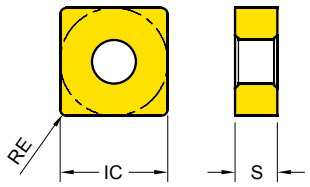
Click for Overview

YG TURN

Turning Inserts - Negative

# SNMA / SNMG (90° Square)

Refer to Turning holder p. 94, 100, 115, 120




| Series | IC | S | Series | IC | S |
|---|---|---|---|---|---|
| SN** 0903 | 9.525 | 3.18 | SN** 1506 | 15.875 | 6.35 |
| SN** 1204 | 12.700 | 4.76 | SN** 1906 | 19.050 | 6.35 |

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

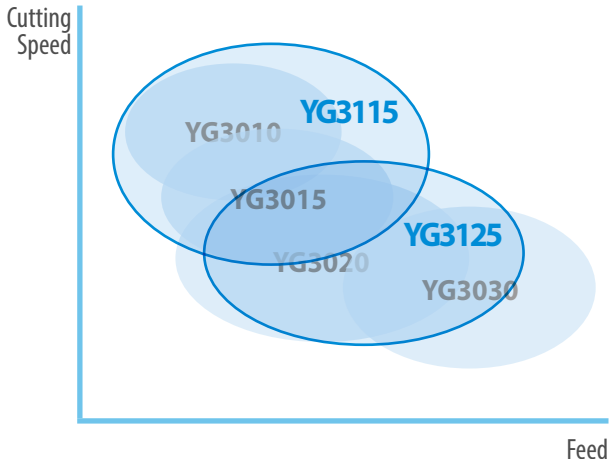
| SNMA SNMG | | Designation | RE | Fn (mm/rev.) | Ap (mm) | K10 | P05 K20 | K20 | P10 K30 | P15 | P10 | P25 | P20 | P30 | P20 | M25 | M35 | M15 | M30 | M40 S30 | S10 | P15 M15 K15 | P10 M10 K10 | N20 | N20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | YG1010 | YG1001 | YG1020 | YG3010 | YG3015 | YG3115 | YG3125 | YG3020 | YG3030 | YG801 | YG2025 | YG2035 | YG211 | YG213 | YG214 | YG401 | YT100 | YT100G | YG100 | YG10 |
| ..MA |  Cast iron | SNMA 120408 | 0.8 | 0.15 - 0.50 | 1.0 - 5.0 | ● 0767 | ○ 0027 | ● 3427 | ○ 1166 | | | | | | | | | | | | | | | | |
| | | SNMA 120412 | 1.2 | 0.15 - 0.50 | 1.5 - 5.0 | ● 0768 | ○ 0028 | ● 3428 | ○ 1133 | | | | | | | | | | | | | | | | |
| | | SNMA 120416 | 1.6 | 0.15 - 0.50 | 1.8 - 5.0 | ● 2023 | | | | | | | | | | | | | | | | | | | |
| | | SNMA 150612 | 1.2 | 0.15 - 0.50 | 1.5 - 5.0 | ● 1423 | ○ 0729 | ● 3469 | ○ 1150 | | | | | | | | | | | | | | | | |
| | | SNMA 190616 | 1.6 | 0.15 - 0.50 | 2.0 - 9.0 | ● 1344 | ○ 1184 | ● 3465 | ○ 1261 | | | | | | | | | | | | | | | | |
| -UF |  Finishing | SNMG 090308 - UF | 0.8 | 0.05 - 0.20 | 1.0 - 2.0 | | | | | | ● 2630 | ● 3337 | ● 0999 | | | | | | | | | | | | |
| | | SNMG 120404 - UF | 0.4 | 0.05 - 0.25 | 0.5 - 1.5 | | | | ○ 1458 | | ● 2631 | ● 3373 | ● 1459 | ● 1454 | ○ 0029 | | | ○ 2237 | | | | | | | |
| | | SNMG 120408 - UF | 0.8 | 0.05 - 0.25 | 1.0 - 2.5 | | | | ○ 1430 | | ● 2633 | ● 3370 | ● 1433 | ● 1437 | | | | | | | | | | | |
| -UL |  Light Machining and Sticky Material | SNMG 120404 - UL | 0.4 | 0.10 - 0.30 | 0.5 - 3.0 | | | | ○ 1167 | | ● 2632 | ● 3313 | ● 0747 | ● 1194 | | | | | | | | | | | |
| | | SNMG 120408 - UL | 0.8 | 0.10 - 0.30 | 1.0 - 3.0 | | | | ○ 0389 | | ● 2634 | ● 3261 | ● 0390 | ● 0391 | | | | | | | | | | | |
| -UM |  Medium Machining Unstable condition | SNMG 120408 - UM | 0.8 | 0.15 - 0.30 | 1.0 - 3.0 | | ○ 0983 | | ○ 0739 | | ● 2635 | ● 3318 | ● 0784 | ● 0740 | | | | | | | | | | | |

Product Overview

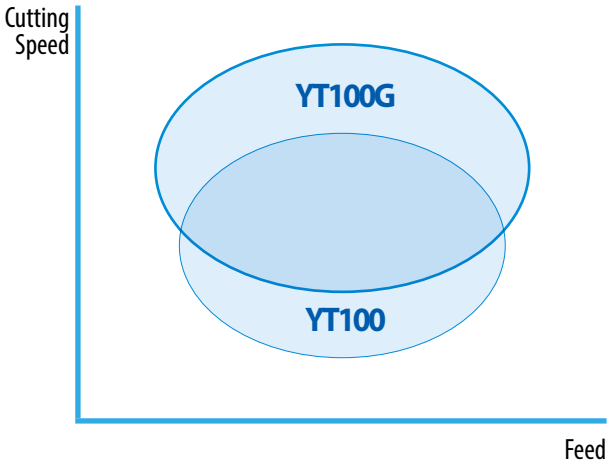
# Turning Grades Map

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

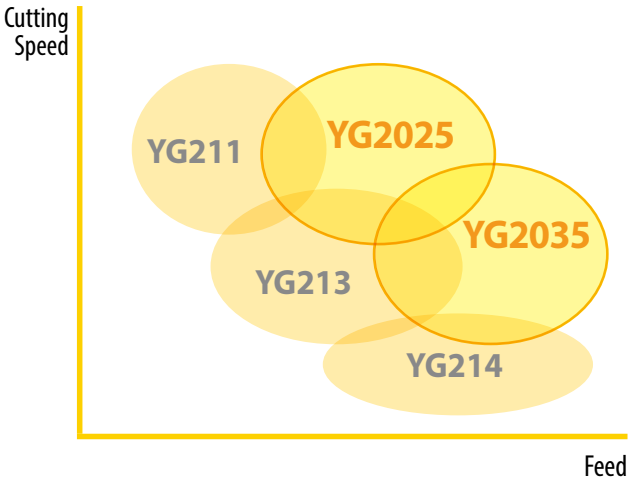
## Steel



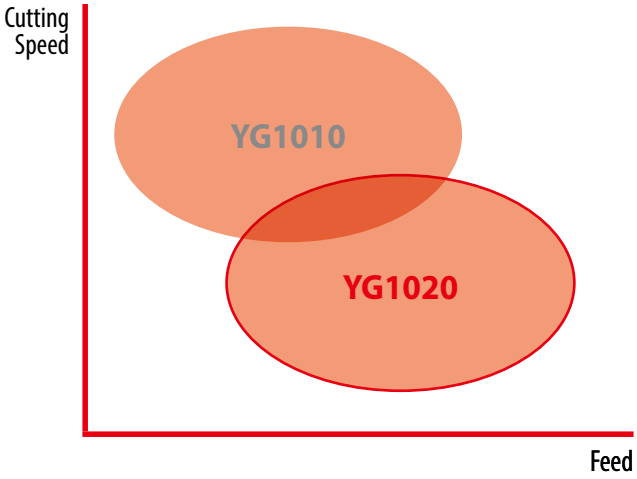

## Steel - Cermet



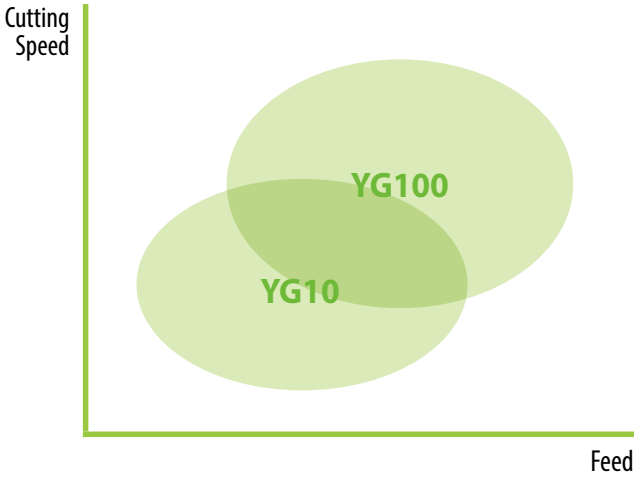

## Stainless steel



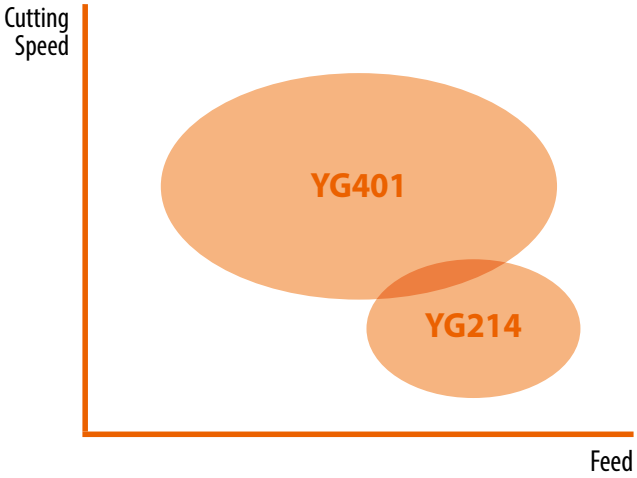

## Cast iron




## Non-ferrous Metal




## Superalloy



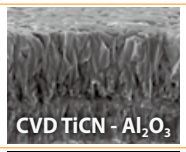
Product Overview

# 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 |
| CVD | YG1010 | | | | | | | | 1010 | | | | | | |
| | YG1001 | 1001 | | | | | | | | 1001 | | | | | |
| | YG1020 | | | | | | | | | 1020 | | | | | |
| | YG3010 | 3010 | | | | | | | | 3010 | | | | | |
| | YG3015 | | 3015 | | | | | | | | | | | | |
| | YG3115 | | 3115 | | | | | | | | | | | | |
| | YG3125 | | | 3125 | | | | | | | | | | | |
| | YG3020 | | 3020 | | | | | | | | | | | | |
| | YG3030 | | | 3030 | | | | | | | | | | | |
| | YG2025 | | | | | | 2025 | | | | | | | | |
| | YG2035 | | | | | | | 2035 | | | | | | | |
| PVD | YG801 | | 801 | | | | | | | | | | | | |
| | YG211 | | | | | 211 | | | | | | | | | |
| | YG213 | | | | | | 213 | | | | | | | | |
| | YG214 | | | | | | | 214 | | | | | | | 214 |
| | YG401 | | | | | | | | | | | | | 401 | |
| Cermet | YT100 | | YT100 | | | | YT100 | | | YT100 | | | | | |
| | YT100G | | YT100G | | | | YT100G | | | YT100G | | | | | |
| DLC | YG100 | | | | | | | | | | | 100 | | | |
| - | YG10 | | | | | | | | | | | 10 | | | |

## YG1010

K05 - K15

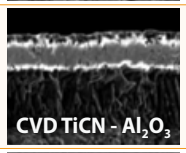



### First Choice for Cast Iron

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

## YG1001

P01 - P10
K10 - K25

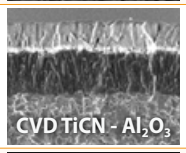



### Stable Machining of Cast Iron

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

## NEW YG1020

K15 - K25

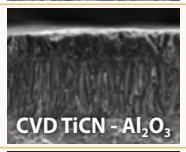



### First choice for ductile cast iron

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

## YG3010

P05 - P20
K15 - K35

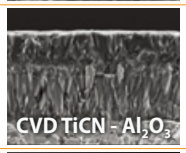



### First choice for Finishing Steels, and Ductile Cast iron

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

## YG3015

P10 - P25

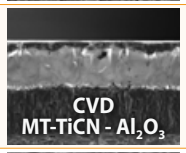



### Balanced Productivity for Continuous cut

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

## YG3115

P15 - P25

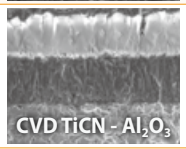



### First choice grade for high cutting speed in Steels

- 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

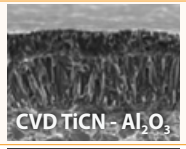
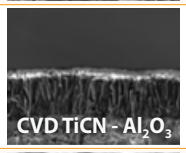
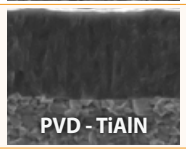
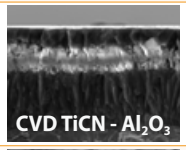
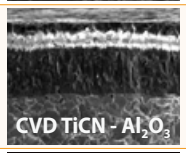
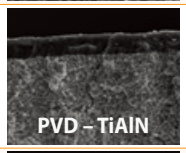
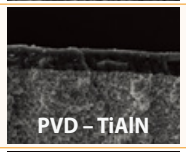
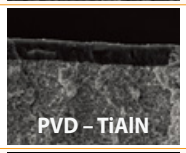
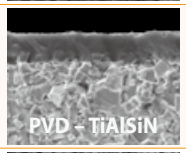
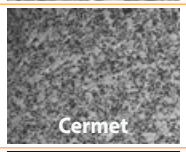
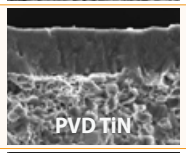
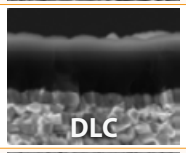
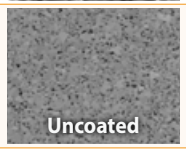



### Recommended first grade for steel

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

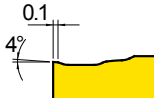
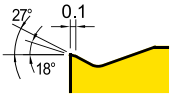
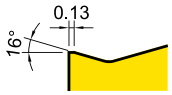
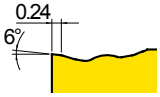
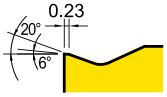
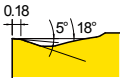
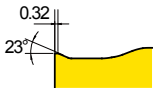
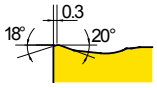
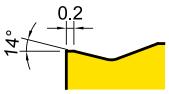
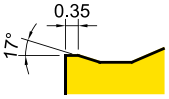
Product Overview

# Turning Grades

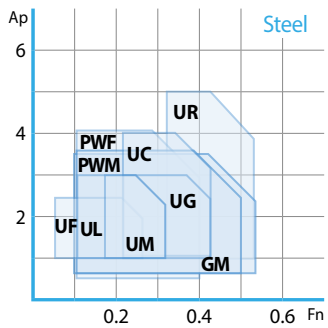
| | | |
|---|---|---|
| **YG3020**<br>P15 - P30 |  | **First Choice Grade for General Steel Application**<br>• Substrate especially designed for good toughness<br>• Excellent surface smoothness increases wear resistance and reliability |
| **YG3030**<br>P20 - P35 |  | **Interrupted Cutting of Steel and Stainless steel**<br>• Substrate for heavy roughing in mild steel and low carbon alloy steel<br>• New $Al_2O_3$ technology and optimized surface treatment achieves a good balance between wear resistance and chipping resistance |
| **YG801**<br>P10 - P30 |  | **for Carbon Steel with Low Cutting Speed**<br>• Recommended for mild steel and boring application<br>• Substrate and special PVD coating for excellent wear resistance |
| **YG2025**<br>M15 - M35 |  | **CVD grade for High Cutting Speed for Stainless steel**<br>• Utilizing a new carbide substrate and new coating<br>• Excellent combination of wear resistance and chipping resistance<br>• Minimized built up edge due to post surface treatment |
| NEW **YG2035**<br>M30 - M40 |  | **CVD Coated Grade for stainless steel at Low Cutting Speed**<br>• Substrate withstands heavy interruption, while the coating provides the wear resistance needed for a long tool life<br>• Smooth surface resists build-up edge, even at low cutting speeds |
| **YG211**<br>M05 - M25 |  | **High wear Resistance Grade for Stainless steel**<br>• Finishing Stainless steel |
| **YG213**<br>M20 - M35 |  | **First Choice Grade on Low Cutting Speed of Stainless steel**<br>• First choice on Stainless steel for Low cutting speed<br>• For Medium to low cutting speed |
| **YG214**<br>M30 - M40<br>S25 - S30 |  | **Heavy Interrupted cut for Stainless steel**<br>• For Heavy Interrupted cut on Stainless steel<br>• Minimize risk of Mechanical fracture or Chipping |
| **YG401**<br>S10 - S20 |  | **PVD Turning Grade for HRSA**<br>• Highly heat-resistant TiAlSiN structure for excellent wear resistance<br>• Greatly improved film coating realizes excellent boundary defect resistance<br>• Top coating layer provides a smooth surface and lubricant effect |
| **YT100**<br>P10 - P20<br>M10 - M20<br>K10 - K20 |  | **New Generation Cermet Grade**<br>• Enhanced wear resistance & chipping resistance<br>• Excellent fracture resistance<br>• Superior surface finish with special edge preparation |
| NEW **YT100G**<br>P5 - P20<br>M5 - M20<br>K5 - K20 |  | **PVD-coated Cermet grade for turning**<br>• 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**<br>N05 - N25 |  | **First Choice Grade for Aluminum with DLC Coating**<br>• Submicron carbide for high wear resistance<br>• DLC coating minimizes Built Up Edge tendency.<br>• Improve tool life in sticky non-ferrous alloy |
| **YG10**<br>N05 - N25 |  | **Uncoated Grade for General Aluminum**<br>• Substrate consisted of submicron carbide for high wear resistance<br>• Shining surface to prevent built up edge |

Product Overview

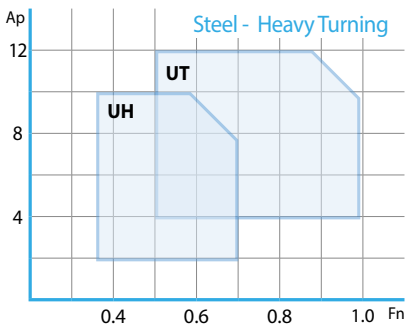
# Turning Chipbreakers - Negative

| P | M | K | N | S | | | | Feed 0 0.1 0.2 0.3 0.4 0.5 0.6 Fn (mm/rev.) |
|---|---|---|---|---|---|---|---|---|
| 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 |
| 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 → |
| P | | | | | UT |  | Heavy roughing  | Fn 0.5~1.0 → / Ap 4.0~12.0 → |
| P | | K | | | UC |  | Medium Roughing and First choice for Cast iron  | Fn 0.2~0.4 / Ap 1.0~4.0 |
| P | | K | | | UR |  | Roughing and Heavy interrupted cut  | Fn 0.3~0.5 / Ap 1.0~5.0 |
| | | K | | | ..MA |  | Cast iron Heavy Roughing  | Fn 0.15~0.50 / Ap 1.0~5.0 |

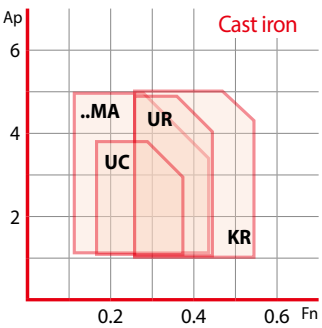
0 1 2 3 4 5 6 Depth of Cut Ap (mm)




*Insert : CNMG120408



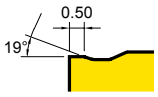
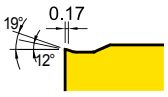
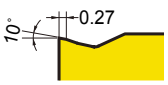
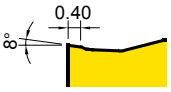
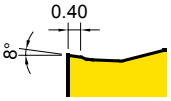
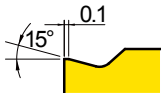
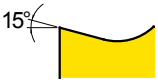
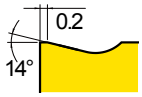

*Insert : CNMM190616



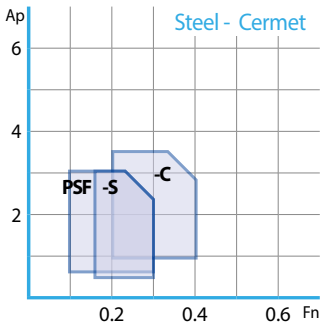

*Insert : CNMG120408

Product Overview

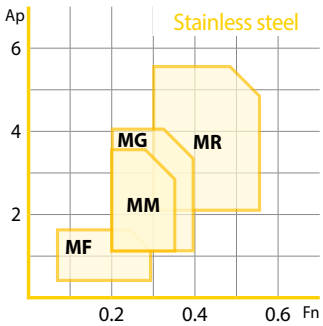
# Turning Chipbreakers - Negative

| P | M | K | N | S | | | | | Feed 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 Ap 1.0~5.0 |
| | 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 | | | NEW -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 |

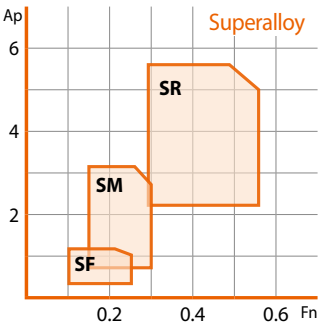
0 1 2 3 4 5 6 Depth of Cut Ap (mm)




*Insert : CNMG120408 / TNGG160408




*Insert : CNMG120408




*Insert : CNMG120408

# Insert ISO Code System

*Metric : According to ISO 1832

page 14 page 12

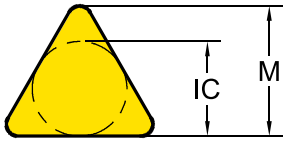
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| C | N | M | G | 12 | 04 | 08 | -UG | YG3115 |
| Shape | Clearance | Tolerance | Clamping & Chipbreaker | Insert Size | Insert Thickness | Corner Radius | Chipbreaker Geometry | Grade |

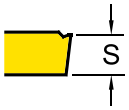
## 1 - Shape

| 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 |  |

## 2 - Relief Angle (AN)

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



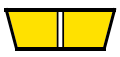
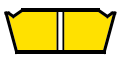
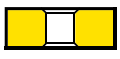
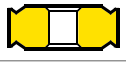
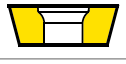
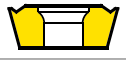
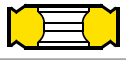




## 3 - Tolerance Class

| 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 | | |

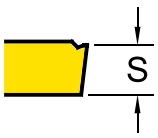
# Insert ISO Code System

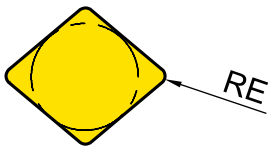
*Inch

| | | | | | | | page 14 | page 12 |
|---|---|---|---|---|---|---|---|---|
| 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 |
|---|---|---|---|---|---|---|---|---|
| S | T | C | D | V | W | R | | |
| **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

| 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 |

## 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 | | ● | | |

## 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 | |
| 40 | Unstable: Tougher Grade, Unstable Application, Interrupted Cut, Chipping Resistance, Roughing |
| 45 | |

## (6) - (Minor Variation)

G - Gold Coated Version