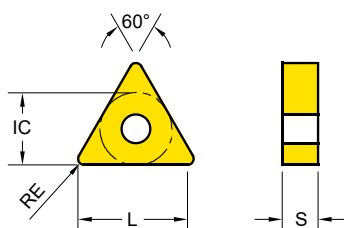


Turning Inserts - Negative **TNMG / TNMA (60° Negative)**



Series	L	IC	S
TN** 1604	15.7	9.525	4.76
TN** 2204	22.0	12.700	4.76

TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION

TNMG	Designation	RE	Fn (mm/rev.)	Ap (mm)	EDP 2200..																		
					YG1010	YG1001	YG3010	YG3015	YG3020	YG3030	YG801	YG211	YG213	YG214	YG401	YG100	YG10						
-UG Medium Machining at stable condition	TNMG 160404 -UG	0.4	0.20~0.40	0.5~3.0	●	●	●		●	●													
	TNMG 160408 -UG	0.8	0.20~0.40	1.0~3.0	●	●	●	○	●	●		●											
	TNMG 160412 -UG	1.2	0.20~0.40	1.5~3.0	●	●	●	○	●	●													
	TNMG 220408 -UG	0.8	0.25~0.60	1.0~6.0	●	●	○		○	○		●											
	TNMG 220412 -UG	1.2	0.25~0.60	1.5~6.0	●	○	○		○	○													
	TNMG 220416 -UG	1.6	0.25~0.60	2.0~6.0	●	○	○	○	○	○													
-UC Cast iron and Medium roughing	TNMG 160404 -UC	0.4	0.20~0.40	0.5~4.0	●	●	●		●	●													
	TNMG 160408 -UC	0.8	0.20~0.40	1.0~4.0	●	●	●		●	●													
	TNMG 160412 -UC	1.2	0.20~0.40	1.5~4.0	●	●	●		●	●													
-UR Roughing	TNMG 160408 -UR	0.8	0.30~0.50	1.0~5.0	●	●	●		●	●													
	TNMG 160412 -UR	1.2	0.30~0.50	1.5~5.0	●	●	●	○	●	●		●											
	TNMG 220412 -UR	1.2	0.30~0.65	1.5~7.0	●	●	●		●	●		●											
	TNMG 220416 -UR	1.6	0.30~0.65	2.0~7.0	●	●	●		●	●													

● : Stock item ○ : Order made item

Cutting Speed			Vc (m/min.)																										
ISO	VDI	Sub Group	YG1010		YG1001		YG3010		YG3015		YG3020		YG3030		YG801		YG211		YG213		YG214		YG401		YG100		YG10		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
P	1~5	Non-Alloyed Steel	-	-	220	480	230	450	200	430	160	380	130	350	120	200	-	-	-	-	-	-	-	-	-	-	-	-	-
	6~9	Low-Alloyed Steel	-	-	220	420	180	380	150	350	140	320	130	280	70	200	-	-	-	-	-	-	-	-	-	-	-	-	-
	10~11	High-Alloyed Steel	-	-	-	-	60	200	90	180	60	130	70	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M	12~13	Ferritic & Martensitic	-	-	-	-	-	-	-	-	-	-	110	220	-	-	170	270	120	180	100	150	-	-	-	-	-	-	-
	14	Austenitic Stainless Steel	-	-	-	-	-	-	-	-	-	-	50	150	-	-	150	230	40	160	100	150	-	-	-	-	-	-	-
K	15~16	Grey Cast Iron	300	450	250	420	120	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17~18	Nodular Cast Iron	120	350	120	300	120	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N	21~30	Non-Ferrous Metals (Al)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	1200	250	800	
S	31~37	Superalloys & Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	30	100	30	70	30	50	30	90	-	-	-	-	-	-
H	38~41	Hard Materials	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Insert ISO Code System













*Metric : According to ISO 1832

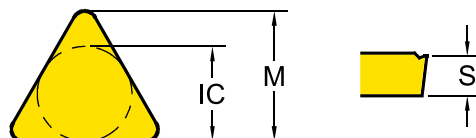
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1	2	3	4	5	6	7	8	9
C	N	M	G	12	04	08	-UG	YG3020
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

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	

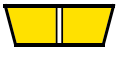
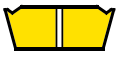
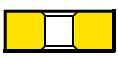







3 - Tolerance Class



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

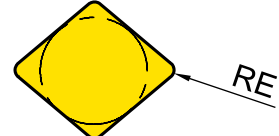
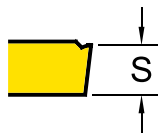
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1	2	3	4	5	6	7	8	9
C	N	M	G	4	3	2	-UG	YG3020
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

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					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	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

Grade Naming System

TURNING

1	2	3	4	5	(6)
YG	3	0	2	0	(G)
YG Brand	Workpiece Material	Grade Version	Application Range (1st Digit)	Application Range (2nd Digit)	Minor Variation
Carbide CVD (4 Digits)	●	●	●	●	YG3020
Carbide PVD (3 Digits)	●	●	●		YG211
Carbide Uncoated (2 Digits)	●	●			YG10

PARTING & GROOVING

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	●			

4 & 5 — Application Range

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

MILLING

DRILLING

TECHNICAL INFORMATION

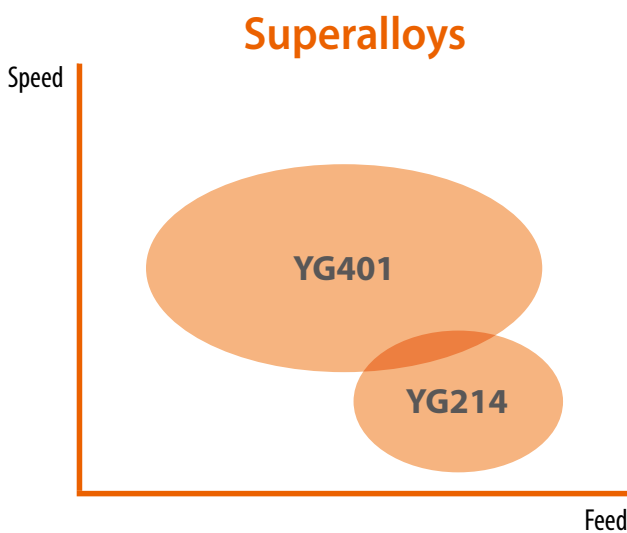
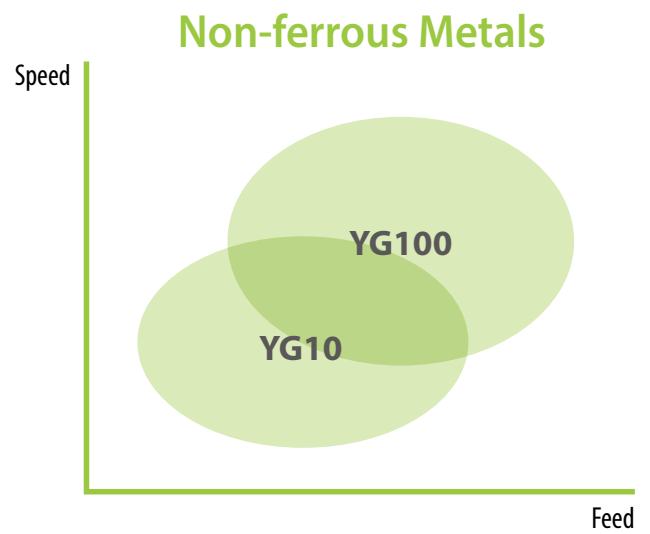
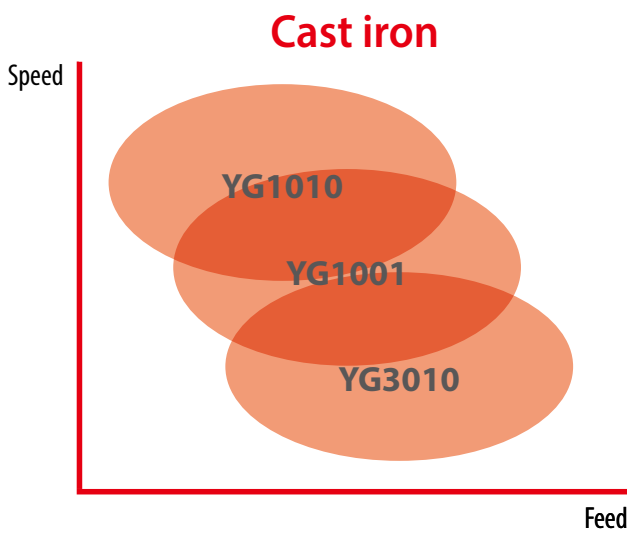
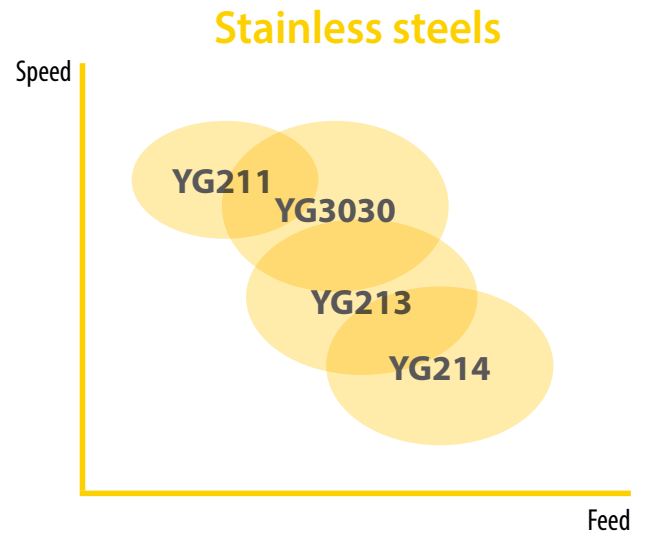
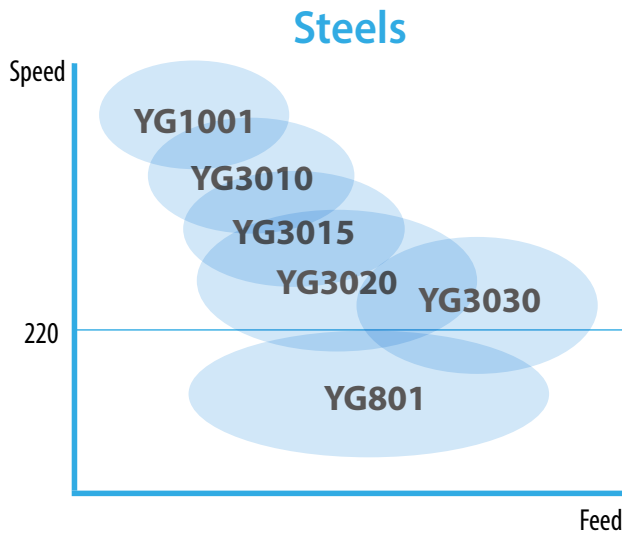
3 — Grade Version

(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 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											
	YG3020		3020											
	YG3030		3030			3030								
PVD	YG801	801												
	YG211				211									
	YG213					213								
	YG214						214							214
	YG401												401	
DLC	YG100										100			
-	YG10										10			

<p>YG1010</p> <p>K05 - K15</p>	<p>CVD TiCN - Al₂O₃</p>	<p>First Choice for Cast Iron</p> <ul style="list-style-type: none"> • Effective coating structure enables high speed machining • Special post treatment for improved chipping resistance
<p>YG1001</p> <p>P01 - P10</p> <p>K10 - K25</p>	<p>CVD TiCN - Al₂O₃</p>	<p>First Choice for Stable Machining of Cast Iron</p> <ul style="list-style-type: none"> • Substrate especially designed for high wear resistance • Thick Al₂O₃ layer ensures good wear resistance at high cutting speeds including dry machining
<p>YG3010</p> <p>P05 - P20</p> <p>K15 - K35</p>	<p>CVD TiCN - Al₂O₃</p>	<p>First choice for Finishing Steels, and Ductile Cast iron</p> <ul style="list-style-type: none"> • Finishing and light machining of steel under in stable condition • New Al₂O₃ coating technology and excellent surface smoothness increase wear resistance and chipping resistance
<p>YG3015</p> <p>P10 - P25</p>	<p>CVD TiCN - Al₂O₃</p>	<p>Balanced Productivity for Continuous cut</p> <ul style="list-style-type: none"> • High wear resistance and improved toughness ensures high productivity with less trouble

Product Overview

Turning Grades

YG3020 P15 - P30	 CVD TiCN - Al ₂ O ₃	First Choice Grade for General Steel Application <ul style="list-style-type: none"> • Substrate especially designed for good toughness • Excellent surface smoothness increases wear resistance and reliability
YG3030 P20 - P35 M10 - M30	 CVD TiCN - Al ₂ O ₃	Interrupted Cutting of Steel and Stainless steel <ul style="list-style-type: none"> • 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	 PVD - TiAlN	for Carbon Steel with Low Cutting Speed <ul style="list-style-type: none"> • Recommended for mild steel and boring application • Substrate and special PVD coating for excellent wear resistance
YG211 M05 - M25	 PVD - TiAlN	High wear Resistance Grade for Stainless steel <ul style="list-style-type: none"> • Finishing Stainless steel
YG213 M20 - M35	 PVD - TiAlN	First Choice Grade on Low Cutting Speed of Stainless steel <ul style="list-style-type: none"> • First choice on Stainless steel for Low cutting speed • For Medium to low cutting speed
YG214 M30 - M40 S25 - S30	 PVD - TiAlN	Heavy Interrupted cut for Stainless steel <ul style="list-style-type: none"> • For Heavy Interrupted cut on Stainless steel • Minimize risk of Mechanical fracture or Chipping
YG401 S10 - S20	 PVD - TiAlSiN	PVD Turning Grade for HRSA <ul style="list-style-type: none"> • 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
YG100 N05 - N25	 DLC	First Choice Grade for Aluminum with DLC Coating <ul style="list-style-type: none"> • 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	Uncoated Grade for General Aluminum <ul style="list-style-type: none"> • Substrate consisted of submicron carbide for high wear resistance • Shining surface to prevent built up edge

TURNING

PARTING & GROOVING

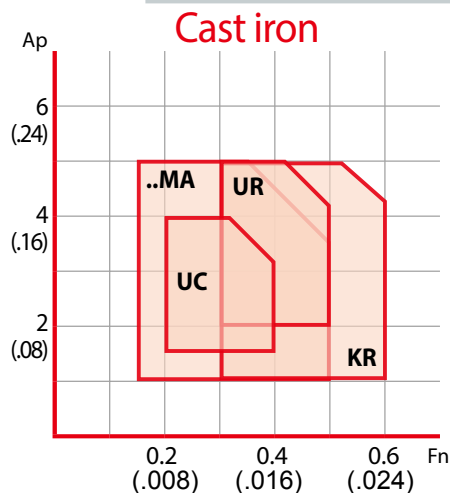
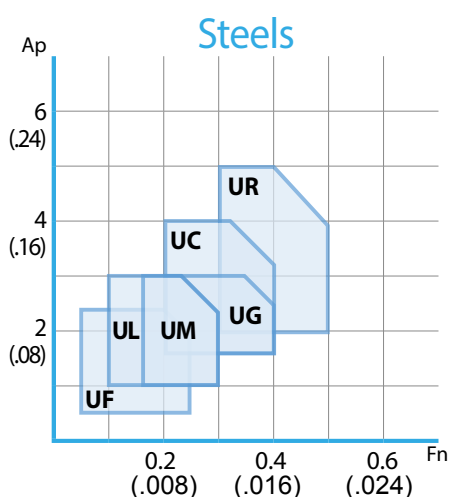
MILLING

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							
	PARTING & GROOVING	P					UL	Semi Finishing and sticky materials						
		P					UM	For Medium & Unstable conditions						
		P					UG	First Choice for Medium (Stable application)						
	MILLING	P					UC	Medium Roughing and First choice for Cast iron						
		DRILLING	P	K			UR	Roughing and Heavy interrupted cut						
			P	K				..MA	Cast iron Heavy Roughing					
		TECHNICAL INFORMATION			K			KR	Cast Iron Heavy Roughing					
							0	1	2	3	4	5	6	



Ap: mm Fn: mm/rev.
(inch) (inch/rev.)

Product Overview

Turning Chipbreakers - Negative

P	M	K	N	S	Chipbreaker	Application	Feed F _n (mm/rev.)						
							0	0.1	0.2	0.3	0.4	0.5	0.6
	M			S	MF	Stainless steel Finishing 18°	Ap 0.2~1.5		Fn 0.07~0.30				
P	M			S	MM	Stainless steel Medium and Low Carbon Steel 19°/12° 0.17	Ap 1.0~3.5		Fn 0.20~0.35				
	M			S	MG	First Choice for Medium for Stainless steel 10° 0.27	Ap 1.0~4.0		Fn 0.20~0.40				
	M			S	MR	Roughing for Stainless steel 8° 0.40	Ap 1.8~5.5		Fn 0.30~0.55				
				S	SF	HRSA Finishing 20°	Ap 0.2~1.0		Fn 0.10~0.25				
				S	SM	HRSA Medium 15°	Ap 0.5~3.0		Fn 0.10~0.25				
				S	SR	Roughing for HRSA 8° 0.40	Ap 1.0~4.5		Fn 0.20~0.35				

Depth of Cut Ap (mm)

TURNING
PARTING & GROOVING
MILLING
DRILLING
TECHNICAL INFORMATION

