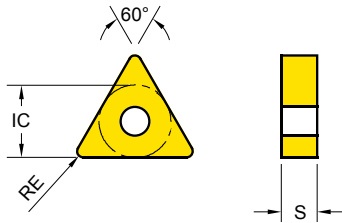


Turning Inserts - Negative TNMG (60° Triangle)

 **Refer to**
Turning holder
p. 95, 101, 116, 121, 125



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

EDP 2200.. ● : Stock item ○ : Order made item

[illegible]

Product Overview

Turning Grades Map

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

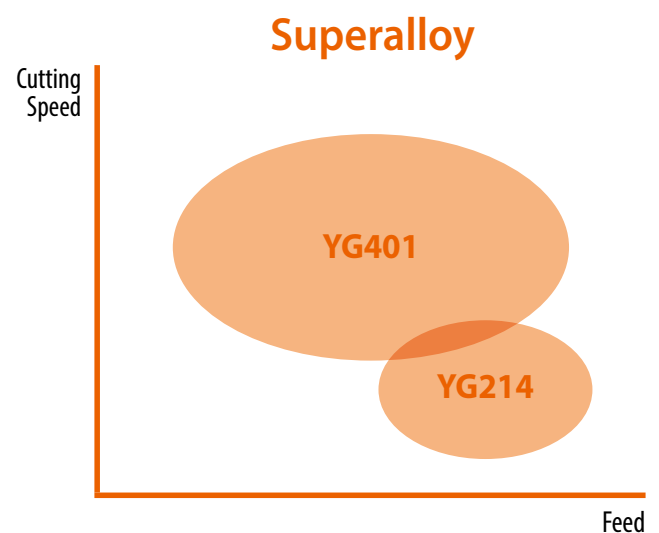
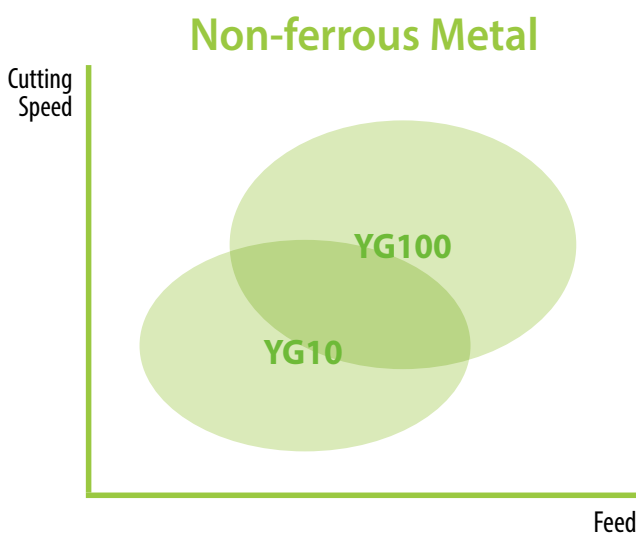
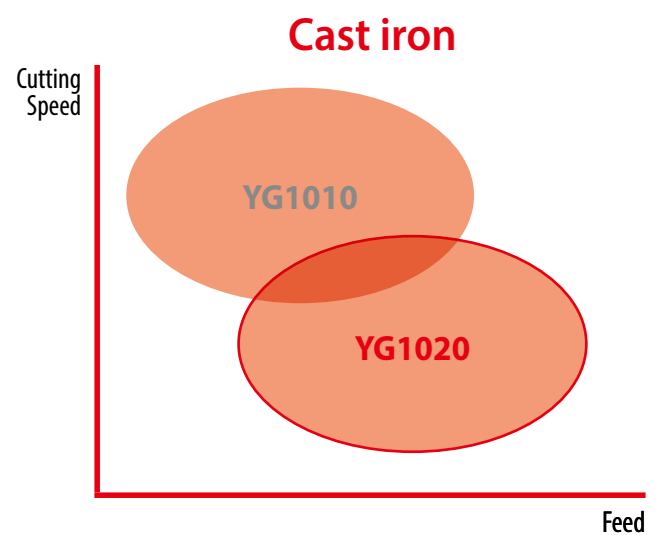
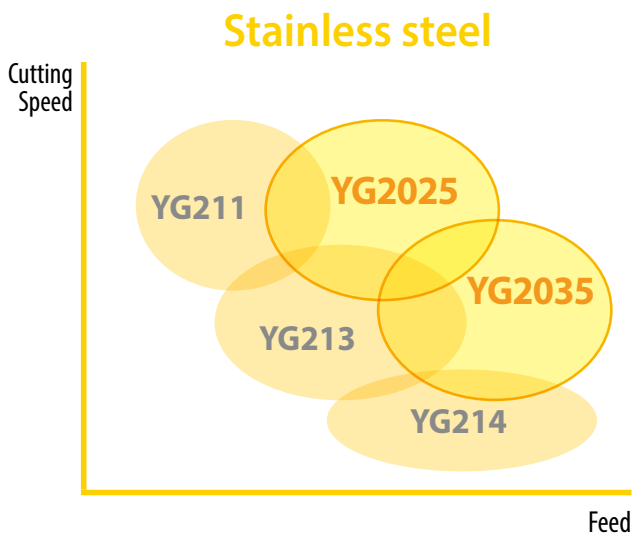
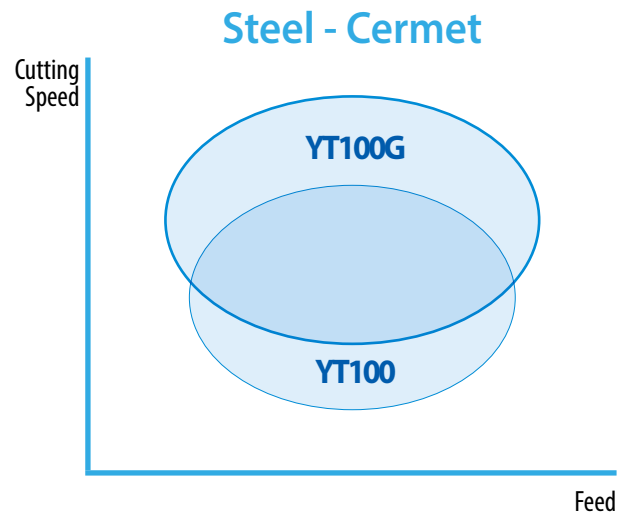
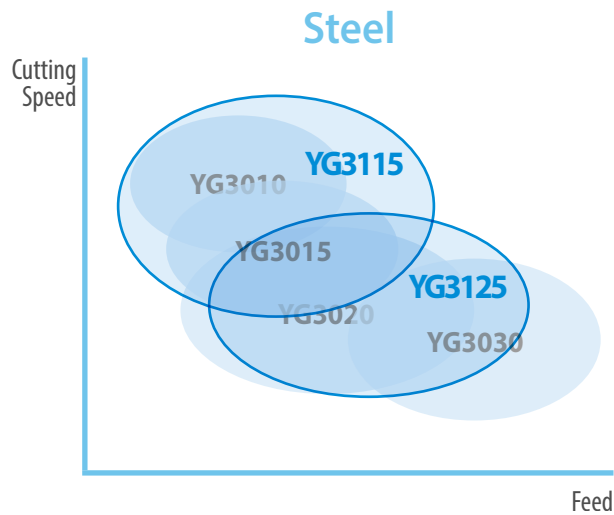
TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION



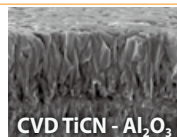
Product Overview

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
TURNING	YG1010								1010						
	YG1001	1001							1001						
	YG1020								1020						
	YG3010	3010							3010						
	YG3015	3015													
	YG3115	3115													
	YG3125	3125													
	YG3020	3020													
	YG3030	3030													
	YG2025					2025									
	YG2035					2035									
PARTING & GROOVING	YG801	801													
	YG211					211									
	YG213					213									
	YG214					214									214
	YG401													401	
MILLING	YG2025					2025									
	YG2035					2035									
	YG801	801													
CERMET	YT100	YT100				YT100			YT100						
	YT100G	YT100G				YT100G			YT100G						
	YT100G	YT100G				YT100G			YT100G						
DLC	YG100											100			
	YG10											10			

YG1010

K05 - K15



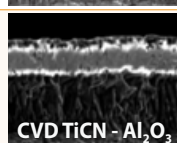
First Choice for Cast Iron

- Effective coating structure enables high speed machining
- Special post treatment for improved chipping resistance

YG1001

P01 - P10

K10 - K25

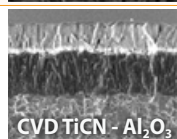


Stable Machining of Cast Iron

- Substrate especially designed for high wear resistance
- Thick Al₂O₃ layer ensures good wear resistance at high cutting speeds including dry machining

NEW YG1020

K15 - K25



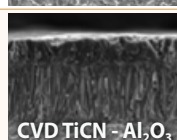
First choice for ductile cast iron

- Excellent wear and fracture resistance when machining ductile cast iron
- New coating ensures outstanding resistance to abrasion wear

YG3010

P05 - P20

K15 - K35

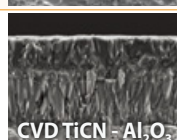


First choice for Finishing Steels, and Ductile Cast iron

- 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

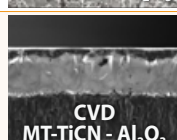


Balanced Productivity for Continuous cut

- High wear resistance and improved toughness ensures high productivity with less trouble

YG3115

P15 - P25

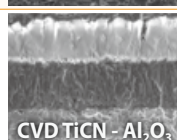


First choice grade for high cutting speed in Steels

- 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

NEW YG3125

P20 - P30



Recommended first grade for steel

- New substrates with a unique combination of good toughness and plastic deformation resistance
- General Machining on steel

Product Overview

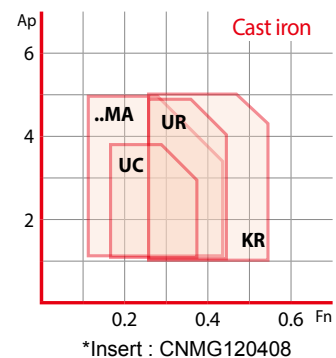
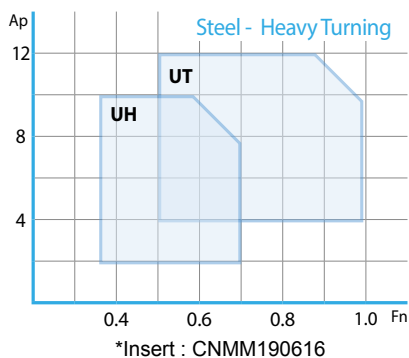
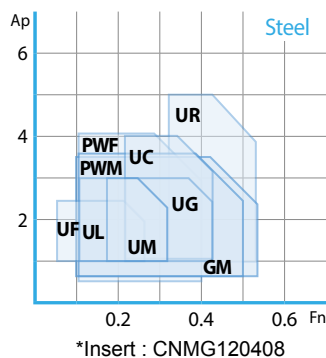
Turning Grades

TURNING PARTING & GROOVING MILLING DRILLING TECHNICAL INFORMATION	YG3020 P15 - P30	 CVD TiCN - Al ₂ O ₃	First Choice Grade for General Steel Application • Substrate especially designed for good toughness • Excellent surface smoothness increases wear resistance and reliability
	YG3030 P20 - P35	 CVD TiCN - Al ₂ O ₃	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	 PVD - TiAlN	for Carbon Steel with Low Cutting Speed • Recommended for mild steel and boring application • Substrate and special PVD coating for excellent wear resistance
	YG2025 M15 - M35	 CVD TiCN - Al ₂ O ₃	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
	NEW YG2035 M30 - M40	 CVD TiCN - Al ₂ O ₃	CVD Coated Grade for stainless steel at Low Cutting Speed • Substrate withstands heavy interruption, while the coating provides the wear resistance needed for a long tool life • Smooth surface resists build-up edge, even at low cutting speeds
	YG211 M05 - M25	 PVD - TiAlN	High wear Resistance Grade for Stainless steel • Finishing Stainless steel
	YG213 M20 - M35	 PVD - TiAlN	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	 PVD - TiAlN	Heavy Interrupted cut for Stainless steel • For Heavy Interrupted cut on Stainless steel • Minimize risk of Mechanical fracture or Chipping
	YG401 S10 - S20	 PVD - TiAlSiN	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
	YT100 P10 - P20 M10 - M20 K10 - K20	 Cermet	New Generation Cermet Grade • Enhanced wear resistance & chipping resistance • Excellent fracture resistance • Superior surface finish with special edge preparation
	NEW YT100G P5 - P20 M5 - M20 K5 - K20	 PVD TiN	PVD-coated Cermet grade for turning • Outstanding wear resistance and a low coefficient of friction enable high-speed turning of steels, stainless steels, and cast irons with extended tool life
	YG100 N05 - N25	 DLC	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	Uncoated Grade for General Aluminum • Substrate consisted of submicron carbide for high wear resistance • Shining surface to prevent built up edge

Product Overview

Turning Chipbreakers - Negative

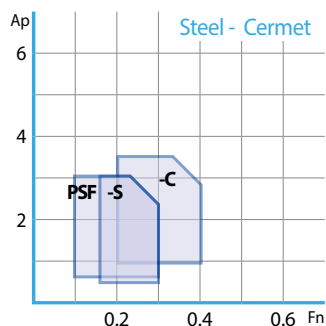
	P	M	K	N	S			Feed	Fn (mm/rev.)						
									0	0.1	0.2	0.3	0.4	0.5	0.6
TURNING	P					UF	Finishing				Fn 0.05~0.25 Ap 1.0~2.5				
	P					NEW PWF	Wiper-Finishing				Fn 0.10~0.40 Ap 0.5~4.0				
	P					UL	Semi Finishing and sticky materials				Fn 0.1~0.3 Ap 1.0~3.0				
	P					UM	Medium & Unstable conditions				Fn 0.15~0.3 Ap 1.0~3.0				
PARTING & GROOVING	P					NEW GM	Medium machining for steel & Stainless steel				Fn 0.17~0.50 Ap 0.8~5.0				
	P					UG	First Choice for Medium (Stable conditions)				Fn 0.2~0.4 Ap 1.0~3.0				
	P					PWM	Wiper-Medium				Fn 0.1~0.5 Ap 0.8~3.5				
	P					UH	Low cutting force				Fn 0.35~0.7 Ap 2.0~9.0				
MILLING	P					UT	Heavy roughing				Fn 0.5~1.0 Ap 4.0~12.0				
	P					UC	Medium Roughing and First choice for Cast iron				Fn 0.2~0.4 Ap 1.0~4.0				
	P					UR	Roughing and Heavy interrupted cut				Fn 0.3~0.5 Ap 1.0~5.0				
						..MA	Cast iron Heavy Roughing				Fn 0.15~0.50 Ap 1.0~5.0				
DRILLING															
TECHNICAL INFORMATION															

Depth of Cut
Ap (mm)


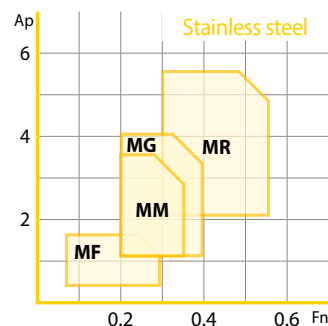
Product Overview

Turning Chipbreakers - Negative

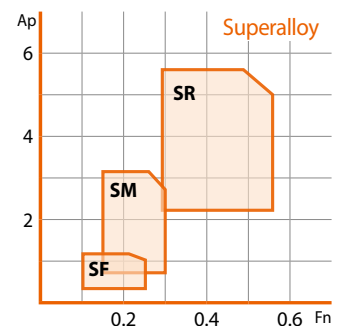
							Feed								
P	M	K	N	S			0	0.1	0.2	0.3	0.4	0.5	0.6	Fn (mm/rev.)	
		K			KR	Cast Iron Heavy Roughing								Fn 0.3~0.6	
	M			S	MF	Stainless steel Finishing								Fn 0.07~0.30	
								Ap 0.2~1.5							
P	M			S	MM	Stainless steel Medium and Low Carbon Steel								Fn 0.20~0.35	
														Ap 1.0~3.5	
	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 2.0~5.5	
				S	SF	HRSA Finishing								Fn 0.1~0.25	
								Ap 0.2~1.0							
				S	SM	HRSA Medium								Fn 0.15~0.30	
														Ap 0.5~3.0	
				S	SR	Roughing for HRSA								Fn 0.30~0.55	
														Ap 2.0~5.5	
P	M	K			PSF	Cermet Finishing to Semi medium								Fn 0.10~0.30	
														Ap 0.6~3.0	
P	M	K			-S	Cermet Finishing								Fn 0.15~0.30	
														Ap 0.5~3.0	
P	M	K			-C	Cermet Medium								Fn 0.20~0.40	
														Ap 1.0~3.5	
								0	1	2	3	4	5	6	Depth of Cut Ap (mm)



*Insert : CNMG120408 / TNGG160408



*Insert : CNMG120408



*Insert : CNMG120408

Insert ISO Code System

*Metric : According to ISO 1832

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TURNING

PARTING & GROOVING

MILLING

DRILLING

TECHNICAL INFORMATION

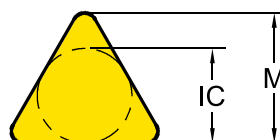
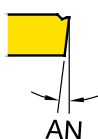
1	2	3	4	5	6	7	8	9
C	N	M	G	12	04	08	-UG	YG3115
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

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

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



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		

Insert ISO Code System

*Inch

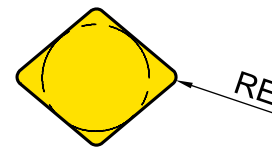
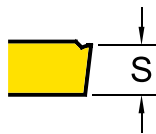
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1	2	3	4	5	6	7	8	9
C	N	M	G	4	3	2	-UG	YG3115
Shape	Clearance	Tolerance	Clamping & Chipbreaker	Insert Size	Insert Thickness	Corner Radius	Chipbreaker Geometry	Grade

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
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	●			
9	Exotic Material		●		
0	Hardened Steel		●		

4 & 5 - Application Range

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

(6) - (Minor Variation)

G - Gold Coated Version

3 - Grade Version