting of Steel and Stainless steel - Substrate for heavy roughing in mild steel and low carbon alloy steel - New Al₂O₃ technology and optimized surface treatment achieves a good balance between wear resistance and chipping resistance
YG801 P10 - P30		for Carbon Steel with Low Cutting Speed - Recommended for mild steel and boring application - Substrate and special PVD coating for excellent wear resistance
NEW YG2025 M15 - M35		CVD grade for High Cutting Speed for Stainless steel - Utilizing a new carbide substrate and new coating - Excellent combination of wear resistance and chipping resistance - Minimized built up edge due to post surface treatment
YG211 M05 - M25		High wear Resistance Grade for Stainless steel Finishing Stainless steel
YG213 M20 - M35		First Choice Grade on Low Cutting Speed of Stainless steel - First choice on Stainless steel for Low cutting speed - For Medium to low cutting speed
YG214 M30 - M40 S25 - S30		Heavy Interrupted cut for Stainless steel - For Heavy Interrupted cut on Stainless steel - Minimize risk of Mechanical fracture or Chipping
YG401 S10 - S20		PVD Turning Grade for HRSA - Highly heat-resistant TiAlSiN structure for excellent wear resistance - Greatly improved film coating realizes excellent boundary defect resistance - Top coating layer provides a smooth surface and lubricant effect
NEW YT100 P10 - P20 M10 - M20 K10 - K20		New Generation Cermet Grade - Enhanced wear resistance & chipping resistance - Excellent fracture resistance - Superior surface finish with special edge preparation
YG100 N05 - N25		First Choice Grade for Aluminum with DLC Coating - Submicron carbide for high wear resistance - DLC coating minimizes Built Up Edge tendency. - Improve tool life in sticky non-ferrous alloy
YG10 N05 - N25		Uncoated Grade for General Aluminum - Substrate consisted of submicron carbide for high wear resistance - Shining surface to prevent built up edge

TURNING

PARTING & GROOVING

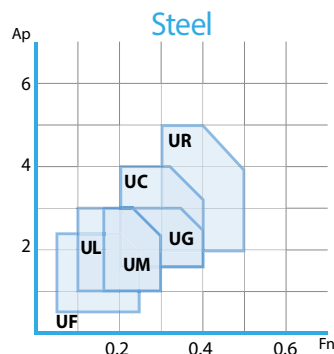
MILLING

DRILLING

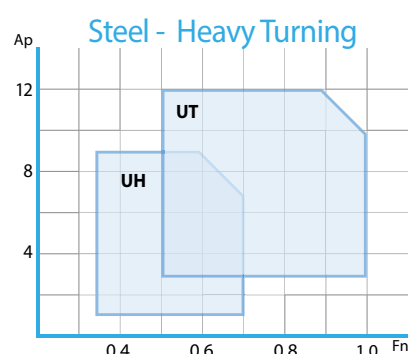
TECHNICAL INFORMATION

Turning Chipbreakers - Negative

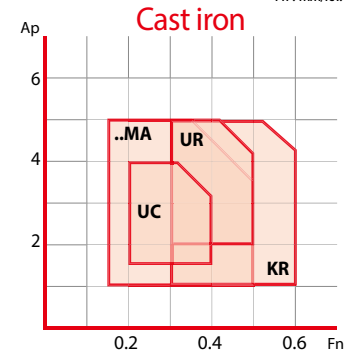
	P	M	K	N	S			Feed							Fn (mm/rev.)
								0	0.1	0.2	0.3	0.4	0.5	0.6	
TURNING	P					UF	Finishing			Fn 0.05~0.25 Ap 0.5~2.5					
	P					UL	Semi Finishing and sticky materials			Fn 0.1~0.3 Ap 1.0~3.0					
	P					UM	Medium & Unstable conditions			Fn 0.15~0.3 Ap 1.0~3.0					
	P					UG	First Choice for Medium (Stable conditions)			Fn 0.2~0.4 Ap 1.5~3.0					
PARTING & GROOVING	P					PWM	Wiper-Medium			Fn 0.1~0.5 Ap 0.5~3.5					
	P					UH	Low cutting force						Fn 0.35~0.7 Ap 1.0~9.0		→
	P					UT	Heavy roughing						Fn 0.5~1.0 Ap 3.0~12.0		→
MILLING	P					UC	Medium Roughing and First choice for Cast iron			Fn 0.2~0.4 Ap 1.5~4.0					
	P					UR	Roughing and Heavy interrupted cut			Fn 0.3~0.5 Ap 2.0~5.0					
						..MA	Cast iron Heavy Roughing			Fn 0.15~0.50 Ap 1.0~5.0					
DRILLING	P														
	P														
TECHNICAL INFORMATION	P														
	P														



*Insert : CNMG120408



*Insert : CNMM190624



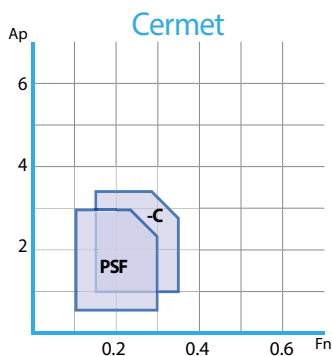
*Insert : CNMG120408

Product Overview

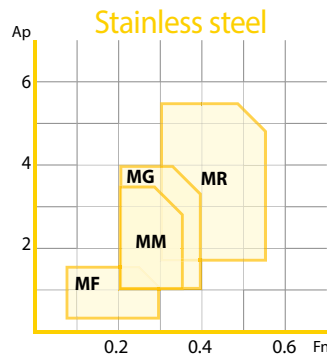
Turning Chipbreakers - Negative

P	M	K	N	S			Feed							Fn (mm/rev.)
							0	0.1	0.2	0.3	0.4	0.5	0.6	
		K			KR	Cast Iron Heavy Roughing 							Fn 0.3~0.6	
	M			S	MF	Stainless steel Finishing 							Fn 0.07~0.30	
								Ap 0.2~1.5						
P	M			S	MM	Stainless steel Medium and Low Carbon Steel 							Fn 0.20~0.35	
													Ap 1.0~3.5	
	M			S	MG	Stainless steel General 							Fn 0.20~0.40	
													Ap 1.0 ~ 4.0	
	M			S	MR	Stainless steel Roughing 							Fn 0.30~0.55	
													Ap 1.8~5.5	
				S	SF	HRSA Finishing 							Fn 0.10~0.25	
								Ap 0.2~1.0						
				S	SM	HRSA Medium 							Fn 0.10~0.25	
													Ap 0.5~3.0	
				S	SR	Roughing for HRSA 							Fn 0.20~0.35	
													Ap 1.0~4.5	
P	M	K			NEW PSF	Cermet Finishing 							Fn 0.10~0.30	
													Ap 0.5~3.0	
P	M	K			NEW -C	Cermet Medium 							Fn 0.15~0.35	
													Ap 1.0~3.5	

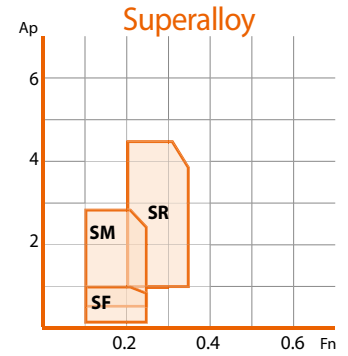
Depth of Cut Ap (mm)



*Insert : CNMG120408 / TNGG160408



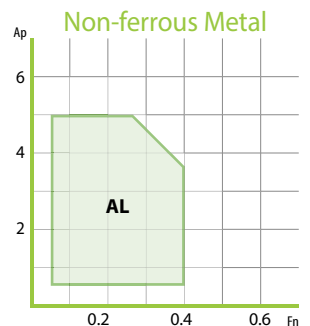
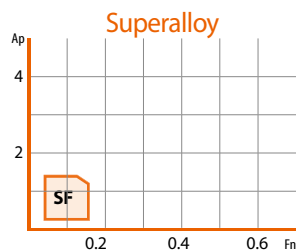
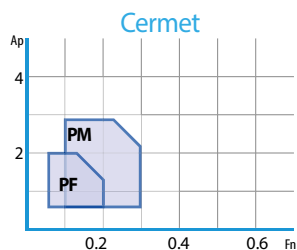
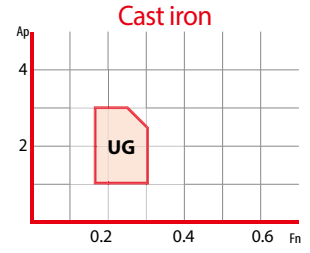
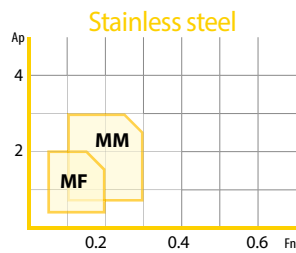
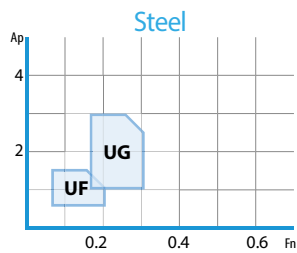
*Insert : CNMG120408



*Insert : CNMG120408

Turning Chipbreakers - Positive

P M K N S					Feed							Fn (mm/rev.)				
					0 0.1 0.2 0.3 0.4 0.5 0.6											
					AL		Aluminum application	Fn 0.05~0.40								
								Ap 0.5~5.0								
P	M				UF		Finishing application	Fn 0.05~0.20								
								Ap 0.5~1.5								
P		K			UG		Medium application	Fn 0.15~0.30								
								Ap 1.0~3.0								
	M				NEW MF		Stainless steel Finishing	Fn 0.05~0.20								
								Ap 0.5~2.0								
	M				NEW MM		Stainless steel Medium	Fn 0.10~0.30								
								Ap 0.5~3.0								
	M				NEW SF		HRSA Finishing	Fn 0.02~0.15								
								Ap 0.1~1.5								
P	M	K			NEW PF		Cermet Finishing	Fn 0.05~0.20								
								Ap 0.5~2.0								
P	M	K			NEW PM		Cermet Medium	Fn 0.10~0.30								
								Ap 0.5~3.0								
								0 1 2 3 4 5 6								
								Depth of Cut							Ap (mm)	



*Insert : CCMT09T308