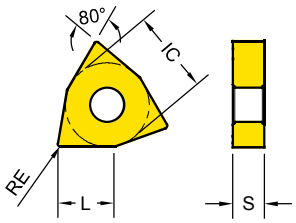
Turning - Inserts - Negative

WNMG / WNMA (80° Trigonal Negative)



Series	L	IC	S
WNM□0604	5.7	9.53	4.76
WNM□0804	7.8	12.7	4.76

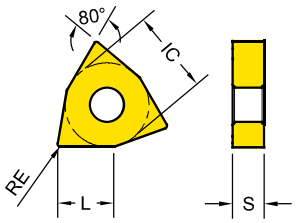
●: Stock item ○: Order made item

WNMA WNMG		Designation	RE	Fn (mm/rev.)	Ap (mm)	YG1001	YG3010	YG3020	YG3030	YG801	YG211	YG100	YG10
..MA	 Cast Iron	WNMA 080404	0.4	0.15~0.35	0.5~2.5	●							
		WNMA 080408	0.8	0.2~0.4	1~3.5	●	○						
		WNMA 080412	1.2	0.2~0.5	1.5~5	●	○						
-UF	 Finishing	WNMG 060404 - UF	0.4	0.05~0.2	0.5~1.5		●	●	○	●			
		WNMG 080404 - UF	0.4	0.05~0.2	0.5~2		●	●	●	●			
		WNMG 080408 - UF	0.8	0.1~0.25	1~2.5		●	●	●				
-UL	 Light Machining and sticky material	WNMG 060408 - UL	0.8	0.1~0.3	1~2.5		●	●	○				
		WNMG 080408 - UL	0.8	0.1~0.3	1~3		●	●	●				
-UM	 Medium Machining at unstable condition	WNMG 080408 - UM	0.8	0.15~0.3	0.5~2	●	●	●	●				

Cutting Speed			Vc (m/min.)															
ISO	VDI	Sub Group	YG1001		YG3010		YG3020		YG3030		YG801		YG211		YG100		YG10	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
P	1~5	Non Alloy Steel	220	480	170	450	180	380	150	350	120	250	-	-	-	-	-	-
	6~9	Low Alloy Steel	220	420	180	380	110	350	90	300	70	230	-	-	-	-	-	-
	10~11	High Alloy Steel	-	-	100	330	60	300	70	250	70	180	-	-	-	-	-	-
M	12~13	Ferritic & Martensitic	-	-	-	-	-	-	120	220	60	180	100	200	-	-	-	-
	14	Austenitic Stainless Steel	-	-	-	-	-	-	50	180	60	150	70	160	-	-	-	-
K	15~16	Grey Cast Iron	170	420	120	300	-	-	-	-	60	160	-	-	-	-	-	-
	17~18	Nodular Cast Iron	120	410	120	280	-	-	-	-	60	120	-	-	-	-	-	-
N	21~30	Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	350	1200	250	800
S	31~37	Heat Resistant Super Alloy	-	-	-	-	-	-	35	80	35	60	30	90	-	-	-	-
H	38~41	Hardened Material	-	-	-	-	-	-	-	-	40	80	-	-	-	-	-	-

Turning - Inserts - Negative

WNMG / WNMA (80° Trigonal Negative)



Series	L	IC	S
WNM□0604	5.7	9.53	4.76
WNM□0804	7.8	12.7	4.76

● : Stock item ○ : Order made item

WNMA WNMG		Designation	RE	Fn (mm/rev.)	Ap (mm)	YG1001	YG3010	YG3020	YG3030	YG801	YG211	YG100	YG10
-UG	 Medium Machining at stable condition	WNMG 060408 - UG	0.8	0.2~0.4	1~2.5			●		●			
		WNMG 080404 - UG	0.4	0.2~0.3	1.5~2.5		●	●	●				
		WNMG 080408 - UG	0.8	0.2~0.4	1~3.5	●	●	●	●	●			
		WNMG 080412 - UG	1.2	0.2~0.4	1~3.5	●							
-UC	 Cast Iron and Medium roughing	WNMG 080404 - UC	0.4	0.25~0.4	0.5~3.5	●	●	●	●				
		WNMG 080408 - UC	0.8	0.25~0.45	1~4	●	●	●	●				
		WNMG 080412 - UC	1.2	0.3~0.55	1.5~4.5	●	●	●	●				
-UR	 Roughing	WNMG 080408 - UR	0.8	0.3~0.6	1~4.5		●	●	●				
		WNMG 080412 - UR	1.2	0.3~0.6	1.5~5	●	○	○	●	●			
		WNMG 080416 - UR	1.6	0.3~0.6	1.5~5	●	●						
-MM	 Stainless Steel Medium	WNMG 080408 - MM	0.8	0.2~0.35	1~3.5						●		

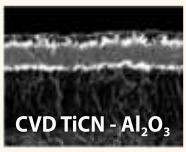
Cutting Speed			Vc (m/min.)															
ISO	VDI	Sub Group	YG1001		YG3010		YG3020		YG3030		YG801		YG211		YG100		YG10	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
P	1~5	Non Alloy Steel	220	480	170	450	180	380	150	350	120	250	-	-	-	-	-	-
	6~9	Low Alloy Steel	220	420	180	380	110	350	90	300	70	230	-	-	-	-	-	-
	10~11	High Alloy Steel	-	-	100	330	60	300	70	250	70	180	-	-	-	-	-	-
M	12~13	Ferritic & Martensitic	-	-	-	-	-	-	120	220	60	180	100	200	-	-	-	-
	14	Austenitic Stainless Steel	-	-	-	-	-	-	50	180	60	150	70	160	-	-	-	-
K	15~16	Grey Cast Iron	170	420	120	300	-	-	-	-	60	160	-	-	-	-	-	-
	17~18	Nodular Cast Iron	120	410	120	280	-	-	-	-	60	120	-	-	-	-	-	-
N	21~30	Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	350	1200	250	800
S	31~37	Heat Resistant Super Alloy	-	-	-	-	-	-	35	80	35	60	30	90	-	-	-	-
H	38~41	Hardened Material	-	-	-	-	-	-	-	-	40	80	-	-	-	-	-	-

Turning Grades

Turning Grades		P Steel				M Stainless Steel				K Cast Iron				N Non Ferrous			
		P05	P15	P25	P35	M05	M15	M25	M35	K05	K15	K25	K35	N05	N15	N25	N35
CVD	YG1001	1001									1001						
	YG3010		3010									3010					
	YG3020			3020													
	YG3030			3030				3030									
PVD	YG801		801				801										
	YG211						211										
DLC	YG100														100		
Uncoated	YG10														10		

YG1001

P01 - P10
K10 - K25

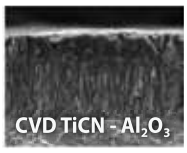


First choice for stable machining of cast iron

- Substrate especially designed for high wear resistance
- Thick Al_2O_3 layer ensures good wear resistance at high cutting speeds including dry machining

YG3010

P05 - P20
K15 - K35

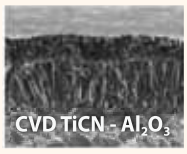


First choice for Finishing Steels, and Ductile Cast iron

- Finishing and light machining of steel under in stable condition
- New Al_2O_3 coating technology and excellent surface smoothness increases wear resistance and chipping resistance

YG3020

P15 - P30

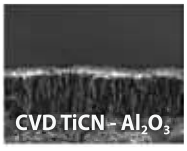


First Choice grade for general Steel application

- Substrate especially designed for good toughness
- Excellent surface smoothness increases wear resistance and reliability

YG3030

P20 - P35
M20 - M35

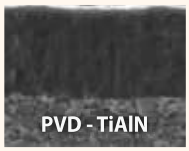


Interrupted cutting of steel and stainless steel

- Substrate for heavy roughing in mild steel and low carbon alloy steel
- New Al_2O_3 technology and optimized surface treatment achieves a good balance between wear resistance and chipping resistance

YG801

P10 - P30 M05 - M25
S05 - S25 H20 - H40

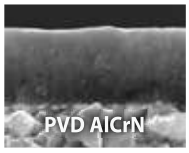


Universal Grade for mid and low cutting conditions

- Recommended for mild steel, stainless steel, and boring application
- Substrate and special PVD coating for excellent wear resistance

YG211

M05 - M25
S05 - S25

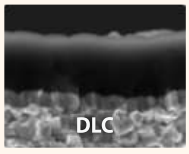


PVD Grade for Stainless Steel and Super Alloy

- For continuous cut and general machining
- Surface treatment prevents Built-up-edge
- Hard coating prevents rapid wear

YG100

N05 - N35

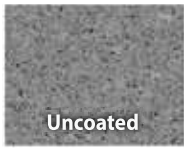


First Choice grade for aluminum with DLC coating

- Submicron carbide for high wear resistance
- DLC coating minimizes Built Up Edge tendency.
- Improves tool life in sticky non-ferrous alloy

YG10

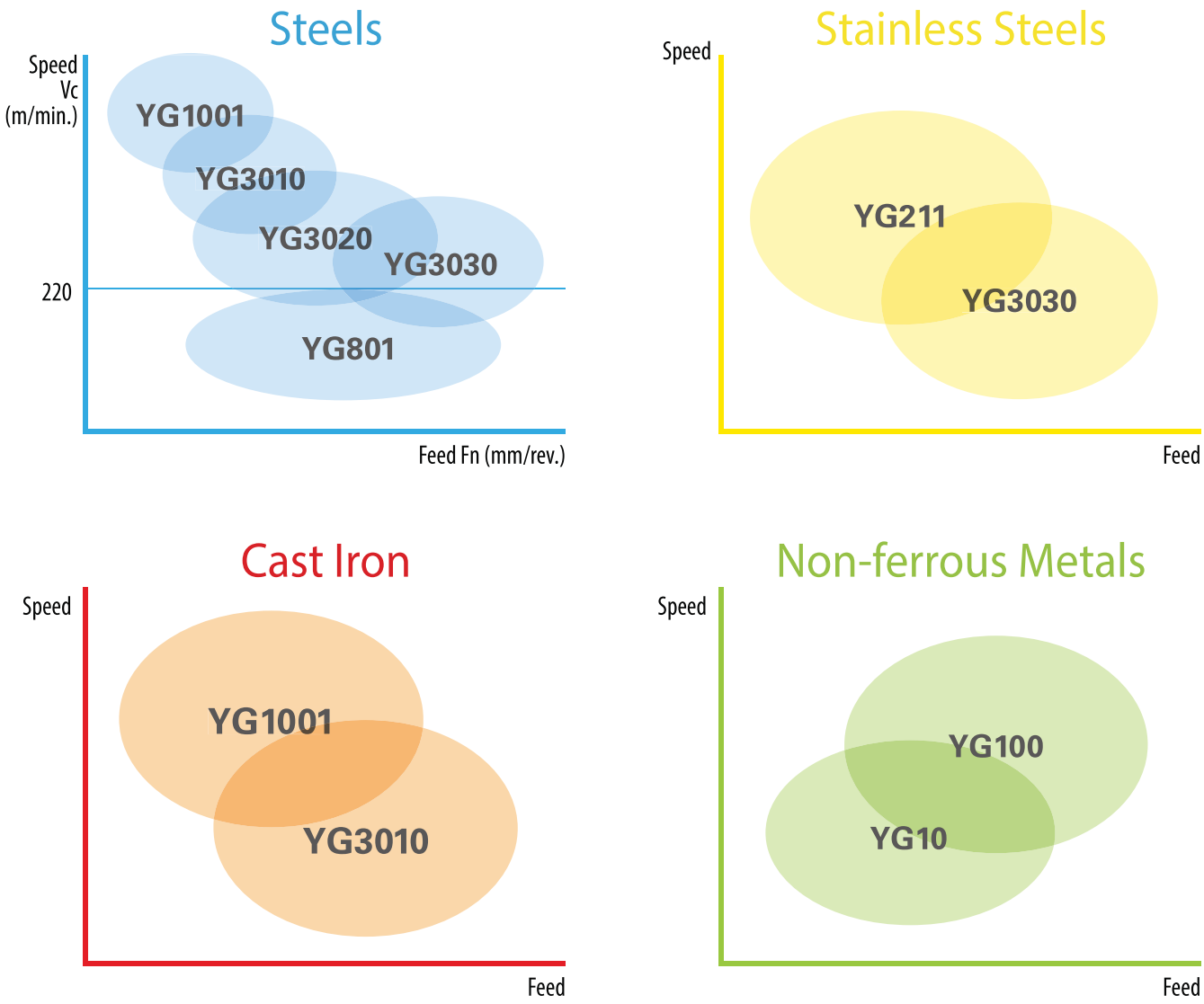
N05 - N35



Uncoated Grade for General Aluminum

- Substrate consisted of submicron carbide for high wear resistance
- Shining surface to prevent built up edge

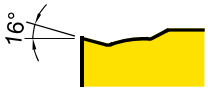
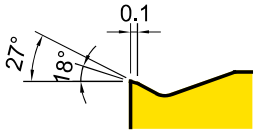
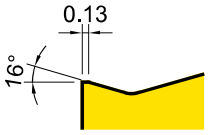
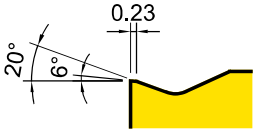
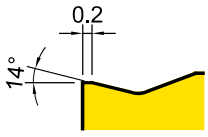
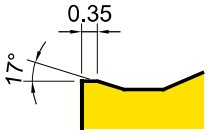
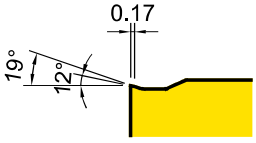
Turning Grade Map

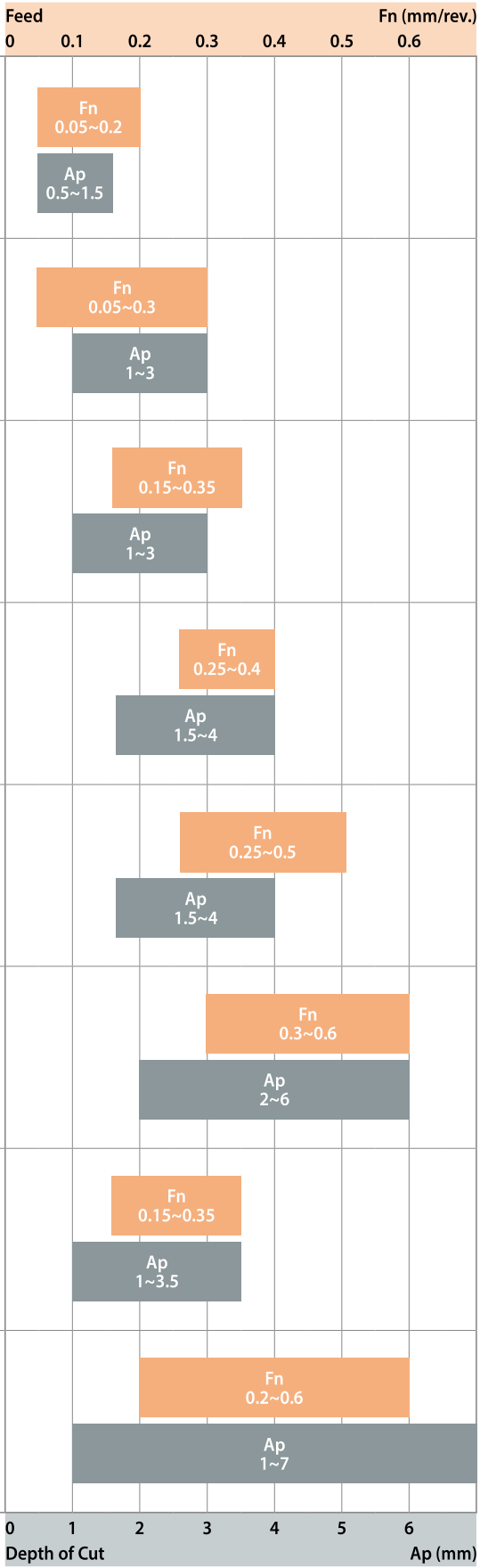


Recommended Cutting Conditions

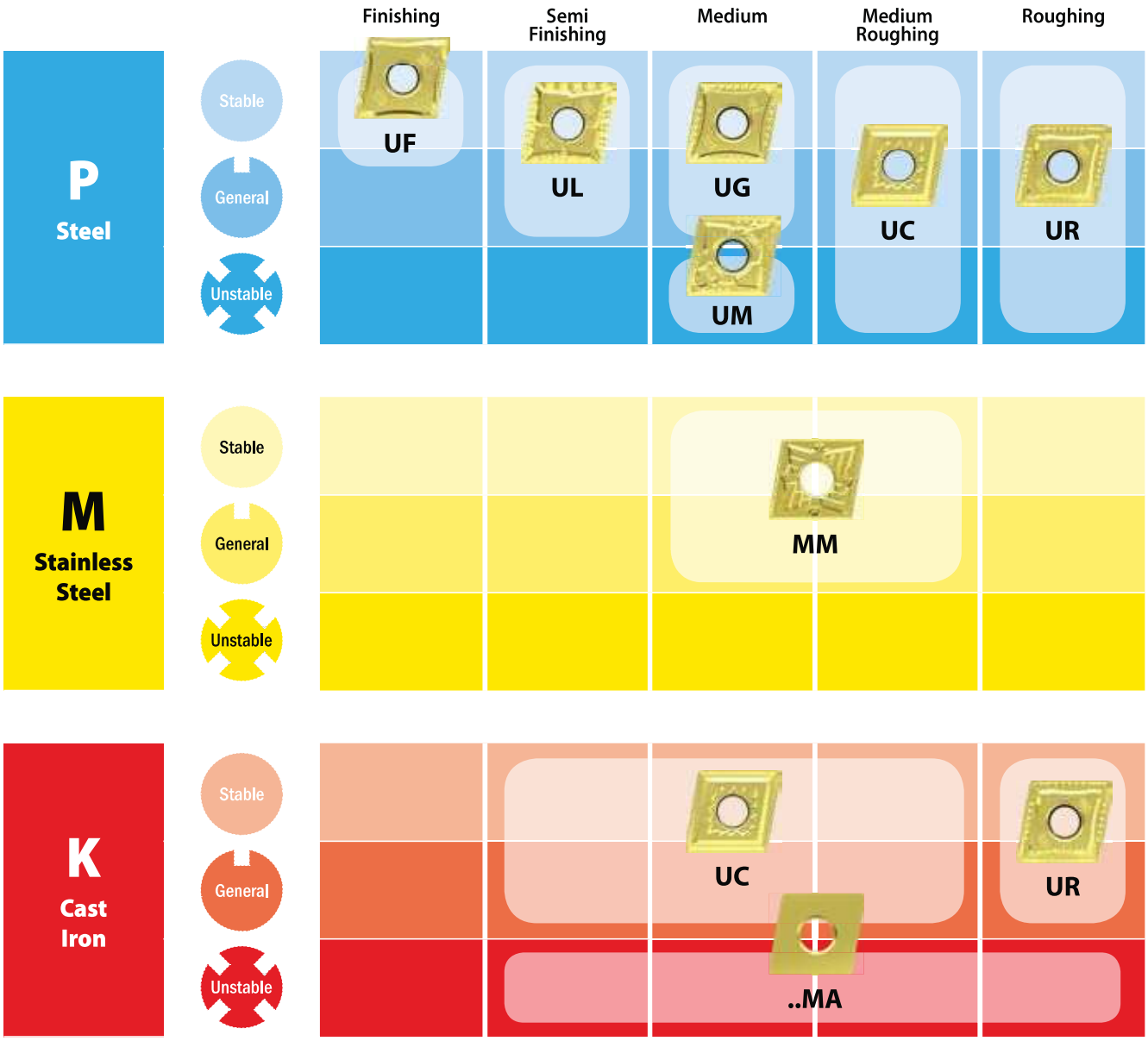
Cutting Speed			Vc (m/min.)															
ISO	VDI	Sub Group	YG1001		YG3010		YG3020		YG3030		YG801		YG211		YG100		YG10	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
P	1~5	Non Alloy Steel	220	480	170	450	180	380	150	350	120	250	-	-	-	-	-	-
	6~9	Low Alloy Steel	220	420	180	380	110	350	90	300	70	230	-	-	-	-	-	-
	10~11	High Alloy Steel	-	-	100	330	60	300	70	250	70	180	-	-	-	-	-	-
M	12~13	Ferritic & Martensitic	-	-	-	-	-	-	120	220	60	180	100	200	-	-	-	-
	14	Austenitic Stainless Steel	-	-	-	-	-	-	50	180	60	150	70	160	-	-	-	-
K	15~16	Grey Cast Iron	170	420	120	300	-	-	-	-	60	160	-	-	-	-	-	-
	17~18	Nodular Cast Iron	120	410	120	280	-	-	-	-	60	120	-	-	-	-	-	-
N	21~30	Aluminum	-	-	-	-	-	-	-	-	-	-	-	-	350	1200	250	800
S	31~37	Heat Resistant Super Alloy	-	-	-	-	-	-	35	80	35	60	30	90	-	-	-	-
H	38~41	Hardened Material	-	-	-	-	-	-	-	-	40	80	-	-	-	-	-	-

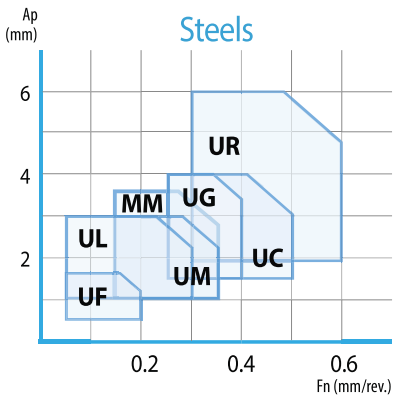
Turning Chipbreakers - Negative

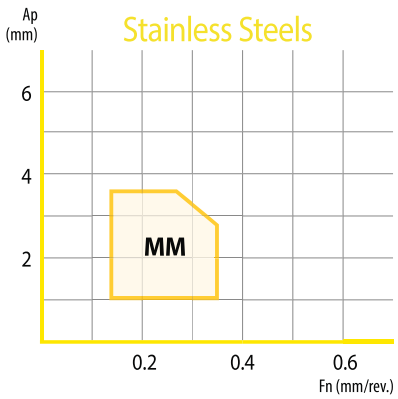
P	M	K	N			
P				UF	Finishing	
P				UL	Semi Finishing and sticky materials	
P				UM	For Medium & Unstable conditions	
P				UG	First Choice for Medium (Stable application)	
P		K		UC	Medium Roughing and First choice for Cast Iron	
P		K		UR	Roughing and Heavy interrupted cut	
	M			MM	Stainless Steel Medium	
		K		..MA	Cast Iron Heavy roughing	

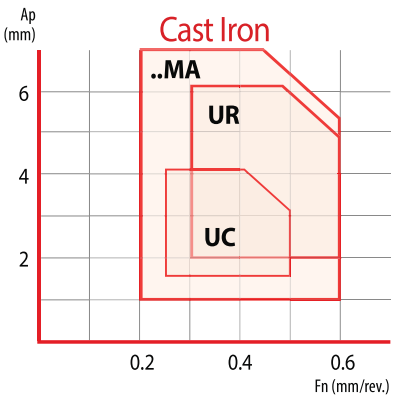


Turning Chipbreakers - Negative









Turning - Name Code System

Insert ISO Code System

*Metric

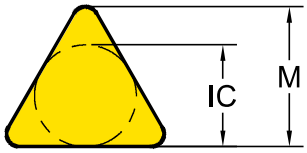
							page 8	page 6
1	2	3	4	5	6	7	8	9
C	N	M	G	12	04	08	-UG	YG3020
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

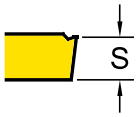
1 - Shape

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°	AN
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

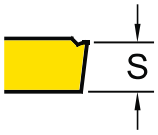
Symbol	Clamping	Chipbreaker	Figure
N	No clamping hole	X	
R		One Face	
A	Cylindrical Clamping hole	X	
M		One Face	
G		Both Faces	
W	Screw Hole	X	
T		One Face	
U		Both Faces	
X	Special		

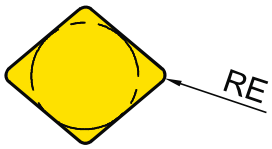
*Inch

							page 8	page 6
1	2	3	4	5	6	7	8	9
C	**N**	**M**	**G**	**4**	**3**	**2**	**-UG**	**YG3020**
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

5 - Insert Size

Metric							Inner Circle IC (mm)	Inch
S	T	C	D	V	W	R		
06	**11**	**06**	**07**	**11**			6.35	**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**
		19					19.05	**6**
						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**

7 - Corner Radius (RE)

Metric	Corner Radius - RE (mm)	Inch
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**