



# TURNING TOOLS



XIAMEN GOLDEN EGRET SPECIAL ALLOY CO.,LTD.

# About GESAC

Xiamen Golden Egret Special Alloy Co., Ltd. (GESAC) is a Sino-foreign joint venture company established in 1989. It is designated by the State as a high-tech enterprise. GESAC is the largest subsidiary of the Shanghai Stock Exchange listed company: Xiamen Tunsten Co., LTD. (Stock code: SH600549). Its main products are tungsten metal powder, tungsten carbide powder, cemented carbide, cutting tools and other tungsten related products. GESAC is the largest producer and exporter of tungsten metal powder and tungsten carbide powder in China and also enjoys good reputation in manufacturing high quality cemented carbide and precision cutting tools.

GESAC has a team of talented staff constantly striving to be stronger. GESAC is equipped with the world's most advanced technologies, manufacturing equipment and testing facilities. The "Golden Egret" brand products are renowned for high quality and excellent service. Our clients are spread across more than forty developed countries and regions all over the world.

GESAC owns a national level R&D center, and has undertaken and finished many national and provincial research projects independently, such as National Science and Technology Support Plan project, National major special science and technology project, National Key Technologies R&D Program, National Torch Program, National Important New Products project etc. GESAC has received numerous awards such as "National Standard High-tech Enterprise", "Enterprise with Advanced Technology" and "Export-oriented Enterprise" from the state government.

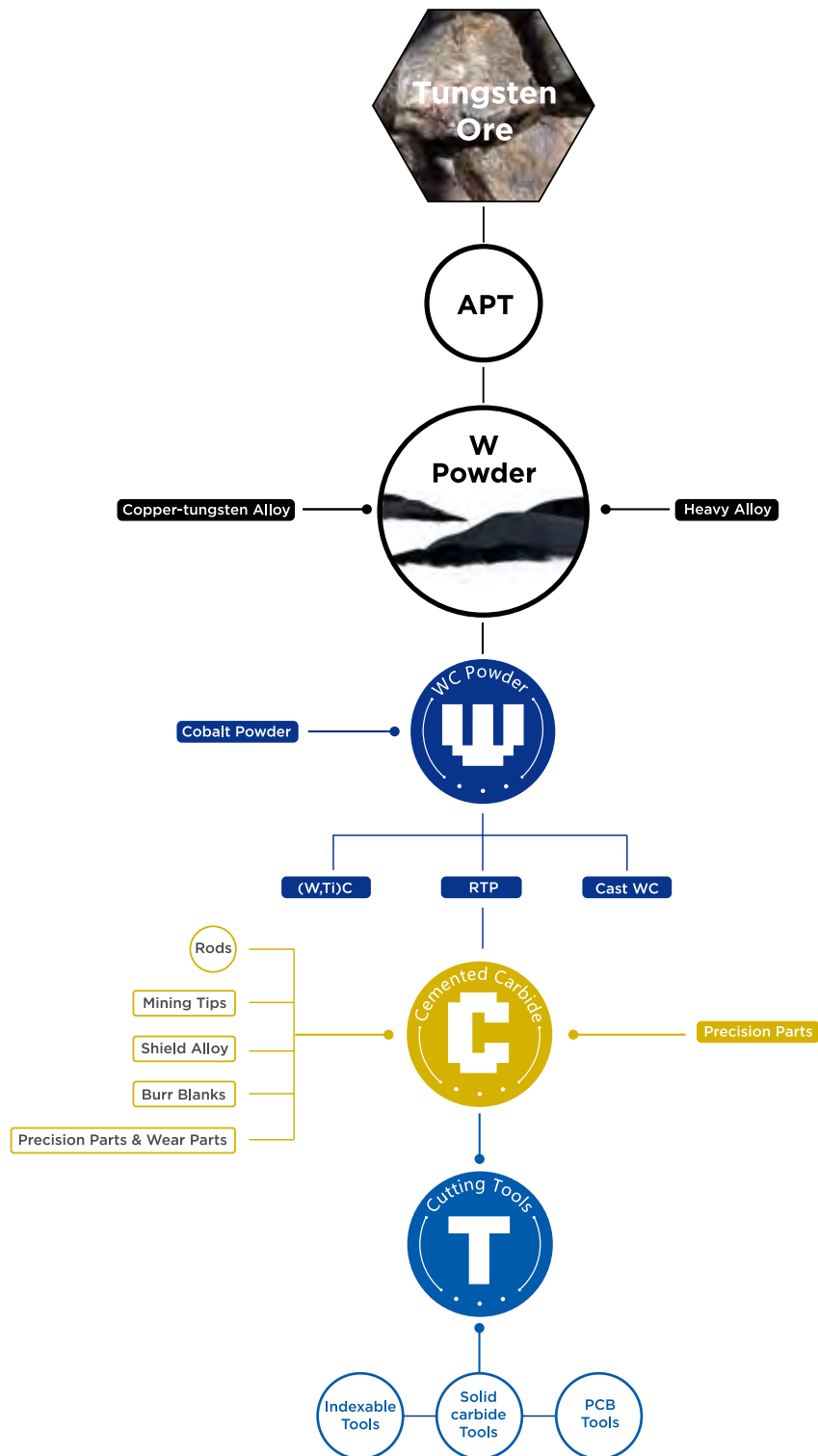
GESAC adheres to the philosophy of "sincerity and dependability are our essence" and strives to develop into a modern enterprise with "first class equipment, first class technology, first class management, first class quality and first class service".





# Product Chain

GESAC has a complete tungsten product chain from tungsten ore to tungsten powder, cemented carbide products and cutting tools.



# Contents

## General Turning —A

|                                                     |     |
|-----------------------------------------------------|-----|
| ISO Turning Indexable Inserts Identification System | 002 |
| Application Summary of Turning Grades               | 004 |
| CVD Coated Carbide                                  | 006 |
| PVD Coated Carbide                                  | 008 |
| Cermet                                              | 009 |
| Carbide                                             | 010 |
| The Working Conditions of Turning Inserts           | 011 |
| Features of Turning Inserts                         | 012 |
| Turning Inserts ( Negative )                        | 024 |
| Turning Inserts ( Positive )                        | 041 |
| Recommended Cutting Datas                           | 056 |

## PCBN/PCD Turning —B

|                                                |     |
|------------------------------------------------|-----|
| PCBN/PCD Turning Inserts Identification System | 062 |
| Application Summary of PCBN Grades             | 064 |
| Application Summary of PCD Grades              | 065 |
| Range of PCBN Turning Inserts                  | 066 |
| PCBN Inserts (Negative)                        | 068 |
| PCBN Inserts (Positive)                        | 076 |
| PCD Inserts (Positive)                         | 081 |
| Recommended Cutting Datas                      | 087 |

## Turning Toolholders —C

|                                                    |     |
|----------------------------------------------------|-----|
| Summary of Turning Toolholders                     | 089 |
| External Turning Toolholders Identification System | 090 |
| External Turning Toolholder                        | 092 |
| Internal Turning Toolholders Identification System | 104 |
| Internal Turning Toolholder                        | 106 |

## Parting and Grooving Tools —D

|                                                    |     |
|----------------------------------------------------|-----|
| Parting and Grooving Inserts Identification System | 114 |
| Parting and Grooving Tools Identification System   | 115 |
| Overview of Parting and Grooving Inserts           | 116 |
| Application Summary of Grades                      | 116 |
| Parting and Grooving Inserts                       | 117 |
| Parting and Grooving Tools                         | 119 |
| Recommended Cutting Datas                          | 123 |

## Threading Tools —E

|                                         |     |
|-----------------------------------------|-----|
| Threading Inserts Identification System | 126 |
| Overview of Threading Tools             | 127 |
| Information of Geometry and Grade       | 128 |
| Thread Turning inserts                  | 129 |
| Recommended Cutting Datas               | 138 |

## G-Notch Series Tools —F

|                                              |     |
|----------------------------------------------|-----|
| G-Notch Series Inserts Identification System | 145 |
| G-Notch Series Tools Identification System   | 146 |
| Overview of G-Notch Series Tools             | 149 |
| Application Summary of Grades                | 149 |
| G-Notch Series Inserts                       | 150 |
| G-Notch Series Tools                         | 153 |
| Recommended Cutting Datas                    | 155 |

# GENERAL TURNING



## ISO Turning Indexable Inserts Identification System

| Symbol        | Shape         | Corner Angle | Figure                                                                            | Symbol               | Relief Angle Others |
|---------------|---------------|--------------|-----------------------------------------------------------------------------------|----------------------|---------------------|
| H             | Hexagon       | 120°         |  | A                    | 3°                  |
| O             | Octagon       | 135°         |  | B                    | 5°                  |
| P             | Pentagon      | 108°         |  | C                    | 7°                  |
| S             | Square        | 90°          |  | D                    | 15°                 |
| T             | Triangle      | 60°          |  | E                    | 20°                 |
| C             | Rhombus       | 80°          |  | F                    | 25°                 |
| D             |               | 55°          |                                                                                   | G                    | 30°                 |
| E             |               | 75°          |                                                                                   | N                    | 0°                  |
| F             |               | 50°          |                                                                                   | P                    | 11°                 |
| M             |               | 86°          |                                                                                   | O                    | Others              |
| V             |               | 35°          |                                                                                   |                      |                     |
| W             | Hexagon       | 80°          |  |                      |                     |
| L             | Rectangle     | 90°          |  |                      |                     |
| A             | Parallelogram | 85°          |  |                      |                     |
| B             |               | 82°          |                                                                                   |                      |                     |
| K             |               | 55°          |                                                                                   |                      |                     |
| R             | Round         | —            |  |                      |                     |
| ①Shape Symbol |               |              |                                                                                   | ②Relief Angle Symbol |                     |

| Symbol            | Tolerance(mm)     |           |               | Tolerance (inch)  |               |                |
|-------------------|-------------------|-----------|---------------|-------------------|---------------|----------------|
|                   | Corner Height (m) | Thickness | I.C.Dia. (Ød) | Corner Height (m) | Thickness (s) | I.C.Dia. (Ød ) |
| A                 | ±0.005            | ±0.025    | ±0.025        | ±0.0002           | ±0.001        | ±0.001         |
| F                 | ±0.005            | ±0.025    | ±0.013        | ±0.0002           | ±0.001        | ±0.0005        |
| C                 | ±0.013            | ±0.025    | ±0.025        | ±0.0005           | ±0.001        | ±0.001         |
| H                 | ±0.013            | ±0.025    | ±0.013        | ±0.0005           | ±0.001        | ±0.0005        |
| E                 | ±0.025            | ±0.025    | ±0.025        | ±0.001            | ±0.001        | ±0.001         |
| G                 | ±0.025            | ±0.13     | ±0.025        | ±0.001            | ±0.005        | ±0.001         |
| J                 | ±0.005            | ±0.025    | ±0.05~±0.13   | ±0.0002           | ±0.001        | ±0.002~±0.005  |
| K                 | ±0.013            | ±0.025    | ±0.05~±0.13   | ±0.0005           | ±0.001        | ±0.002~±0.005  |
| L                 | ±0.025            | ±0.025    | ±0.05~±0.13   | ±0.001            | ±0.001        | ±0.002~±0.005  |
| M                 | ±0.08~±0.18       | ±0.13     | ±0.05~±0.13   | ±0.003~±0.007     | ±0.005        | ±0.002~±0.005  |
| N                 | ±0.08~±0.18       | ±0.025    | ±0.05~±0.13   | ±0.003~±0.007     | ±0.001        | ±0.002~±0.005  |
| U                 | ±0.13~±0.38       | ±0.13     | ±0.08~±0.25   | ±0.005~±0.015     | ±0.005        | ±0.003~±0.01   |
| ③Tolerance Symbol |                   |           |               |                   |               |                |

|   |   |   |   |    |
|---|---|---|---|----|
| ① | ② | ③ | ④ | ⑤  |
| T | N | M | G | 22 |
| T | N | M | G | 22 |
| ① | ② | ③ | ④ | ⑤  |

| Symbol | Hole    | Hole Shape                             | Chip-breaker | Shape |
|--------|---------|----------------------------------------|--------------|-------|
| N      | Without | —                                      | Without      |       |
| R      |         |                                        | Single-sided |       |
| F      |         |                                        | Double-sided |       |
| A      | With    | Without Hole                           | Without      |       |
| M      |         |                                        | Single-sided |       |
| G      |         |                                        | Double-sided |       |
| W      |         | With Hole and one countersink 40°-60°  | Without      |       |
| T      |         |                                        | Single-sided |       |
| Q      |         | With Hole and two countersinks 40°-60° | Without      |       |
| U      |         |                                        | Double-sided |       |
| B      |         | With Hole and one countersink 70°-90°  | Without      |       |
| H      |         |                                        | Single-sided |       |
| C      |         | With Hole and two countersinks 70°-90° | Without      |       |
| J      |         |                                        | Double-sided |       |
| X      |         | —                                      | —            | —     |

| Symbol | Length | Symbol | Length | Symbol | Length | Symbol | Length | Symbol | Length | Symbol | Length | Symbol | Length | Symbol | Length | I.C.Dia. (mm) |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------|
| P      |        | S      |        | C      |        | W      |        | T      |        | D      |        | V      |        | K      |        |               |
|        |        | 03     | 3.97   | 03     | 4.0    |        |        | 06     | 6.9    | 4      | 4.8    |        |        |        |        | 3.97          |
|        |        | 04     | 4.76   | 04     | 4.8    |        |        | 08     | 8.2    | 5      | 5.8    |        |        |        |        | 4.76          |
| 05     | 5      | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 5             |
|        |        | 05     | 5.56   | 05     | 5.6    | 03     | 3.8    | 09     | 9.6    | 6      | 6.8    |        |        |        |        | 5.56          |
| 06     | 6      | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 6             |
|        |        | 06     | 6.35   | 06     | 6.5    | 04     | 4.3    | 11     | 11     | 7      | 7.8    | 11     | 11.2   |        |        | 6.35          |
|        |        | 07     | 7.94   | 08     | 8.1    | 05     | 5.4    | 13     | 13.8   | 9      | 9.7    |        |        |        |        | 7.94          |
| 08     | 8      | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 8             |
| 09     | 9.525  | 09     | 9.525  | 09     | 9.7    | 06     | 6.5    | 16     | 16.5   | 11     | 11.6   | 16     | 16.6   | 16     | 19.7   | 9.525         |
| 10     | 10     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 10            |
| 12     | 12     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 12            |
| 12     | 12.7   | 12     | 12.7   | 12     | 12.9   | 08     | 8.7    | 22     | 22     | 15     | 15.5   | 22     | 22.1   |        |        | 12.7          |
| 15     | 15.875 | 15     | 15.875 | 16     | 16.1   | 10     | 10.9   | 27     | 27.5   | 19     | 19.4   |        |        |        |        | 15.875        |
| 16     | 16     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 16            |
| 19     | 19.05  | 19     | 19.05  | 19     | 19.3   | 13     | 13     | 33     | 33     | 23     | 23.3   |        |        |        |        | 19.05         |
| 20     | 20     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 20            |
|        |        | 22     | 22.225 | 22     | 22.6   |        |        | 38     | 38.5   | 27     | 27.1   |        |        |        |        | 22.225        |
| 25     | 25     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 25            |
| 25     | 25.4   | 25     | 25.4   | 25     | 25.8   |        |        | 44     | 44     | 31     | 31     |        |        |        |        | 25.4          |
| 31     | 31.75  | 31     | 31.75  | 32     | 32.2   |        |        | 55     | 55     | 38     | 38.8   |        |        |        |        | 31.75         |
| 31     | 32     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | --     | 32            |

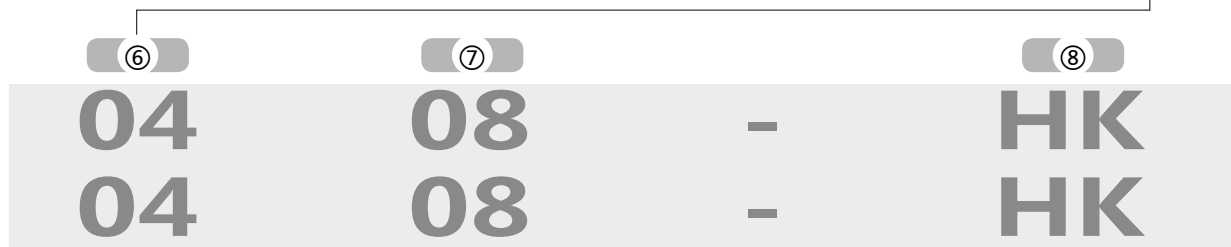


| Insert Shape : H,O,P,S,T,C,E,M,W,R |                                       |         |                                           |         |                     |                                       |         |                                           |         |
|------------------------------------|---------------------------------------|---------|-------------------------------------------|---------|---------------------|---------------------------------------|---------|-------------------------------------------|---------|
| I.C. Size<br>(mm)                  | Tolerance of<br>I.C. Size(Ød)<br>(mm) |         | Tolerance of corner<br>height (m)<br>(mm) |         | I.C. Size<br>(inch) | Tolerance of<br>I.C. Size(Ød)<br>(mm) |         | Tolerance of corner<br>height (m)<br>(mm) |         |
|                                    | Class J,K,<br>L,M,N                   | Class U | Class J,K,<br>L,M,N                       | Class U |                     | Class J,K,<br>L,M,N                   | Class U | Class J,K,<br>L,M,N                       | Class U |
| 6.35                               | ±0.05                                 | ±0.08   | ±0.08                                     | ±0.13   | 0.250               | ±0.002                                | ±0.003  | ±0.003                                    | ±0.005  |
| 9.525                              |                                       |         |                                           |         | 0.375               |                                       |         |                                           |         |
| 12.7                               | ±0.08                                 | ±0.13   | ±0.13                                     | ±0.2    | 0.500               | ±0.003                                | ±0.005  | ±0.005                                    | ±0.008  |
| 15.875                             | ±0.1                                  | ±0.18   | ±0.15                                     | ±0.27   | 0.625               | ±0.004                                | ±0.007  | ±0.006                                    | ±0.011  |
| 19.05                              |                                       |         |                                           |         | 0.750               |                                       |         |                                           |         |
| 25.4                               | ±0.13                                 | ±0.25   | ±0.18                                     | ±0.38   | 1.000               | ±0.005                                | ±0.010  | ±0.007                                    | ±0.015  |
| 31.75                              | ±0.15                                 | ±0.25   | ±0.2                                      | ±0.38   | 1.250               | ±0.006                                | ±0.010  | ±0.008                                    | ±0.015  |
| 32                                 |                                       |         |                                           |         | 1.260               |                                       |         |                                           |         |

| Insert Shape : D             |       |                        |        |                               |        |
|------------------------------|-------|------------------------|--------|-------------------------------|--------|
| Inscribed Circle<br>Size(Ød) |       | Tolerance of I.C. Size |        | Tolerance of corner<br>height |        |
| mm                           | in    | mm                     | in     | mm                            | in     |
| 6.35                         | 0.250 | ±0.05                  | ±0.002 | ±0.11                         | ±0.004 |
| 9.525                        | 0.375 | ±0.05                  | ±0.002 | ±0.11                         | ±0.004 |
| 12.7                         | 0.500 | ±0.08                  | ±0.003 | ±0.15                         | ±0.006 |
| 15.875                       | 0.625 | ±0.10                  | ±0.004 | ±0.18                         | ±0.007 |
| 19.05                        | 0.750 | ±0.10                  | ±0.004 | ±0.18                         | ±0.007 |

| Insert Shape : V             |       |                        |        |                               |        |
|------------------------------|-------|------------------------|--------|-------------------------------|--------|
| Inscribed Circle<br>Size(Ød) |       | Tolerance of I.C. Size |        | Tolerance of corner<br>height |        |
| mm                           | in    | mm                     | in     | mm                            | in     |
| 6.35                         | 0.250 | ±0.05                  | ±0.002 | ±0.15                         | ±0.006 |
| 9.525                        | 0.375 | ±0.05                  | ±0.002 | ±0.15                         | ±0.006 |
| 12.7                         | 0.500 | ±0.08                  | ±0.003 | ±0.20                         | ±0.008 |
| 15.875                       | 0.625 | ±0.10                  | ±0.004 | ±0.27                         | ±0.011 |
| 19.05                        | 0.750 | ±0.10                  | ±0.004 | ±0.27                         | ±0.011 |

| Symbol                 | Corner<br>Height<br>(mm) |
|------------------------|--------------------------|
| 01                     | 1.59                     |
| 02                     | 2.38                     |
| T2                     | 2.78                     |
| 03                     | 3.18                     |
| T3                     | 3.97                     |
| 04                     | 4.76                     |
| 05                     | 5.56                     |
| 06                     | 6.35                     |
| 07                     | 7.94                     |
| 09                     | 9.52                     |
| Ⓒ Corner Height Symbol |                          |



| Inscribed Circle Size(Ød) |
|---------------------------|
| Corner Height(s)          |
| Corner Height(m)          |
|                           |

| Ⓓ Corner Re Symbol |                  |
|--------------------|------------------|
|                    |                  |
| Symbol             | Corner-R<br>(mm) |
| 00                 | 0.03             |
| 02                 | 0.2              |
| 04                 | 0.4              |
| 08                 | 0.8              |
| 12                 | 1.2              |
| 16                 | 1.6              |
| 20                 | 2.0              |
| 24                 | 2.4              |
| 28                 | 2.8              |
| 32                 | 3.2              |

| Ⓔ Chipbreaker Symbol                             |
|--------------------------------------------------|
| Indicates the cutting properties and chipbreaker |

## Application Summary of Turning Grades

| Workpiece                     | ISO | Coated     |            | Uncoated   |  |
|-------------------------------|-----|------------|------------|------------|--|
|                               |     | CVD        | PVD        |            |  |
| <b>P</b><br>Steel             | 01  | GP1105     |            |            |  |
|                               | 10  | GP1115     |            |            |  |
|                               | 20  | NEW GP1120 | GP3125     |            |  |
|                               | 30  | GP1225     |            |            |  |
|                               | 40  | NEW GP1135 |            |            |  |
|                               | 50  |            |            |            |  |
| <b>M</b><br>Stainless Steel   | 01  | GM1115     | GS3115     |            |  |
|                               | 10  |            | GM3215     |            |  |
|                               | 20  | NEW GM1125 | GS3125     |            |  |
|                               | 30  |            | NEW GM3225 |            |  |
|                               | 40  |            | NEW        |            |  |
|                               | 50  |            |            |            |  |
| <b>K</b><br>Cast Iron         | 01  | GK1115     |            |            |  |
|                               | 10  | GK1120     |            |            |  |
|                               | 20  | GK1125     |            |            |  |
|                               | 30  | GK1130     |            |            |  |
|                               | 40  |            |            |            |  |
| <b>N</b><br>Nonferrous Metal  | 01  |            |            | GN9115     |  |
|                               | 10  |            |            |            |  |
|                               | 20  |            |            | GN9120     |  |
|                               | 30  |            |            | NEW GN9130 |  |
|                               | 40  |            |            |            |  |
| <b>S</b><br>HRSA              | 01  |            |            |            |  |
|                               | 10  |            | GS3115     |            |  |
|                               | 20  |            | GS3125     | GS9125     |  |
|                               | 30  |            |            |            |  |
|                               | 40  |            |            |            |  |
| <b>H</b><br>Hardened Material | 01  |            |            |            |  |
|                               | 10  |            |            |            |  |
|                               | 20  |            |            |            |  |
|                               | 30  |            |            |            |  |
|                               | 40  |            |            |            |  |

|  | Cermet | CBN     | Coated CBN | PCD     |
|--|--------|---------|------------|---------|
|  | GP91TF |         |            |         |
|  | GP91TM |         |            |         |
|  | NEW    |         |            |         |
|  |        |         |            |         |
|  |        |         |            |         |
|  | GP91TF |         |            |         |
|  | GP91TM |         |            |         |
|  | NEW    |         |            |         |
|  |        |         |            |         |
|  |        |         |            |         |
|  | GP91TF | BKN115P |            |         |
|  | GP91TM | BKN115S |            |         |
|  | NEW    | BKN125S |            |         |
|  |        | BKN135S |            |         |
|  |        |         |            |         |
|  |        |         |            | DNN105P |
|  |        |         |            | DNN125P |
|  |        |         |            | DNN130P |
|  |        |         |            | DNN135P |
|  |        |         |            |         |
|  |        |         |            |         |
|  |        |         |            |         |
|  |        |         |            |         |
|  |        | BHN115P |            |         |
|  |        | BHN125P |            |         |
|  |        | BHN135P |            |         |
|  |        | BHN105S |            |         |
|  |        | BHN115S |            |         |
|  |        | BHN125S |            |         |
|  |        |         | BHC125P    |         |
|  |        |         | NEW        |         |
|  |        |         | BHC135P    |         |
|  |        |         | NEW        |         |

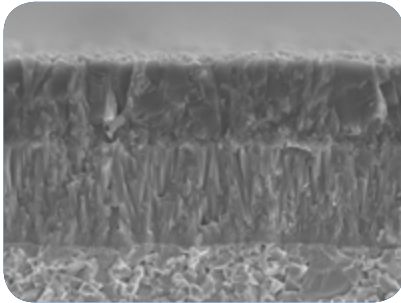
## COATED CARBIDE ( CVD )

• Fine grain Al<sub>2</sub>O<sub>3</sub> coating improve wear-resistance and breakage failure resistance

| Workpiece | Cutting Mode    | Recommended Grade   | Recommended Cutting Speed (m/min) | ISO     | Application Range |
|-----------|-----------------|---------------------|-----------------------------------|---------|-------------------|
| <b>P</b>  | Steel           | Continuous Cutting  | GP1105                            | 200-380 | P01               |
|           |                 |                     | GP1115                            | 150-360 | P10               |
|           |                 | Interrupted Cutting | GP1120                            | 150-360 | P20               |
|           |                 |                     | GP1225                            | 120-280 | P30               |
|           |                 |                     | GP1135                            | 80-180  | P40               |
| <b>M</b>  | Stainless Steel | Continuous Cutting  | GM1115                            | 200-300 | M01               |
|           |                 |                     |                                   |         | M10               |
|           |                 | Interrupted Cutting | GM1125                            | 180-280 | M20               |
|           |                 |                     |                                   |         | M30               |
|           |                 |                     |                                   |         | M40               |
|           |                 |                     |                                   |         |                   |
| <b>K</b>  | Cast Iron       | Continuous Cutting  | GK1115                            | 200-400 | K01               |
|           |                 |                     | GK1120                            |         | K10               |
|           |                 | Interrupted Cutting | GK1125                            | 150-300 | K20               |
|           |                 |                     | GK1130                            |         | K30               |
|           |                 |                     |                                   |         | K40               |
|           |                 |                     |                                   |         |                   |

**NEW**

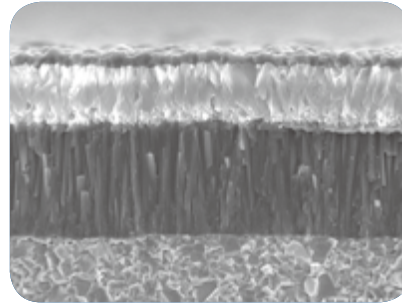
### Extremely wear-resistance Steel Turning CVD Grade-GP1105



- Superfine  $\text{Al}_2\text{O}_3$  and MT-TiCN coating on gradient carbide substrate provide excellent wear resistance.
- Suitable for finishing of steel & alloy steel under stable condition.

**NEW**

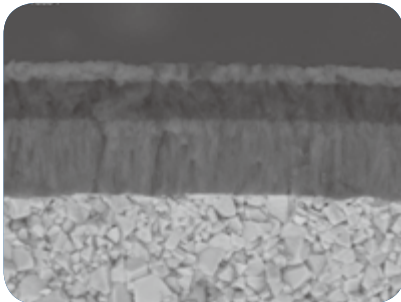
### High versatility Steel Turning CVD Grade-GP1120



- Perfect combination with nano columnar MT-TiCN and  $\text{Al}_2\text{O}_3$ , TiN coating.
- Special edge treatment technology.
- Suitable for continuous to light interrupted cutting of steel & alloy steel.

**NEW**

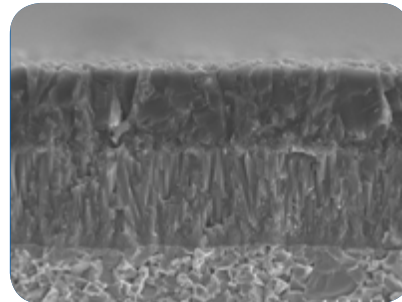
### High abrasive wear resistance Stainless Steel Turning CVD Grade-GM1115



- New thinner  $\text{Al}_2\text{O}_3$  and Nano MT-TiCN coating, including bright yellow TiN coating, on good toughness gradient carbide substrate, with good wear resistance, superior adhesion resistance and longer tool life.
- Application: Suitable for machining of stainless steels in high-speed continuous finishing conditions.

**NEW**

### High versatility Cast Iron Turning CVD Grade-GK1120



- MT-TiCN and thick  $\text{Al}_2\text{O}_3$  coated on micro-grain carbide substrate. Special post-processing with excellent edge strength and ensure the stability of cutting.
- Application: Suitable for continuous and light interrupted cutting action of nodular cast iron.

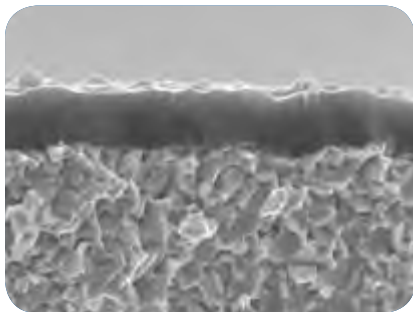
## COATED CARBIDE

• Exclusive PVD nano-coating improve comprehensive properties of cutting insert.

| Workpiece |                       | Cutting Mode        | Recommended Grade | Recommended Cutting Speed (m/min) | ISO | Application Range |                   |                   |
|-----------|-----------------------|---------------------|-------------------|-----------------------------------|-----|-------------------|-------------------|-------------------|
| P         | Steel                 | Continuous Cutting  | GP3125            | 100-250                           | P01 | <div>GP3125</div> |                   |                   |
|           |                       |                     |                   |                                   | P10 |                   |                   |                   |
|           |                       | Interrupted Cutting |                   |                                   | P20 |                   |                   |                   |
|           |                       |                     |                   |                                   | P30 |                   |                   |                   |
|           |                       |                     |                   |                                   | P40 |                   |                   |                   |
| M         | Stainless Steel       | Continuous Cutting  | GS3115            | 120-250                           | M01 | <div>GS3115</div> | <div>GM3215</div> | <div>GM3225</div> |
|           |                       |                     | GM3215            | 100-220                           | M10 |                   |                   |                   |
|           |                       | Interrupted Cutting | GM3225            | 100-220                           | M20 |                   |                   |                   |
|           |                       |                     |                   | M30                               |     |                   |                   |                   |
|           |                       |                     |                   | M40                               |     |                   |                   |                   |
|           |                       |                     |                   |                                   |     |                   |                   |                   |
| S         | Heat Resistance Alloy | Continuous Cutting  | GS3115            | 40-70                             | S01 | <div>GS3115</div> | <div>GS3125</div> |                   |
|           |                       |                     | GS3125            | 45-65                             | S10 |                   |                   |                   |
|           |                       | Interrupted Cutting | GS3125            | 45-65                             | S20 |                   |                   |                   |
|           |                       |                     |                   |                                   | S30 |                   |                   |                   |
|           |                       |                     |                   |                                   | S40 |                   |                   |                   |
|           |                       |                     |                   |                                   |     |                   |                   |                   |

**NEW**

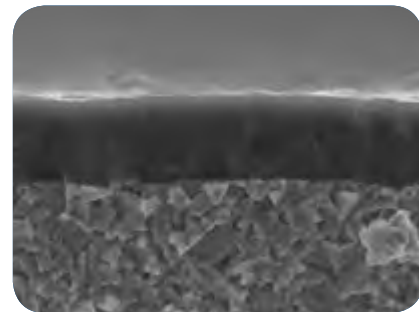
High abrasive wear resistance Stainless Steel Turning PVD Grade-GM3215



- New TiAlN coating on submicron substrate with strong adhesion, superior wear resistance and good heat resistance.
- Application: Suitable for finishing stainless steel and high-temperature alloy on stable conditions.

**NEW**

High versatility Stainless Steel Turning PVD Grade-GM3225



- Optimized combination of TiAlN coating and micro-grain carbide substrate with high Co content provide superior adhesion resistance and toughness.
- Application: Suitable for semi-finishing of stainless steels and threading of general materials.



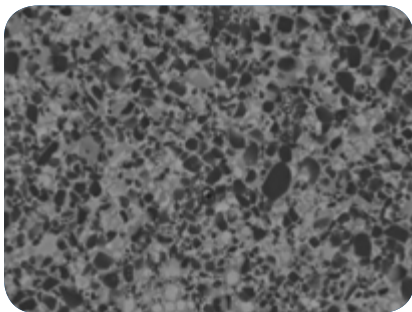
## Cermet

• The specially optimized matrix largely improves wear resistance and anti-breakage property .Great surface quality in high speed application.

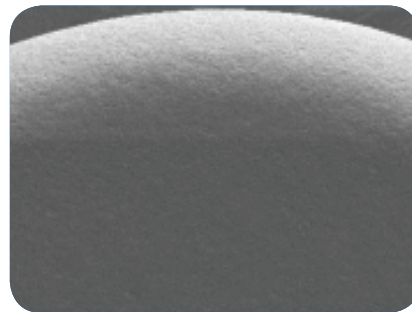
| Workpiece | Cutting Mode        | Recommended Grade | Recommended Cutting Speed (m/min) | ISO | Application Range |
|-----------|---------------------|-------------------|-----------------------------------|-----|-------------------|
| <b>P</b>  | Steel               | GP91TF            | (260)<br>180-380                  | P01 | GP91TF            |
|           |                     |                   |                                   | P10 |                   |
|           | Interrupted Cutting | GP91TM            | (230)<br>150-350                  | P20 | GP91TM            |
|           |                     |                   |                                   | P30 |                   |
| <b>M</b>  | Stainless Steel     | GP91TF            | (200)<br>150-280                  | M01 | GP91TF            |
|           |                     |                   |                                   | M10 |                   |
|           | Finishing           | GP91TM            | (180)<br>130-250                  | M20 | GP91TM            |
|           |                     |                   |                                   |     |                   |
| <b>K</b>  | Cast Iron           | GP91TF            | (230)<br>130-330                  | K01 | GP91TF            |
|           |                     |                   |                                   | K10 |                   |
|           | Finishing           | GP91TM            | (210)<br>100-300                  | K20 | GP91TM            |
|           |                     |                   |                                   |     |                   |



### Finishing and Semi-finishing Machining Turning Grade-GP91TM



- TiCN-based cermet
- Achieving stability and longer tool life with excellent wear resistance and fracture resistance.



- Special surface treatment
- Improved micro-chipping resistance lead to better surface roughness, and enhance wear resistance.

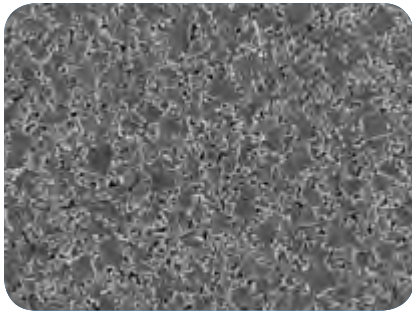
## CARBIDE

- Cemented carbide substrate with special surface treatment suitable for cutting of copper, aluminum alloys and non-metal materials

| Workpiece |                   | Cutting Mode       | Recommended Grade   | Recommended Cutting Speed (m/min) | ISO      | Application Range                                              |     |  |
|-----------|-------------------|--------------------|---------------------|-----------------------------------|----------|----------------------------------------------------------------|-----|--|
| N         | Nonferrous Metals | Continuous Cutting | GN9115              | 800-1600                          | P01      | <div><div>GN9115</div><div>GN9120</div><div>GN9130</div></div> |     |  |
|           |                   |                    | Interrupted Cutting | GN9120                            | 700-1500 |                                                                | P10 |  |
|           |                   | P20                |                     |                                   |          |                                                                |     |  |
|           |                   | GN9130             |                     | 650-1400                          | P30      |                                                                |     |  |
|           |                   |                    |                     |                                   | P40      |                                                                |     |  |

**NEW**

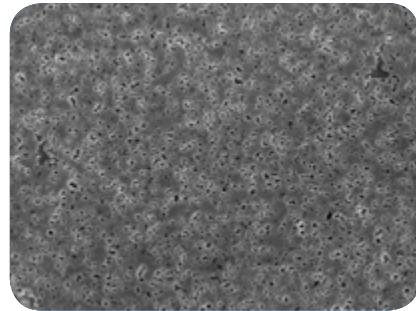
High versatility aluminum alloys Turning  
Grade-GN9120



- Fine grain cemented carbide substrate with special surface treatment have superior wear resistance and adhesion resistance.
- Application: Suitable for cutting of copper, aluminum alloys and non-ferrous materials in high speed conditions.

**NEW**

High toughness aluminum alloys Turning  
Grade-GN9130



- Micro-fine grain cemented carbide substrate have balance between superior wear resistance and toughness.
- Application: Suitable for roughing of copper, aluminum alloys And non-metallic material.

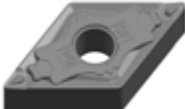
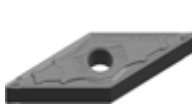
## The Working Conditions of Turning Inserts

| Workpiece material                                                                  | Geometry |      | Working Condition                                                                 |                                                                                    |                                                                                     |
|-------------------------------------------------------------------------------------|----------|------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                                                                     |          |      |  |  |  |
|                                                                                     |          |      | Continuous                                                                        | Light Interrupted                                                                  | Interrupted                                                                         |
|    | Negative | PS   | GP91TF                                                                            |                                                                                    |                                                                                     |
|                                                                                     |          | GF   | GP1115/GP91TF                                                                     | GP1115/GP1225                                                                      | GP1225                                                                              |
|                                                                                     |          | QF   | GP1105/GP1115/GP91TF/<br>GP91TM                                                   | GP1115/GP1120/GP1225/GP91TM                                                        | GP1120/GP1225                                                                       |
|                                                                                     |          | GM   | GP1115                                                                            | GP1115/GP1225                                                                      | GP1225                                                                              |
|                                                                                     |          | QM   | GP1105/GP1115/GP91TF/<br>GP91TM                                                   | GP1115/GP1120/GP1225/GP91TM                                                        | GP1120/GP1225                                                                       |
|                                                                                     |          | TS   | GP91TM                                                                            | GP91TM                                                                             |                                                                                     |
|                                                                                     |          | SV   | GP1115/GP91TF/GP91TM                                                              | GP1115/GP1120/GP1225/GP91TM                                                        | GP1120/GP1225                                                                       |
|                                                                                     |          | QR   | GP1105/GP1115                                                                     | GP1225                                                                             | GP1135                                                                              |
|                                                                                     |          | QH   | GP1105/GP1115                                                                     | GP1225                                                                             | GP1135                                                                              |
|                                                                                     | Positive | PS   | GP91TF                                                                            |                                                                                    |                                                                                     |
|                                                                                     |          | GS   | GP91TF                                                                            |                                                                                    |                                                                                     |
|                                                                                     |          | MM   | GP1105/GP91TF/GP91TM                                                              | GP1115/GP91TM                                                                      | GP1225/GP3125                                                                       |
|                                                                                     |          | GP   | GP1115/GP91TF/GP91TM                                                              | GP1115/GP1120/GP1225/GP3125/<br>GP91TM                                             | GP1120/GP1225/<br>GP3125                                                            |
|                                                                                     |          | KM   | GP1115                                                                            | GP1115/GP1225                                                                      | GP1225                                                                              |
|  | Negative | PS   | GS3115/GS3125                                                                     |                                                                                    |                                                                                     |
|                                                                                     |          | SF   | GS3115                                                                            |                                                                                    |                                                                                     |
|                                                                                     |          | SM   | GM1115/GM1125/GP91TF/<br>GP91TM                                                   | GM3215/GM3225/GP91TM                                                               | GM3225                                                                              |
|                                                                                     | Positive | PS   | GS3125                                                                            | GM3215/GM3225                                                                      | GM3225                                                                              |
|                                                                                     |          | GS   | GS3125                                                                            |                                                                                    |                                                                                     |
|                                                                                     |          | MM   | GM1115/GM1125                                                                     | GM3215/GM3225                                                                      | GM3225                                                                              |
|                                                                                     |          | GP   | GM1115/GM1125                                                                     | GM3215/GM3225                                                                      | GM3225                                                                              |
|  | Negative | UK   | GK1115                                                                            | GK1115/GK1120                                                                      | GK1125/GK1130                                                                       |
|                                                                                     |          | HK   | GK1115                                                                            | GK1115/GK1120                                                                      | GK1125/GK1130                                                                       |
|                                                                                     |          | Flat | GK1115                                                                            | GK1115/GK1120                                                                      | GK1125/GK1130                                                                       |
|                                                                                     | Positive | GP   | GK1115                                                                            | GK1115/GK1125                                                                      | GK1125                                                                              |
|                                                                                     |          | KM   | GK1115                                                                            | GK1115/GK1125                                                                      | GK1125                                                                              |
|  | Positive | AL   | GN9115                                                                            | GN9120/GN9130                                                                      | GN9120/GN9130                                                                       |

## Features of Turning Inserts

### Turning Inserts ( Negative )

| Geometry | Features                                                                                                                                                                                                                                                                                                | Application Range                                                                                                                                                                                                                                                                  | Cross Section Geometry                                                                                                                       |  |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--|
| PS       | <ul style="list-style-type: none"> <li>• PS for finishing of steel(mild steel) and stainless steel.</li> <li>• Sharp edge reduces cutting force, enables high quality surface.</li> <li>• Low feed,small cutting depth.</li> </ul>                                                                      | <p>Graph showing Application Range for PS insert. The y-axis is <math>a_p</math> [mm] (0 to 3) and the x-axis is <math>f</math> [mm/rev] (0 to 0.3). The shaded region is a narrow band at low <math>a_p</math> and low <math>f</math>.</p>                                        | <p>Graph showing Cross Section Geometry for PS insert. The angle is <math>16^\circ</math> and the cutting depth is <math>0.08</math> mm.</p> |  |
| GF       | <ul style="list-style-type: none"> <li>• GF for finishing of general steel and alloy steel.</li> <li>• Sharp tool nose and strong cutting edge.</li> <li>• Good chip control under small cutting depth.</li> </ul>                                                                                      | <p>Graph showing Application Range for GF insert. The y-axis is <math>a_p</math> [mm] (0 to 4) and the x-axis is <math>f</math> [mm/rev] (0 to 0.4). The shaded region is a rectangle from <math>f=0.1</math> to <math>0.35</math> and <math>a_p=1</math> to <math>2.5</math>.</p> | <p>Graph showing Cross Section Geometry for GF insert. The angle is <math>14^\circ</math> and the cutting depth is <math>0.12</math> mm.</p> |  |
| QF       | <ul style="list-style-type: none"> <li>• QF for finishing of general steel and alloy steel.</li> <li>• Variable range angle provides enough edge strength at different depth of cut.</li> <li>• Curved edge,sharp cutting edge,good chip control and fine surface finish due to curved edge.</li> </ul> | <p>Graph showing Application Range for QF insert. The y-axis is <math>a_p</math> [mm] (0 to 4) and the x-axis is <math>f</math> [mm/rev] (0 to 0.4). The shaded region is a rectangle from <math>f=0.1</math> to <math>0.35</math> and <math>a_p=1</math> to <math>2.5</math>.</p> | <p>Graph showing Cross Section Geometry for QF insert. The angle is <math>15^\circ</math> and the cutting depth is <math>0.12</math> mm.</p> |  |
| SF       | <ul style="list-style-type: none"> <li>• SF for stainless steel and Heat Resistance Super Alloy ( HRSA )</li> <li>• Sharp edge due to results in low cutting forces particularly for thin wall structures and extended shafts.</li> </ul>                                                               | <p>Graph showing Application Range for SF insert. The y-axis is <math>a_p</math> [mm] (0 to 4) and the x-axis is <math>f</math> [mm/rev] (0 to 0.4). The shaded region is a rectangle from <math>f=0.1</math> to <math>0.35</math> and <math>a_p=1</math> to <math>2.5</math>.</p> | <p>Graph showing Cross Section Geometry for SF insert. The angle is <math>18^\circ</math>.</p>                                               |  |
| GM       | <ul style="list-style-type: none"> <li>• GM for semi-finishing of general steel and alloy steel.</li> <li>• Strong flat cutting edge.</li> </ul>                                                                                                                                                        | <p>Graph showing Application Range for GM insert. The y-axis is <math>a_p</math> [mm] (0 to 4) and the x-axis is <math>f</math> [mm/rev] (0 to 0.4). The shaded region is a rectangle from <math>f=0.1</math> to <math>0.35</math> and <math>a_p=2</math> to <math>3.5</math>.</p> | <p>Graph showing Cross Section Geometry for GM insert. The angle is <math>18^\circ</math> and the cutting depth is <math>0.2</math> mm.</p>  |  |

|  | 80° Rhombic                                                                         | 55° Rhombic                                                                         | 90° Square                                                                          | 60° Regular Triangle                                                                | 35° Rhombic                                                                           | 80° Trigon                                                                            |
|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |                                                                                     |                                                                                     |                                                                                     |    |                                                                                       |                                                                                       |
|  |                                                                                     |                                                                                     |                                                                                     | TNGGr/L-PS<br>P035                                                                  |                                                                                       |                                                                                       |
|  |    |    |    |    |    |    |
|  | CNMG-GF<br>P024                                                                     | DNMG-GF<br>P028                                                                     | SNMG-GF<br>P031                                                                     | TNMG-GF<br>P035                                                                     | VNMG-GF<br>P038                                                                       | WNMG-GF<br>P039                                                                       |
|  |  |  |  |  |  |  |
|  | CNMG-QF<br>P024                                                                     | DNMG-QF<br>P028                                                                     | SNMG-QF<br>P031                                                                     | TNMG-QF<br>P035                                                                     | VNMG-QF<br>P038                                                                       | WNMG-QF<br>P039                                                                       |
|  |  |  |  |  |  |  |
|  | CNMG-SF<br>P024                                                                     | DNMG-SF<br>P028                                                                     | SNMG-SF<br>P031                                                                     | TNMG-SF<br>P035                                                                     | VNMG-SF<br>P038                                                                       | WNMG-SF<br>P039                                                                       |
|  |  |  |  |  |  |  |
|  | CNMG-GM<br>P024                                                                     | DNMG-GM<br>P028                                                                     | SNMG-GM<br>P031                                                                     | TNMG-GM<br>P035                                                                     | VNMG-GM<br>P038                                                                       | WNMG-GM<br>P039                                                                       |

## Features of Turning Inserts

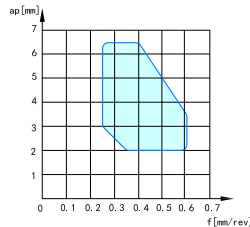
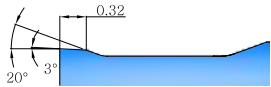
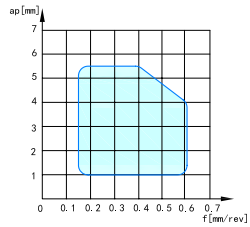
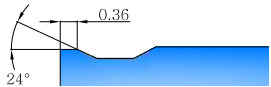
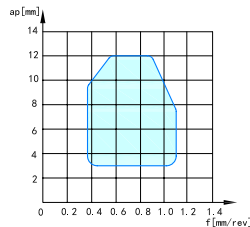
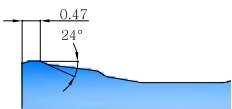
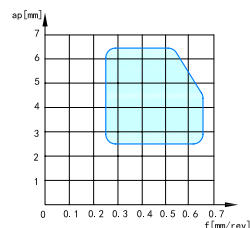
### Turning Inserts ( Negative )

| Geometry | Features                                                                                                                                                                                                                                                                    | Application Range | Cross Section Geometry |  |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|--|
| QM       | <ul style="list-style-type: none"> <li>• QM for semi-finishing of general steel and alloy steel.</li> <li>• Gradient and waved hump wide applicable geometry range.</li> </ul>                                                                                              |                   |                        |  |
| TS       | <ul style="list-style-type: none"> <li>• TS for semi-finishing of general steel and alloy steel.</li> <li>• Big rake, smooth chip evacuation.</li> <li>• Variable groove depth design, with super chip removal.</li> </ul>                                                  |                   |                        |  |
| SV       | <ul style="list-style-type: none"> <li>• SV for semi-finishing of general steel and alloy steel.</li> <li>• Throughout groove and wide chip groove make cutting available in unstable working conditions.</li> <li>• Long chip groove allows high depth of cuts.</li> </ul> |                   |                        |  |
| SM       | <ul style="list-style-type: none"> <li>• SM for medium cutting of stainless steel and mild steel.</li> <li>• Sharp cutting edge.</li> </ul>                                                                                                                                 |                   |                        |  |
| UK       | <ul style="list-style-type: none"> <li>• UK for machining cast iron.</li> <li>• Medium cutting for general conditions.</li> </ul>                                                                                                                                           |                   |                        |  |

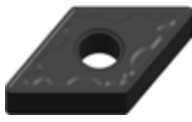
|  | 80° Rhombic                                                                         | 55° Rhombic                                                                         | 90° Square                                                                          | 60° Regular Triangle                                                                | 35° Rhombic                                                                           | 80° Trigon                                                                            |
|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |    |    |    |    |    |    |
|  | CNMG-QM<br>P025                                                                     | DNMG-QM<br>P029                                                                     | SNMG-QM<br>P032                                                                     | TNMG-QM<br>P036                                                                     | VNMG-QM<br>P038                                                                       | WNMG-QM<br>P039                                                                       |
|  |                                                                                     |    |                                                                                     |    |                                                                                       |                                                                                       |
|  |                                                                                     | DNMGr/L-TS<br>P029                                                                  |                                                                                     | TNMGr/L-TS<br>P036                                                                  |                                                                                       |                                                                                       |
|  |  |  |  |  |                                                                                       |                                                                                       |
|  | CNMGr/L-SV<br>P025                                                                  | DNMGr/L-SV<br>P029                                                                  | SNMGr/L-SV<br>P032                                                                  | TNMGr/L-SV<br>P036                                                                  |                                                                                       |                                                                                       |
|  |  |  |  |  |  |  |
|  | CNMG-SM<br>P025                                                                     | DNMG-SM<br>P029                                                                     | SNMG-SM<br>P032                                                                     | TNMG-SM<br>P036                                                                     | VNMG-SM<br>P038                                                                       | WNMG-SM<br>P040                                                                       |
|  |  |  |  |  |  |  |
|  | CNMG-UK<br>P026                                                                     | DNMG-UK<br>P030                                                                     | SNMG-UK<br>P033                                                                     | TNMG-UK<br>P036                                                                     | VNMG-UK<br>P038                                                                       | WNMG-UK<br>P040                                                                       |

## Features of Turning Inserts

### Turning Inserts ( Negative )

| Geometry | Features                                                                                                                                                                                                                                                                                                                                              | Application Range                                                                    | Cross Section Geometry                                                                |  |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| QR       | <ul style="list-style-type: none"> <li>• QR for rough cutting action of carbon steel, cast steel and alloy steel.</li> <li>• Variable rake angle and land provides enough edge sharpness and strength at different depth of cut.</li> </ul>                                                                                                           |    |    |  |
| HK       | <ul style="list-style-type: none"> <li>• HK for cast iron heavy cutting.</li> <li>• Strong cutting edge and wide land for improved performance.</li> </ul>                                                                                                                                                                                            |   |    |  |
| QH       | <ul style="list-style-type: none"> <li>• QH for heavy cutting action of carbon steel, cast steel and alloy steel.</li> <li>• Single-sided Chip breaker.</li> <li>• Variable land and progressive chip breaker space, generating lower cutting force.</li> <li>• Straight edgeline with reinforcement balances strength and cutting action.</li> </ul> |  |  |  |
| None     | <ul style="list-style-type: none"> <li>• Without chipbreaker.</li> <li>• Flat-top.</li> <li>• Stable placement.</li> <li>• Strong edge design for intermittent cutting conditions.</li> </ul>                                                                                                                                                         |  |  |  |



|  | 80° Rhombic                                                                         | 55° Rhombic                                                                         | 90° Square                                                                          | 60° Regular Triangle                                                                | 35° Rhombic                                                                         | 80° Trigon                                                                            |
|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |    |    |    |    |                                                                                     |    |
|  | CNMG-QR<br>P026                                                                     | DNMG-QR<br>P030                                                                     | SNMG-QR<br>P033                                                                     | TNMG-QR<br>P037                                                                     |                                                                                     | WNMG-QR<br>P040                                                                       |
|  |    |    |    |    |  |    |
|  | CNMG-HK<br>P026                                                                     | DNMG-HK<br>P030                                                                     | SNMG-HK<br>P033                                                                     | TNMG-HK<br>P037                                                                     | VNMG-HK<br>P038                                                                     | WNMG-HK<br>P040                                                                       |
|  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                       |
|  | CNMM-QH<br>P027                                                                     |                                                                                     | SNMM-QH<br>P034                                                                     |                                                                                     |                                                                                     |                                                                                       |
|  |  |  |  |  |                                                                                     |  |
|  | CNMA<br>P027                                                                        | DNMA<br>P030                                                                        | SNMA<br>P034                                                                        | TNMA<br>P037                                                                        |                                                                                     | WNMA<br>P040                                                                          |

## Features of Turning Inserts

Turning Inserts ( Positive )

5° Clearance Angle

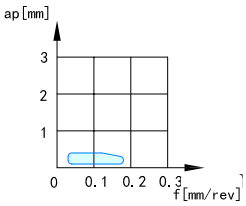
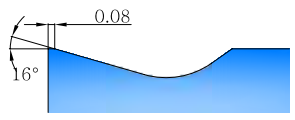
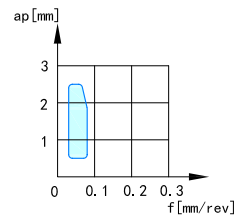
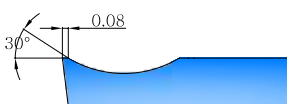
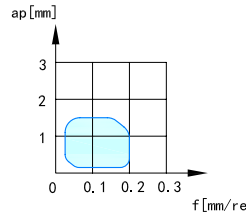
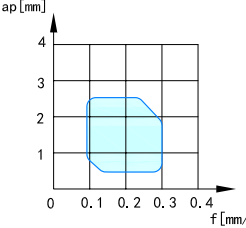
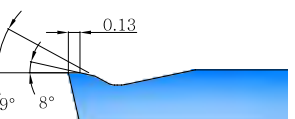
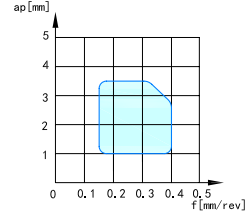
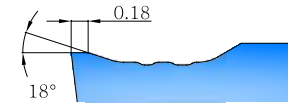
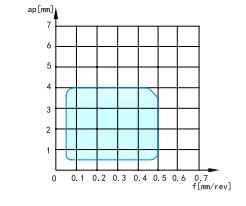
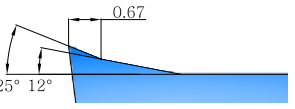
| Geometry | Features                                                                                                                                                                                                                                                                                                                                                | Application Range | Cross Section Geometry |  |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|--|
| PS       | <ul style="list-style-type: none"> <li>• PS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,small cutting depth.</li> </ul>                                                                                                                     |                   |                        |  |
| GS       | <ul style="list-style-type: none"> <li>• GS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,large cutting depth</li> </ul>                                                                                                                      |                   |                        |  |
| MM       | <ul style="list-style-type: none"> <li>• MM for light cutting of general steel, alloy steel and stainless steel.</li> <li>• Sharp cutting edge, enables high surface quality.</li> <li>• Double rake angle,ensure sharp cutting edge and enough strength.</li> </ul>                                                                                    |                   |                        |  |
| GP       | <ul style="list-style-type: none"> <li>• GP for light cutting of general steel, alloy steel,stainless steel and cast iron.</li> <li>• Strong tool nose due to flat cutting edge and sharp cutting edge due to double rake angle.</li> <li>• Steady chip control when the depth of cut is less than 1mm due to Peninsula-shaped chip breaker.</li> </ul> |                   |                        |  |
| KM       | <ul style="list-style-type: none"> <li>• KM for Semi-finishing and roughing of general steel, alloy steel and cast iron.</li> <li>• Variable land design, combine sharpness with fracture resistance.</li> <li>• Large shallow groove design, smooth cutting, easily evacuate chips.</li> </ul>                                                         |                   |                        |  |

|  | 80° Rhombic | 55° Rhombic | 90° Square | 60° Regular Triangle | 35° Rhombic                                                                           | 80° Trigon |
|--|-------------|-------------|------------|----------------------|---------------------------------------------------------------------------------------|------------|
|  |             |             |            |                      |    |            |
|  |             |             |            |                      | VBET <i>R/L</i> -PS                                                                   |            |
|  |             |             |            |                      | P052                                                                                  |            |
|  |             |             |            |                      |    |            |
|  |             |             |            |                      | VBET <i>R/L</i> -GS                                                                   |            |
|  |             |             |            |                      | P052                                                                                  |            |
|  |             |             |            |                      |  |            |
|  |             |             |            |                      | VBMT-MM                                                                               |            |
|  |             |             |            |                      | P052                                                                                  |            |
|  |             |             |            |                      |  |            |
|  |             |             |            |                      | VBMT-GP                                                                               |            |
|  |             |             |            |                      | P052                                                                                  |            |
|  |             |             |            |                      |  |            |
|  |             |             |            |                      | VBMT-KM                                                                               |            |
|  |             |             |            |                      | P052                                                                                  |            |

## Features of Turning Inserts

Turning Inserts ( Positive )

7° Clearance Angle

| Geometry | Features                                                                                                                                                                                                                                                                                                                                                 | Application Range                                                                    | Cross Section Geometry                                                                |  |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| PS       | <ul style="list-style-type: none"> <li>• PS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,small cutting depth.</li> </ul>                                                                                                                      |    |    |  |
| GS       | <ul style="list-style-type: none"> <li>• GS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,large cutting depth.</li> </ul>                                                                                                                      |    |    |  |
| MM       | <ul style="list-style-type: none"> <li>• MM for light cutting of general steel, alloy steel and stainless steel.</li> <li>• Sharp cutting edge, enables high surface quality.</li> <li>• Double rake angle,ensure sharp cutting edge and enough strength.</li> </ul>                                                                                     |  |  |  |
| GP       | <ul style="list-style-type: none"> <li>• GP for light cutting of general steel, alloy steel, stainless steel and cast iron.</li> <li>• Strong tool nose due to flat cutting edge and sharp cutting edge due to double rake angle.</li> <li>• Steady chip control when the depth of cut is less than 1mm due to Peninsula-shaped chip breaker.</li> </ul> |  |  |  |
| KM       | <ul style="list-style-type: none"> <li>• KM for Semi-finishing and roughing of general steel, alloy steel and cast iron.</li> <li>• Variable land design, combine sharpness with fracture resistance.</li> <li>• Large shallow groove design, smooth cutting, easily evacuate chips.</li> </ul>                                                          |  |  |  |
| AL       | <ul style="list-style-type: none"> <li>• AL for aluminum alloy cutting.</li> <li>• Sharp tool nose due to large rake angle.</li> </ul>                                                                                                                                                                                                                   |  |  |  |

|  | 80° Rhombic                                                                         | 55° Rhombic                                                                         | 90° Square                                                                          | 60° Regular Triangle                                                                | 35° Rhombic                                                                           | 80° Trigon                                                                            |
|--|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |    |    |                                                                                     |    |    |                                                                                       |
|  | CCET <i>R/L</i> -PS                                                                 | DCET <i>R/L</i> -PS                                                                 |                                                                                     | TCET <i>R/L</i> -PS                                                                 | VCET <i>R/L</i> -PS                                                                   |                                                                                       |
|  | P041                                                                                | P044                                                                                |                                                                                     | P048                                                                                | P053                                                                                  |                                                                                       |
|  |    |    |                                                                                     |    |    |                                                                                       |
|  | CCET <i>R/L</i> -GS                                                                 | DCET <i>R/L</i> -GS                                                                 |                                                                                     | TCET <i>R/L</i> -GS                                                                 | VCET <i>R/L</i> -GS                                                                   |                                                                                       |
|  | P041                                                                                | P044                                                                                |                                                                                     | P048                                                                                | P053                                                                                  |                                                                                       |
|  |  |  |  |  |                                                                                       |                                                                                       |
|  | CCMT-MM                                                                             | DCMT-MM                                                                             | SCMT-MM                                                                             | TCMT-MM                                                                             |                                                                                       |                                                                                       |
|  | P042                                                                                | P045                                                                                | P046                                                                                | P049                                                                                |                                                                                       |                                                                                       |
|  |  |  |  |  |  |  |
|  | CCMT-GP                                                                             | DCMT-GP                                                                             | SCMT-GP                                                                             | TCMT-GP                                                                             | VCMT-GP                                                                               | WCMT-GP                                                                               |
|  | P042                                                                                | P045                                                                                | P046                                                                                | P049                                                                                | P053                                                                                  | P055                                                                                  |
|  |  |  |  |  |  |                                                                                       |
|  | CCMT-KM                                                                             | DCMT-KM                                                                             | SCMT-KM                                                                             | TCMT-KM                                                                             | VCMT-KM                                                                               |                                                                                       |
|  | P042                                                                                | P045                                                                                | P046                                                                                | P049                                                                                | P053                                                                                  |                                                                                       |
|  |  |  |  |  |  |                                                                                       |
|  | CCGX-AL                                                                             | DCGX-AL                                                                             | SCGX-AL                                                                             | TCGX-AL                                                                             | VCGX-AL                                                                               |                                                                                       |
|  | P042                                                                                | P045                                                                                | P046                                                                                | P049                                                                                | P053                                                                                  |                                                                                       |

## Features of Turning Inserts

### Turning Inserts ( Positive )

11° Clearance Angle

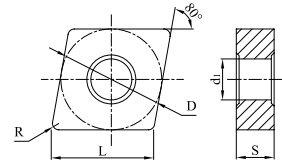
| Geometry | Features                                                                                                                                                                                                                                                                                                                                                                                                   | Application Range | Cross Section Geometry |  |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|--|
| PS       | <ul style="list-style-type: none"> <li>• PS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,small cutting depth.</li> </ul>                                                                                                                                                                        |                   |                        |  |
| GS       | <ul style="list-style-type: none"> <li>• GS for finishing of steels(mild steels) and stainless steel.</li> <li>• Sharp edge reduces cutting force,enables high quality surface.</li> <li>• Low feed,large cutting depth</li> </ul>                                                                                                                                                                         |                   |                        |  |
| MM       | <ul style="list-style-type: none"> <li>• MM for light cutting of general steel, alloy steel and stainless steel.</li> <li>• Sharp cutting edge, enables high surface quality.</li> <li>• Double rake angle,ensure sharp cutting edge and enough strength.</li> </ul>                                                                                                                                       |                   |                        |  |
| GP       | <ul style="list-style-type: none"> <li>• GP for light cutting of general steel, alloy steel,stainless steel and cast iron</li> <li>• Strong tool nosedue to flat cutting edge and sharp cutting edge due to double rake angle.</li> <li>• Steady chip control when the depth of cut is less than 1mmdue to peninsula-shaped chip breaker.</li> <li>• Sharp tool nose due to 11°clearance angle.</li> </ul> |                   |                        |  |

|  | 80° Rhombic                                                                         | 55° Rhombic | 90° Square                                                                          | 60° Regular Triangle                                                                | 35° Rhombic                                                                        | 80° Trigon |
|--|-------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------|
|  |                                                                                     |             |                                                                                     |    |  |            |
|  |                                                                                     |             |                                                                                     | TPET <small>R/L</small> -PS<br>TPEH <small>R</small> -PS                            | VPET <small>R/L</small> -PS                                                        |            |
|  |                                                                                     |             |                                                                                     | P050                                                                                | P054                                                                               |            |
|  |                                                                                     |             |                                                                                     |    |  |            |
|  |                                                                                     |             |                                                                                     | TPET <small>R/L</small> -GS<br>TPEH <small>R/L</small> -GS                          | VPET <small>R/L</small> -GS                                                        |            |
|  |                                                                                     |             |                                                                                     | P050                                                                                | P054                                                                               |            |
|  |                                                                                     |             |                                                                                     |  |                                                                                    |            |
|  |                                                                                     |             |                                                                                     | TPMT-MM                                                                             |                                                                                    |            |
|  |                                                                                     |             |                                                                                     | P051                                                                                |                                                                                    |            |
|  |  |             |  |  |                                                                                    |            |
|  | CPMT-GP<br>CPGT-GP                                                                  |             | SPMT-GP                                                                             | TPMT-GP                                                                             |                                                                                    |            |
|  | P043                                                                                |             | P047                                                                                | P051                                                                                |                                                                                    |            |

## Turning Inserts(Negative)

**CN□□**

Rhombic 80° with Hole



| Ordering Code                                                                       |               | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        | Cermet |        |        |        |        |  |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--|
|                                                                                     |               | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |  |
|    | CNMG090308-GF | 9.7           | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120404-GF | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | CNMG120408-GF | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | CNMG120412-GF | 12.9          | 12.7   | 4.76 | 5.16 | 1.2 |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|   | CNMG090304-QF | 9.7           | 9.525  | 3.18 | 3.81 | 0.4 |        | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○      |  |
|                                                                                     | CNMG090308-QF | 9.7           | 9.525  | 3.18 | 3.81 | 0.8 |        | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○      |  |
|                                                                                     | CNMG120404-QF | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        | ●      | ●      |  |
|                                                                                     | CNMG120408-QF | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        | ○      | ●      |  |
|  | CNMG120404-SF | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120408-SF | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     |               |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     |               |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|  | CNMG090308-GM | 9.7           | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120404-GM | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120408-GM | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120412-GM | 12.9          | 12.7   | 4.76 | 5.16 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG120416-GM | 12.9          | 12.7   | 4.76 | 5.16 | 1.6 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG160608-GM | 16.1          | 15.875 | 6.35 | 6.35 | 0.8 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG160612-GM | 16.1          | 15.875 | 6.35 | 6.35 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG160616-GM | 16.1          | 15.875 | 6.35 | 6.35 | 1.6 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG190608-GM | 19.3          | 19.05  | 6.35 | 7.94 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG190612-GM | 19.3          | 19.05  | 6.35 | 7.94 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                     | CNMG190616-GM | 19.3          | 19.05  | 6.35 | 7.94 | 1.6 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |  |

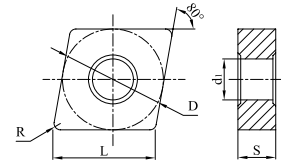
● Stock ○ Available Upon Order



## Turning Inserts(Negative)

**CN□□**

Rhombic 80° with Hole



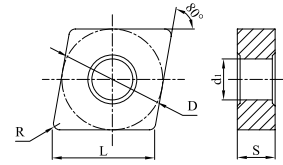
| Ordering Code                                                                       |                | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |
|-------------------------------------------------------------------------------------|----------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                     |                | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|   | CNMG090304-QM  | 9.7           | 9.525  | 3.18 | 3.81 | 0.4 |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | CNMG090308-QM  | 9.7           | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | CNMG120404-QM  | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 | ●      | ●      | ○      | ●      |        |        |        | ○      |        |        |        |        |        |        |          |        |        |        |        |        | ●      | ● |
|                                                                                     | CNMG120408-QM  | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |          |        |        |        |        |        | ●      | ● |
|                                                                                     | CNMG120412-QM  | 12.9          | 12.7   | 4.76 | 5.16 | 1.2 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG120416-QM  | 12.9          | 12.7   | 4.76 | 5.16 | 1.6 | ●      | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG160608-QM  | 16.1          | 15.875 | 6.35 | 6.35 | 0.8 | ○      | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG160612-QM  | 16.1          | 15.875 | 6.35 | 6.35 | 1.2 | ●      | ●      | ○      | ○      |        |        |        | ○      |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190608-QM  | 19.3          | 19.05  | 6.35 | 7.94 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190612-QM  | 19.3          | 19.05  | 6.35 | 7.94 | 1.2 | ●      | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190616-QM  | 19.3          | 19.05  | 6.35 | 7.94 | 1.6 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | CNMG120408R-SV | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | CNMG120408L-SV | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     |                |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |                |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | CNMG090304-SM  | 9.7           | 9.525  | 3.18 | 3.81 | 0.4 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG09T304-SM  | 9.7           | 9.525  | 3.97 | 3.81 | 0.4 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG090308-SM  | 9.7           | 9.525  | 3.18 | 3.81 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG09T308-SM  | 9.7           | 9.525  | 3.97 | 3.81 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG120404-SM  | 12.9          | 12.7   | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        | ●      | ○      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ○      | ● |
|                                                                                     | CNMG120408-SM  | 12.9          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        | ●      | ●      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | CNMG120412-SM  | 12.9          | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG120416-SM  | 12.9          | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG160608-SM  | 16.1          | 15.875 | 6.35 | 6.35 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG160612-SM  | 16.1          | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG160616-SM  | 16.1          | 15.875 | 6.35 | 6.35 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190608-SM  | 19.3          | 19.05  | 6.35 | 7.94 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190612-SM  | 19.3          | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | CNMG190616-SM  | 19.3          | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        |        |        |        | ●      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**CN□□**

Rhombic 80° with Hole



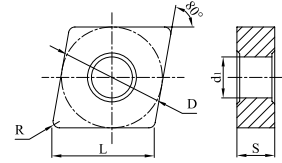
| Ordering Code                                                                       |               | Dimension(mm) |        |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|                                                                                     |               | L             | D      | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |
|   | CNMG120404-UK | 12.9          | 12.7   | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |        |          |        |        |        |        |
|                                                                                     | CNMG120408-UK | 12.9          | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ●      |          |        |        |        |        |
|                                                                                     | CNMG120412-UK | 12.9          | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG120416-UK | 12.9          | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG160608-UK | 16.1          | 15.875 | 6.35 | 6.35           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG160612-UK | 16.1          | 15.875 | 6.35 | 6.35           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG160616-UK | 16.1          | 15.875 | 6.35 | 6.35           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG190612-UK | 19.3          | 19.05  | 6.35 | 7.94           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG190616-UK | 19.3          | 19.05  | 6.35 | 7.94           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |
|  | CNMG120408-QR | 12.9          | 12.7   | 4.76 | 5.16           | 0.8 | ●      | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG120412-QR | 12.9          | 12.7   | 4.76 | 5.16           | 1.2 | ●      | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG120416-QR | 12.9          | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG160608-QR | 16.1          | 15.875 | 6.35 | 6.35           | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG160612-QR | 16.1          | 15.875 | 6.35 | 6.35           | 1.2 | ●      | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG160616-QR | 16.1          | 15.875 | 6.35 | 6.35           | 1.6 | ●      |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG190608-QR | 19.3          | 19.3   | 6.35 | 7.94           | 0.8 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG190612-QR | 19.3          | 19.3   | 6.35 | 7.94           | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG190616-QR | 19.3          | 19.3   | 6.35 | 7.94           | 1.6 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG190624-QR | 19.3          | 19.3   | 6.35 | 7.94           | 2.4 |        | ○      |        | ●      | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | CNMG250924-QR | 25.8          | 25.4   | 9.52 | 9.21           | 2.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|  | CNMG120408-HK | 12.9          | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG120412-HK | 12.9          | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG120416-HK | 12.9          | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG160612-HK | 16.1          | 15.875 | 6.35 | 6.35           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG160616-HK | 16.1          | 15.875 | 6.35 | 6.35           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ●      |          |        |        |        |        |
|                                                                                     | CNMG190612-HK | 19.3          | 19.05  | 6.35 | 7.94           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |
|                                                                                     | CNMG190616-HK | 19.3          | 19.05  | 6.35 | 7.94           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**CN□□**

Rhombic 80° with Hole



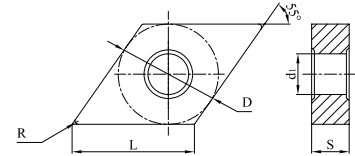
| Ordering Code                                                                       |               | Dimension(mm) |        |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |  |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--|
|                                                                                     |               | L             | D      | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |  |
|    | CNMM190616-QH | 19.3          | 19.05  | 6.35 | 7.94           | 1.6 | ●      |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | CNMM190624-QH | 19.3          | 19.05  | 6.35 | 7.94           | 2.4 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | CNMM250924-QH | 25.8          | 25.4   | 9.52 | 9.12           | 2.4 | ●      | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     |               |               |        |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|  | CNMA120404    | 12.9          | 12.7   | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |          |        |        |        |        |  |
|                                                                                     | CNMA120408    | 12.9          | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA120412    | 12.9          | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA120416    | 12.9          | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA160612    | 16.1          | 15.875 | 6.35 | 6.35           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA160616    | 16.1          | 15.875 | 6.35 | 6.35           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA160620    | 16.1          | 15.875 | 6.35 | 6.35           | 2.0 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA190612    | 19.3          | 19.05  | 6.35 | 7.94           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | CNMA190616    | 19.3          | 19.05  | 6.35 | 7.94           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ●      |          |        |        |        |        |  |
|                                                                                     | CNMA190624    | 19.3          | 19.05  | 6.35 | 7.94           | 2.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |

● Stock ○ Available Upon Order

## Turning Inserts(Negative)

**DN□□**

Rhombic 55° with Hole



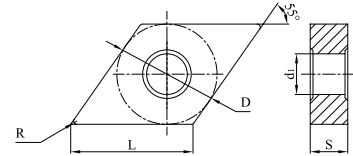
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | DNMG110404-GF | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG110408-GF | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150404-GF | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150408-GF | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150604-GF | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150608-GF | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|  | DNMG110404-QF | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG110408-QF | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG150404-QF | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | DNMG150408-QF | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ○      | ● |
|                                                                                     | DNMG150604-QF | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ● |
|                                                                                     | DNMG150608-QF | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ○      | ○ |
|  | DNMG110404-SF | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG110408-SF | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150404-SF | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150408-SF | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150604-SF | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150608-SF | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        |        |   |
|  | DNMG110404-GM | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG110408-GM | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150404-GM | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150408-GM | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150412-GM | 15.5          | 12.7  | 4.76 | 5.16 | 1.2 |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150604-GM | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 |        | ○      | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150608-GM | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 |        |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150612-GM | 15.5          | 12.7  | 6.35 | 5.16 | 1.2 |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150616-GM | 15.5          | 12.7  | 6.35 | 5.16 | 1.6 |        | ○      | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**DN□□**

Rhombic 55° with Hole



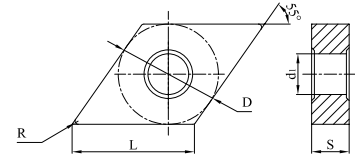
| Ordering Code                                                                       |                 | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|-----------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |                 | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | DNMG110404-QM   | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 |        | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG110408-QM   | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG110412-QM   | 11.6          | 9.525 | 4.76 | 3.81 | 1.2 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150404-QM   | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | DNMG150408-QM   | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | DNMG150412-QM   | 15.5          | 12.7  | 4.76 | 5.16 | 1.2 |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150604-QM   | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 | ●      | ○      |        | ○      |        |        |        | ○      |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ● |
|                                                                                     | DNMG150608-QM   | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG150612-QM   | 15.5          | 12.7  | 6.35 | 5.16 | 1.2 | ●      | ○      | ○      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |        |          |        |        |        |        |        |   |
|  | DNMG150404R -TS | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | DNMG150404L -TS | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | DNMG150408R -TS | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      |   |
|                                                                                     | DNMG150408L -TS | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      |   |
|  | DNMG150604R-SV  | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        | ●      |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG150604L-SV  | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 |        |        |        | ●      |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG150608R-SV  | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 |        |        |        | ●      |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | DNMG150608L-SV  | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 |        |        |        | ●      |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|  | DNMG110404-SM   | 11.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG110408-SM   | 11.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        | ●      | ○      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG110412-SM   | 11.6          | 9.525 | 4.76 | 3.81 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150404-SM   | 15.5          | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        | ●      | ○      | ●      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150408-SM   | 15.5          | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150412-SM   | 15.5          | 12.7  | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150604-SM   | 15.5          | 12.7  | 6.35 | 5.16 | 0.4 |        |        |        |        |        |        | ●      | ○      | ●      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150608-SM   | 15.5          | 12.7  | 6.35 | 5.16 | 0.8 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | DNMG150612-SM   | 15.5          | 12.7  | 6.35 | 5.16 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**DN□□**

Rhombic 55° with Hole



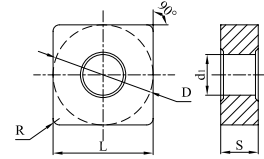
| Ordering Code                                                                       |               | Dimension(mm) |      |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |
|-------------------------------------------------------------------------------------|---------------|---------------|------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|
|                                                                                     |               | L             | D    | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |
|    | DNMG150404-UK | 15.5          | 12.7 | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |
|                                                                                     | DNMG150408-UK | 15.5          | 12.7 | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150412-UK | 15.5          | 12.7 | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150604-UK | 15.5          | 12.7 | 6.35 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |          |        |        |        |        |        |
|                                                                                     | DNMG150608-UK | 15.5          | 12.7 | 6.35 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150612-UK | 15.5          | 12.7 | 6.35 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150616-UK | 15.5          | 12.7 | 6.35 | 5.16 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |
|  | DNMG150408-QR | 15.5          | 12.7 | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|                                                                                     | DNMG150412-QR | 15.5          | 12.7 | 4.76 | 5.16 | 1.2 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|                                                                                     | DNMG150608-QR | 15.5          | 12.7 | 6.35 | 6.35 | 0.8 |        | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|                                                                                     | DNMG150612-QR | 15.5          | 12.7 | 6.35 | 6.35 | 1.2 | ●      | ●      |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|                                                                                     | DNMG150616-QR | 15.5          | 12.7 | 6.35 | 6.35 | 1.6 |        | ○      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |
|  | DNMG150408-HK | 15.5          | 12.7 | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ●        |        |        |        |        |        |
|                                                                                     | DNMG150412-HK | 15.5          | 12.7 | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150608-HK | 15.5          | 12.7 | 6.35 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMG150612-HK | 15.5          | 12.7 | 6.35 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|  | DNMA150404    | 15.5          | 12.7 | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |
|                                                                                     | DNMA150408    | 15.5          | 12.7 | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMA150412    | 15.5          | 12.7 | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMA150416    | 15.5          | 12.7 | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMA150604    | 15.5          | 12.7 | 6.35 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |
|                                                                                     | DNMA150608    | 15.5          | 12.7 | 6.35 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |
|                                                                                     | DNMA150612    | 15.5          | 12.7 | 6.35 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**SN□□**

Square 90° with Hole



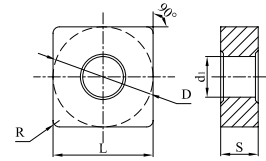
| Ordering Code                                                                       |               | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | SNMG090304-GF | 9.525         | 9.525  | 3.18 | 3.81 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG090308-GF | 9.525         | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120404-GF | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120408-GF | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|   | SNMG090304-QF | 9.525         | 9.525  | 3.18 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | SNMG090308-QF | 9.525         | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | SNMG120404-QF | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | SNMG120408-QF | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 | ●      | ●      |        | ●      |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ○      | ○ |
|  | SNMG120404-SF | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120408-SF | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |               |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |               |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|  | SNMG090304-GM | 9.525         | 9.525  | 3.18 | 3.81 | 0.4 |        |        |        | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG090308-GM | 9.525         | 9.525  | 3.18 | 3.81 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120404-GM | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120408-GM | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120412-GM | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG120416-GM | 12.7          | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG150608-GM | 15.875        | 15.875 | 6.35 | 6.35 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG150612-GM | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        | ○      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG150616-GM | 15.875        | 15.875 | 6.35 | 6.35 | 1.6 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG190612-GM | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | SNMG190616-GM | 19.05         | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**SN□□**

Square 90° with Hole



| Ordering Code                                                                       |                | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |
|-------------------------------------------------------------------------------------|----------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                     |                | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | SNMG090304-QM  | 9.525         | 9.525  | 3.18 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | SNMG090308-QM  | 9.525         | 9.525  | 3.18 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | SNMG120404-QM  | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        | ○      | ●      |   |
|                                                                                     | SNMG120408-QM  | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 | ●      | ○      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        | ○      | ○      |   |
|                                                                                     | SNMG120412-QM  | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG120416-QM  | 12.7          | 12.7   | 4.76 | 5.16 | 1.6 | ○      |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG150608-QM  | 15.875        | 15.875 | 6.35 | 6.35 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG150612-QM  | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG190612-QM  | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | SNMG120404R-SV | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG120408R-SV | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG120408L-SV | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |                |               |        |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | SNMG090304-SM  | 9.525         | 9.525  | 3.18 | 3.81 | 0.4 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG090308-SM  | 9.525         | 9.525  | 3.18 | 3.81 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG120404-SM  | 12.7          | 12.7   | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        | ●      | ○      | ●      | ●      |        |        |        |        |          |        |        |        |        | ○      | ○      |   |
|                                                                                     | SNMG120408-SM  | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        | ○      | ○      |   |
|                                                                                     | SNMG120412-SM  | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        | ●      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG120416-SM  | 12.7          | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG150608-SM  | 15.875        | 15.875 | 6.35 | 6.35 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG150612-SM  | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG150616-SM  | 15.875        | 15.875 | 6.35 | 6.35 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG190612-SM  | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | SNMG190616-SM  | 19.05         | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        |   |

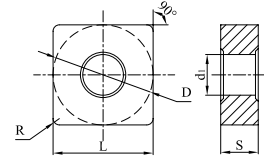
●Stock ○Available Upon Order



## Turning Inserts(Negative)

**SN□□**

Square 90° with Hole



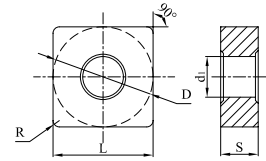
| Ordering Code                                                                       |               | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |  |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--|
|                                                                                     |               | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |  |
|    | SNMG120408-UK | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG120412-UK | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG150412-UK | 15.875        | 15.875 | 4.76 | 6.35 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG150612-UK | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG150616-UK | 15.875        | 15.875 | 6.35 | 6.35 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG190612-UK | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG190616-UK | 19.05         | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|  | SNMG120408-QR | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG120412-QR | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG120416-QR | 12.7          | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG150608-QR | 15.875        | 15.875 | 6.35 | 6.35 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG150612-QR | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG150616-QR | 15.875        | 15.875 | 6.35 | 6.35 | 1.6 |        | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG150624-QR | 15.875        | 15.875 | 6.35 | 6.35 | 2.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG190608-QR | 19.05         | 19.05  | 6.35 | 7.94 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG190612-QR | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG190616-QR | 19.05         | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG190624-QR | 19.05         | 19.05  | 6.35 | 7.94 | 2.4 | ○      |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG250724-QR | 25.4          | 25.4   | 7.94 | 9.21 | 2.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|                                                                                     | SNMG250924-QR | 25.4          | 25.4   | 9.52 | 9.21 | 2.4 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |  |
|  | SNMG120408-HK | 12.7          | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG120412-HK | 12.7          | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG120416-HK | 12.7          | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG150612-HK | 15.875        | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG150616-HK | 15.875        | 15.875 | 6.35 | 6.35 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG190612-HK | 19.05         | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |
|                                                                                     | SNMG190616-HK | 19.05         | 19.05  | 6.35 | 7.94 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○        |        |        |        |        |        |  |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**SN□□**

Square 90° with Hole



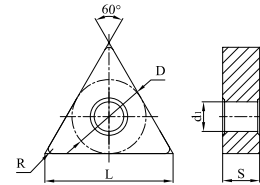
| Ordering Code                                                                       |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|
|                                                                                     |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |
|    | SNMM150616-QH | 15.875        | 19.05 | 6.35 | 7.94           | 1.6 | ●      | ●      | ○      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM190612-QH | 19.05         | 19.05 | 6.35 | 7.94           | 1.2 |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM190616-QH | 19.05         | 19.05 | 6.35 | 7.94           | 1.6 |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM190624-QH | 19.05         | 19.05 | 6.35 | 7.94           | 2.4 |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM250724-QH | 25.4          | 25.4  | 7.94 | 9.12           | 2.4 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM250732-QH | 25.4          | 25.4  | 7.94 | 9.12           | 3.2 |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM250924-QH | 25.4          | 25.4  | 9.52 | 9.12           | 2.4 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|                                                                                     | SNMM250932-QH | 25.4          | 25.4  | 9.52 | 9.12           | 3.2 |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |
|  | SNMA090304    | 9.525         | 9.525 | 3.18 | 3.81           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |        |          |        |        |        |        |
|                                                                                     | SNMA090308    | 9.525         | 9.525 | 3.18 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |        |          |        |        |        |        |
|                                                                                     | SNMA090312    | 9.525         | 9.525 | 3.18 | 3.81           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |        |          |        |        |        |        |
|                                                                                     | SNMA120404    | 12.7          | 12.7  | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |        |          |        |        |        |        |
|                                                                                     | SNMA120408    | 12.7          | 12.7  | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |        |          |        |        |        |        |
|                                                                                     | SNMA120412    | 12.7          | 12.7  | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |        |          |        |        |        |        |
|                                                                                     | SNMA120416    | 12.7          | 12.7  | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |        |          |        |        |        |        |
|                                                                                     | SNMA190612    | 19.05         | 19.05 | 6.35 | 7.94           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |        |          |        |        |        |        |
|                                                                                     | SNMA190616    | 19.05         | 19.05 | 6.35 | 7.94           | 1.6 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ●      |        |          |        |        |        |        |

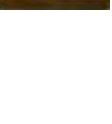
●Stock ○Available Upon Order

## Turning Inserts(Negative)

**TN□□**

Triangle 60° with Hole



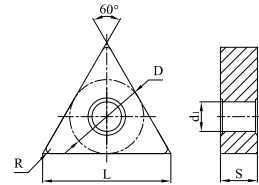
| Ordering Code                                                                       |                                                                                     | Dimension(mm) |        |       |      |      | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|--------|-------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |                                                                                     | L             | D      | S     | d1   | R    | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | TNGG160402R-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.2  |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | TNGG160402L-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.2  |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | TNGG160404R-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.4  |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | TNGG160404L-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.4  |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |        |          |        |        |        |        | ●      |   |
|                                                                                     | TNGG160408R-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  |        |        |        |        |        |        |        |        |        |        | ○      | ○      |        |        |        |          |        |        |        |        | ○      |   |
|                                                                                     | TNGG160408L-PS                                                                      | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  |        |        |        |        |        |        |        |        |        |        | ○      | ○      |        |        |        |          |        |        |        |        | ○      |   |
|  | TNMG110304-GF                                                                       | 11            | 6.35   | 3.18  | 2.26 | 0.4  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160304-GF                                                                       | 16.5          | 9.525  | 3.18  | 3.81 | 0.4  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160308-GF                                                                       | 16.5          | 9.525  | 3.18  | 3.81 | 0.8  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160404-GF                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.4  | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160408-GF                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220404-GF                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.4  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|  | TNMG220408-GF                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.8  | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160404-QF                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.4  | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | TNMG160408-QF                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        | ○      | ● |
|                                                                                     | TNMG220404-QF                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.4  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220408-QF                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.8  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |  | TNMG160404-SF | 16.5   | 9.525 | 4.76 | 3.81 | 0.4    |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        |        |   |
| TNMG160408-SF                                                                       |                                                                                     | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |                                                                                     |               |        |       |      |      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |                                                                                     |               |        |       |      |      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|  | TNMG160304-GM                                                                       | 16.5          | 9.525  | 3.18  | 3.81 | 0.4  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160308-GM                                                                       | 16.5          | 9.525  | 3.18  | 3.81 | 0.8  |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160312-GM                                                                       | 16.5          | 9.525  | 3.18  | 3.81 | 1.2  |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160404-GM                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.4  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160408-GM                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 0.8  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG160412-GM                                                                       | 16.5          | 9.525  | 4.76  | 3.81 | 1.2  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220404-GM                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.4  |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220408-GM                                                                       | 22            | 12.7   | 4.76  | 5.16 | 0.8  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220412-GM                                                                       | 22            | 12.7   | 4.76  | 5.16 | 1.2  | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG220416-GM                                                                       | 22            | 12.7   | 4.76  | 5.16 | 1.6  |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TNMG270608-GM                                                                       | 27.5          | 15.875 | 6.35  | 6.35 | 0.8  |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**TN□□**

Triangle 60° with Hole



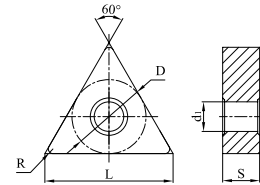
| Ordering Code                                                                       |                | Dimension(mm) |        |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |   |
|-------------------------------------------------------------------------------------|----------------|---------------|--------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|---|
|                                                                                     |                | L             | D      | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | TNMG270612-GM  | 27.5          | 15.875 | 6.35 | 6.35 | 1.2 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG330608-GM  | 33            | 19.05  | 6.35 | 7.94 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG330612-GM  | 33            | 19.05  | 6.35 | 7.94 | 1.2 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG110304-QM  | 11            | 6.35   | 3.18 | 2.26 | 0.4 |        | ●      |        | ●      |        |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        | ○      |   |
|                                                                                     | TNMG110308-QM  | 11            | 6.35   | 3.18 | 2.26 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ○      |   |
|   | TNMG160404-QM  | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |        |        |          |        |        |        | ●      | ● |
|                                                                                     | TNMG160408-QM  | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |        |        |          |        |        |        | ●      | ● |
|                                                                                     | TNMG160412-QM  | 16.5          | 9.525  | 4.76 | 3.81 | 1.2 | ●      | ●      | ●      | ●      |        |        |        | ○      |        |        |        |        | ○      |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG220408-QM  | 22            | 12.7   | 4.76 | 5.16 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG220412-QM  | 22            | 12.7   | 4.76 | 5.16 | 1.2 |        | ●      |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|  | TNMG220416-QM  | 22            | 12.7   | 4.76 | 5.16 | 1.6 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG160404R-TS | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |   |
|                                                                                     | TNMG160404L-TS | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |   |
|                                                                                     | TNMG160408R-TS | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ●      |   |
|                                                                                     | TNMG160408L-TS | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ○      |   |
|  | TNMG160404R-SV | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        | ●      | ●      |        |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        | ●      | ● |
|                                                                                     | TNMG160404L-SV | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        | ●      | ●      |        |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        |        | ●      | ● |
|                                                                                     | TNMG160408R-SV | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        | ●      | ●      |        |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        | ○      | ●      |   |
|                                                                                     | TNMG160408L-SV | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        | ●      | ●      |        |        |        | ○      |        |        |        |        |        |        |        |        |          |        |        | ○      | ○      |   |
|                                                                                     | TNMG160404-SM  | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        | ●      | ●      | ●      | ●      | ○      |        |        |        |        |        |          |        |        | ○      | ●      |   |
|  | TNMG160408-SM  | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        | ●      | ●      | ●      | ●      | ○      |        |        |        |        |        |          |        |        | ○      | ○      |   |
|                                                                                     | TNMG160412-SM  | 16.5          | 9.525  | 4.76 | 3.81 | 1.2 |        |        |        |        |        |        | ●      | ○      | ○      | ●      |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG220408-SM  | 22            | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG220412-SM  | 22            | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | TNMG220416-SM  | 22            | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |        |        |          |        |        |        |        |   |
|  | TNMG160404-UK  | 16.5          | 9.525  | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |        |          |        |        |        |        |   |
|                                                                                     | TNMG160408-UK  | 16.5          | 9.525  | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |        |          |        |        |        |        |   |
|                                                                                     | TNMG160412-UK  | 16.5          | 9.525  | 4.76 | 3.81 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      |        |          |        |        |        |        |   |
|                                                                                     | TNMG160416-UK  | 16.5          | 9.525  | 4.76 | 3.81 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      |        |          |        |        |        |        |   |
|                                                                                     | TNMG220408-UK  | 22            | 12.7   | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |   |
|                                                                                     | TNMG220412-UK  | 22            | 12.7   | 4.76 | 5.16 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |   |
|                                                                                     | TNMG220416-UK  | 22            | 12.7   | 4.76 | 5.16 | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**TN□□**

Triangle 60° with Hole



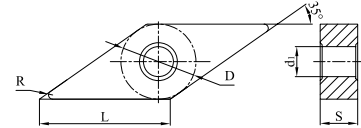
| Ordering Code                                                                       |               | Dimension(mm) |        |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        | Cermet |        |        |  |
|-------------------------------------------------------------------------------------|---------------|---------------|--------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--|
|                                                                                     |               | L             | D      | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |  |
|    | TNMG160408-QR | 16.5          | 9.525  | 4.76 | 3.81           | 0.8 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG160412-QR | 16.5          | 9.525  | 4.76 | 3.81           | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG220408-QR | 22            | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG220412-QR | 22            | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        | ●      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG220416-QR | 22            | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG270608-QR | 27.5          | 15.875 | 6.35 | 6.35           | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG270612-QR | 27.5          | 15.875 | 6.35 | 6.35           | 1.2 |        |        |        | ○      | ●      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG270616-QR | 27.5          | 15.875 | 6.35 | 6.35           | 1.6 |        |        |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG330716-QR | 33            | 19.05  | 7.94 | 7.94           | 1.6 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|                                                                                     | TNMG330924-QR | 33            | 19.05  | 9.52 | 7.94           | 2.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |  |
|  | TNMG160408-HK | 16.5          | 9.525  | 4.76 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |        |          |        |        |        |        |  |
|                                                                                     | TNMG160412-HK | 16.5          | 9.525  | 4.76 | 3.81           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |        |          |        |        |        |        |  |
|                                                                                     | TNMG220408-HK | 22            | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMG220412-HK | 22            | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMG220416-HK | 22            | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMG270612-HK | 27.5          | 15.875 | 6.35 | 6.35           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMG270616-HK | 27.5          | 15.875 | 6.35 | 6.35           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|  | TNMA110304    | 11            | 6.35   | 3.18 | 2.26           | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |          |        |        |        |        |  |
|                                                                                     | TNMA110308    | 11            | 6.35   | 3.18 | 2.26           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |          |        |        |        |        |  |
|                                                                                     | TNMA160308    | 16.5          | 9.525  | 3.18 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |          |        |        |        |        |  |
|                                                                                     | TNMA160404    | 16.5          | 9.525  | 4.76 | 3.81           | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |          |        |        |        |        |  |
|                                                                                     | TNMA160408    | 16.5          | 9.525  | 4.76 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMA160412    | 16.5          | 9.525  | 4.76 | 3.81           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMA160416    | 16.5          | 9.525  | 4.76 | 3.81           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMA220404    | 22            | 12.7   | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      |        |        |          |        |        |        |        |  |
|                                                                                     | TNMA220408    | 22            | 12.7   | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMA220412    | 22            | 12.7   | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |
|                                                                                     | TNMA220416    | 22            | 12.7   | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○      |          |        |        |        |        |  |

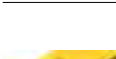
● Stock ○ Available Upon Order

## Turning Inserts(Negative)

**VN□□**

Rhombic 35° with Hole



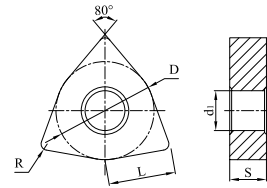
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |  |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|--|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |  |
|    | VNMG160404-GF | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG160408-GF | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG220404-GF | 22.1          | 12.7  | 4.76 | 5.16 | 0.4 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG220408-GF | 22.1          | 12.7  | 4.76 | 5.16 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|    | VNMG160404-QF | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        |        | ●      | ● |  |
|                                                                                     | VNMG160408-QF | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        |        | ○      | ○ |  |
|                                                                                     | VNMG220404-QF | 22.1          | 12.7  | 4.76 | 5.16 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG220408-QF | 22.1          | 12.7  | 4.76 | 5.16 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160404-SF | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG160408-SF | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160404-GM | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG160408-GM | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG160412-GM | 16.6          | 9.525 | 4.76 | 3.81 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG220408-GM | 22.1          | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160404-QM | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        |        | ●      | ● |  |
|                                                                                     | VNMG160408-QM | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        |        | ○      | ○ |  |
|                                                                                     | VNMG160412-QM | 16.6          | 9.525 | 4.76 | 3.81 | 1.2 |        | ●      | ○      | ●      |        |        |        |        |        |        |        |        | ○      |        |          |        |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160404-SM | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ○      | ● |  |
|                                                                                     | VNMG160408-SM | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ○      | ○ |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160404-UK | 16.6          | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        |        |        |        |        |        |        |   |  |
|                                                                                     | VNMG160408-UK | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        | ○      |        |        |        |        |        |   |  |
|                                                                                     | VNMG160412-UK | 16.6          | 9.525 | 4.76 | 3.81 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        | ○      |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | VNMG160408-HK | 16.6          | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●        | ○      |        |        |        |        |        |   |  |
|                                                                                     | VNMG160412-HK | 16.6          | 9.525 | 4.76 | 3.81 | 1.2 |        |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ○        | ○      |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**WN□□**

Trigon 80° with Hole



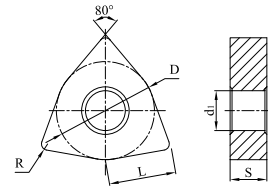
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130 | GN9115   | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | WNMG06T304-GF | 6.5           | 9.525 | 3.97 | 3.81 | 0.4 |        | ●      | ○      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG060404-GF | 6.5           | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG06T308-GF | 6.5           | 9.525 | 3.97 | 3.81 | 0.8 |        | ●      | ○      |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG060408-GF | 6.5           | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080404-GF | 8.7           | 12.7  | 4.76 | 5.16 | 0.4 |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080408-GF | 8.7           | 12.7  | 4.76 | 5.16 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|   | WNMG060404-QF | 6.5           | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ○      | ○ |
|                                                                                     | WNMG060408-QF | 6.5           | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ○      | ○ |
|                                                                                     | WNMG080404-QF | 8.7           | 12.7  | 4.76 | 5.16 | 0.4 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        | ●      | ●      |   |
|                                                                                     | WNMG080408-QF | 8.7           | 12.7  | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        | ●      | ●      |   |
|  | WNMG060404-SF | 6.5           | 9.525 | 4.76 | 3.81 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG060408-SF | 6.5           | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080404-SF | 8.7           | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080408-SF | 8.7           | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        |   |
|  | WNMG06T304-GM | 6.5           | 9.525 | 3.97 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG06T308-GM | 6.5           | 9.525 | 3.97 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG06T312-GM | 6.5           | 9.525 | 3.97 | 3.81 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG060404-GM | 6.5           | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG060408-GM | 6.5           | 9.525 | 4.76 | 3.81 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080404-GM | 8.7           | 12.7  | 4.76 | 5.16 | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080408-GM | 8.7           | 12.7  | 4.76 | 5.16 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080412-GM | 8.7           | 12.7  | 4.76 | 5.16 | 1.2 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080416-GM | 8.7           | 12.7  | 4.76 | 5.16 | 1.6 |        | ○      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|  | WNMG060404-QM | 6.5           | 9.525 | 4.76 | 3.81 | 0.4 |        | ●      |        | ●      |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        | ○      | ○ |
|                                                                                     | WNMG060408-QM | 6.5           | 9.525 | 4.76 | 3.81 | 0.8 |        | ●      |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        | ○      | ○ |
|                                                                                     | WNMG060412-QM | 6.5           | 9.525 | 4.76 | 3.81 | 1.2 |        | ●      |        | ○      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080404-QM | 8.7           | 12.7  | 4.76 | 5.16 | 0.4 | ●      | ●      | ○      | ●      |        |        | ○      |        |        |        |        |        | ○      |        |        |        |          |        |        | ●      | ●      |   |
|                                                                                     | WNMG080408-QM | 8.7           | 12.7  | 4.76 | 5.16 | 0.8 | ●      | ●      | ●      | ●      |        |        | ○      |        |        |        |        |        | ○      |        |        |        |          |        |        | ●      | ●      |   |
|                                                                                     | WNMG080412-QM | 8.7           | 12.7  | 4.76 | 5.16 | 1.2 | ●      | ●      | ●      | ●      |        |        | ○      |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        |   |
|                                                                                     | WNMG080416-QM | 8.7           | 12.7  | 4.76 | 5.16 | 1.6 | ●      |        |        | ●      |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Negative)

**WN□□**

Trigon 80° with Hole



| Ordering Code                                                                       |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | WNMG06T304-SM | 6.5           | 9.525 | 3.97 | 3.81           | 0.4 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG06T308-SM | 6.5           | 9.525 | 3.97 | 3.81           | 0.8 |        |        |        |        |        |        | ●      | ○      | ●      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG06T312-SM | 6.5           | 9.525 | 3.97 | 3.81           | 1.2 |        |        |        |        |        |        | ●      | ○      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG060404-SM | 6.5           | 9.525 | 4.76 | 3.81           | 0.4 |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG060408-SM | 6.5           | 9.525 | 4.76 | 3.81           | 0.8 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG060412-SM | 6.5           | 9.525 | 4.76 | 3.81           | 1.2 |        |        |        |        |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG080404-SM | 8.7           | 12.7  | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ○      | ● |
|                                                                                     | WNMG080408-SM | 8.7           | 12.7  | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        | ●      | ●      | ●      | ●      | ○      |        |        |        |          |        |        |        |        |        | ○      | ● |
|                                                                                     | WNMG080412-SM | 8.7           | 12.7  | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        | ●      | ●      | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |
|  | WNMG080404-UK | 8.7           | 12.7  | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG080408-UK | 8.7           | 12.7  | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |
|                                                                                     | WNMG080412-UK | 8.7           | 12.7  | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | WNMG080408-QR | 8.7           | 12.7  | 4.76 | 5.16           | 0.8 | ●      | ●      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG080412-QR | 8.7           | 12.7  | 4.76 | 5.16           | 1.2 | ●      | ○      |        | ●      | ●      |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG080416-QR | 8.7           | 12.7  | 4.76 | 5.16           | 1.6 | ●      |        |        | ●      | ○      |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | WNMG06T308-HK | 6.5           | 9.525 | 3.97 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ○      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG060408-HK | 6.5           | 9.525 | 4.76 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ○      | ●      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMG080408-HK | 8.7           | 12.7  | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |
|                                                                                     | WNMG080412-HK | 8.7           | 12.7  | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ●        |        |        |        |        |        |        |   |
|  | WNMA06T304    | 6.5           | 9.525 | 3.97 | 3.81           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | WNMA060404    | 6.5           | 9.525 | 4.76 | 3.81           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMA060408    | 6.5           | 9.525 | 4.76 | 3.81           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMA080404    | 8.7           | 12.7  | 4.76 | 5.16           | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        | ●      |          |        |        |        |        |        |        |   |
|                                                                                     | WNMA080408    | 8.7           | 12.7  | 4.76 | 5.16           | 0.8 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |
|                                                                                     | WNMA080412    | 8.7           | 12.7  | 4.76 | 5.16           | 1.2 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |
|                                                                                     | WNMA080416    | 8.7           | 12.7  | 4.76 | 5.16           | 1.6 |        |        |        |        |        |        |        |        |        |        |        | ●      | ●      | ●      | ○        |        |        |        |        |        |        |   |

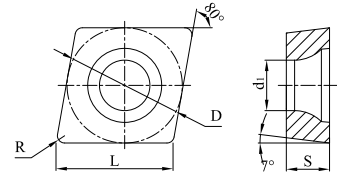
●Stock ○Available Upon Order



## Turning Inserts(Positive)

**CC□□**

Rhombic 80° with Hole



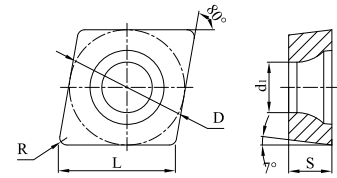
| Ordering Code                                                                       |                 | Dimension(mm) |       |      |                |       | Coated |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |        |        |        |        |  |
|-------------------------------------------------------------------------------------|-----------------|---------------|-------|------|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--|
|                                                                                     |                 | L             | D     | S    | d <sub>1</sub> | R     | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115   | GK1120 | GK1125 | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |  |
|  | CCET0602005R-PS | 6.5           | 6.35  | 2.38 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET0602005L-PS | 6.5           | 6.35  | 2.38 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET060201R-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET060201L-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET060202R-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ●      |  |
|                                                                                     | CCET060202L-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET060204R-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET060204L-PS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T3005R-PS | 9.7           | 9.525 | 3.97 | 4.4            | <0.05 |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T3005L-PS | 9.7           | 9.525 | 3.97 | 4.4            | <0.05 |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T301R-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.1   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T301L-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.1   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T302R-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ●      |  |
|                                                                                     | CCET09T302L-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T304R-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T304L-PS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|  | CCET0602005R-GS | 6.5           | 6.35  | 2.38 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET0602005L-GS | 6.5           | 6.35  | 2.38 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060201R-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060201L-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060202R-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060202L-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060204R-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET060204L-GS  | 6.5           | 6.35  | 2.38 | 2.8            | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |          |        |        |        |        |        |        | ○      |        |  |
|                                                                                     | CCET09T3005R-GS | 9.7           | 9.525 | 3.97 | 4.4            | <0.05 |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T3005L-GS | 9.7           | 9.525 | 3.97 | 4.4            | <0.05 |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T301R-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.1   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T301L-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.1   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T302R-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T302L-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T304R-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |
|                                                                                     | CCET09T304L-GS  | 9.7           | 9.525 | 3.97 | 4.4            | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        | ○        |        |        |        |        |        |        |        | ○      |  |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**CC□□**

Rhombic 80° with Hole



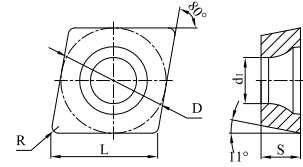
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | CCMT060202-MM | 6.5           | 6.35  | 2.38 | 2.8  | 0.2 |        | ●      |        | ●      |        | ●      | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCMT060204-MM | 6.5           | 6.35  | 2.38 | 2.8  | 0.4 | ●      | ●      |        | ●      |        | ●      | ●      | ●      | ○      | ●      | ●      |        |        |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | CCMT09T302-MM | 9.7           | 9.525 | 3.97 | 4.4  | 0.2 |        | ●      |        | ●      |        | ●      | ○      | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | CCMT09T304-MM | 9.7           | 9.525 | 3.97 | 4.4  | 0.4 | ●      | ●      |        | ●      |        | ●      | ●      | ●      | ●      | ●      | ○      |        |        |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | CCMT09T308-MM | 9.7           | 9.525 | 3.97 | 4.4  | 0.8 |        | ●      |        | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        | ○      | ● |
|  | CCMT060202-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.2 |        | ●      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | CCMT060204-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.4 |        | ●      | ●      | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      |        | ●      |          |        |        |        |        | ●      | ● |
|                                                                                     | CCMT060208-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.8 |        | ○      |        | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | CCMT09T302-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.2 |        | ●      |        | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        | ●      | ○ |
|                                                                                     | CCMT09T304-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.4 |        | ●      | ●      | ●      |        | ●      | ●      | ●      | ○      | ●      | ○      |        | ●      |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     | CCMT09T308-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.8 |        | ●      | ●      | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      |        | ●      |          |        |        |        |        | ●      | ● |
|                                                                                     | CCMT120404-GP | 12.9          | 12.7  | 4.76 | 5.56 | 0.4 |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |        |          |        |        |        |        | ○      | ● |
|                                                                                     | CCMT120408-GP | 12.9          | 12.7  | 4.76 | 5.56 | 0.8 |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        | ●      |          |        |        |        |        | ○      | ○ |
|                                                                                     | CCMT120412-GP | 12.9          | 12.7  | 4.76 | 5.56 | 1.2 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT060202-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT060204-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT060208-GP | 6.5           | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT09T302-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.2 |        |        |        |        |        |        | ○      |        |        | ○      | ○      | ○      |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT09T304-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT09T308-GP | 9.7           | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        |        | ○      |        |        | ○      | ○      | ○      |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT120404-GP | 12.9          | 12.7  | 4.76 | 5.56 | 0.4 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCGT120408-GP | 12.9          | 12.7  | 4.76 | 5.56 | 0.8 |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|  | CCMT09T304-KM | 9.7           | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCMT09T308-KM | 9.7           | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      | ○      | ○      |          |        |        |        |        |        |   |
|                                                                                     | CCMT120408-KM | 12.9          | 12.7  | 4.76 | 5.56 | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | CCMT120412-KM | 12.9          | 12.7  | 4.76 | 5.56 | 1.2 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|  | CCGX060202-AL | 6.5           | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        | ○      |        |        |   |
|                                                                                     | CCGX060204-AL | 6.5           | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      | ○      |        |   |
|                                                                                     | CCGX060208-AL | 6.5           | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      | ○      |        |   |
|                                                                                     | CCGX09T302-AL | 9.7           | 9.525 | 3.97 | 4.4  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      | ○      |        |   |
|                                                                                     | CCGX09T304-AL | 9.7           | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |
|                                                                                     | CCGX09T308-AL | 9.7           | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |
|                                                                                     | CCGX120402-AL | 12.9          | 12.7  | 4.76 | 5.5  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ●      | ○      |        |        |   |
|                                                                                     | CCGX120404-AL | 12.9          | 12.7  | 4.76 | 5.5  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |
|                                                                                     | CCGX120408-AL | 12.9          | 12.7  | 4.76 | 5.5  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |

● Stock ○ Available Upon Order

## Turning Inserts(Positive)

**CP□□**

Rhombic 80° with Hole



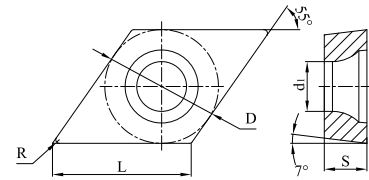
| Ordering Code                                                                     |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |  |
|-----------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--|
|                                                                                   |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |  |
|  | CPMT120412-GP | 12.9          | 12.7  | 4.76 | 5.56           | 1.2 |        |        |        | ●      |        |        | ○      | ○      | ○      | ○      |        |        | ●      |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT060204-GP | 6.5           | 6.35  | 2.38 | 2.8            | 0.4 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT060208-GP | 6.5           | 6.35  | 2.38 | 2.8            | 0.8 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT09T302-GP | 9.7           | 9.525 | 3.97 | 4.4            | 0.2 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT09T304-GP | 9.7           | 9.525 | 3.97 | 4.4            | 0.4 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT09T308-GP | 9.7           | 9.525 | 3.97 | 4.4            | 0.8 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT120404-GP | 12.9          | 12.7  | 4.76 | 5.56           | 0.4 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |
|                                                                                   | CPGT120408-GP | 12.9          | 12.7  | 4.76 | 5.56           | 0.8 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |  |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**DC□□**

Rhombic 55° with Hole



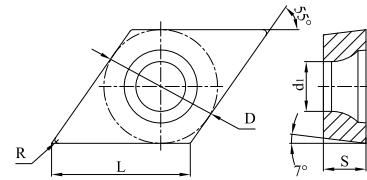
| Ordering Code                                                                       |                 | Dimension(mm) |       |      |     |       | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |  |
|-------------------------------------------------------------------------------------|-----------------|---------------|-------|------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|--|
|                                                                                     |                 | L             | D     | S    | d1  | R     | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP911F | GP911M |   |  |
|  | DCET0702005R-PS | 7.8           | 6.35  | 2.38 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET0702005L-PS | 7.8           | 6.35  | 2.38 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070201R-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070201L-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070202R-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070202L-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070204R-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.4   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070204L-PS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.4   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T3005R-PS | 11.6          | 9.525 | 3.97 | 4.4 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        |        | ○ |  |
|                                                                                     | DCET11T3005L-PS | 11.6          | 9.525 | 3.97 | 4.4 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        |        | ○ |  |
|                                                                                     | DCET11T301R-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |  |
|                                                                                     | DCET11T301L-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T302R-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |  |
|                                                                                     | DCET11T302L-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T304R-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T304L-PS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|  | DCET0702005R-GS | 7.8           | 6.35  | 2.38 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET0702005L-GS | 7.8           | 6.35  | 2.38 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070201R-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070201L-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070202R-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070202L-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070204R-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.4   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET070204L-GS  | 7.8           | 6.35  | 2.38 | 2.8 | 0.4   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T3005R-GS | 11.6          | 9.525 | 3.97 | 4.4 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        |        | ○ |  |
|                                                                                     | DCET11T3005L-GS | 11.6          | 9.525 | 3.97 | 4.4 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        |        | ○ |  |
|                                                                                     | DCET11T301R-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |  |
|                                                                                     | DCET11T301L-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T302R-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |  |
|                                                                                     | DCET11T302L-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |
|                                                                                     | DCET11T304R-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |  |
|                                                                                     | DCET11T304L-GS  | 11.6          | 9.525 | 3.97 | 4.4 | 0.4   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |  |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**DC□□**

Rhombic 55° with Hole



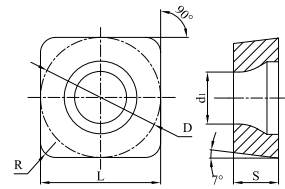
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|---|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |   |
|    | DCMT070202-MM | 7.8           | 6.35  | 2.38 | 2.8  | 0.2 |        | ●      |        | ●      |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT070204-MM | 7.8           | 6.35  | 2.38 | 2.8  | 0.4 |        | ●      |        | ●      |        |        | ●      | ●      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT11T302-MM | 11.6          | 9.525 | 3.97 | 4.4  | 0.2 |        | ●      |        | ●      |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT11T304-MM | 11.6          | 9.525 | 3.97 | 4.4  | 0.4 | ●      | ●      |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT11T308-MM | 11.6          | 9.525 | 3.97 | 4.4  | 0.8 | ●      | ●      |        | ●      |        |        | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        |        | ● | ● |
|  | DCMT070202-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.2 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        | ○      | ○ |   |
|                                                                                     | DCMT070204-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.4 |        | ○      |        | ●      |        | ●      | ●      | ○      | ●      |        |        |        | ●      |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT070208-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.8 |        | ○      |        | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        | ○      | ● |   |
|                                                                                     | DCMT11T302-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.2 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT11T304-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.4 |        | ●      |        | ●      |        | ●      | ●      | ○      | ●      |        |        |        | ●      |        | ●      |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT11T308-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.8 |        | ●      |        | ●      |        | ●      | ●      | ○      | ●      |        |        |        | ●      |        | ○      |          |        |        |        |        |        | ● | ● |
|                                                                                     | DCMT150404-GP | 15.5          | 12.7  | 4.76 | 5.56 | 0.4 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCMT150408-GP | 15.5          | 12.7  | 4.76 | 5.56 | 0.8 |        | ○      |        | ○      |        |        | ○      | ○      |        |        | ○      |        | ●      |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCMT150412-GP | 15.5          | 12.7  | 4.76 | 5.56 | 1.2 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT070202-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT070204-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT070208-GP | 7.8           | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT11T302-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.2 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT11T304-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCGT11T308-GP | 11.6          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |        |          |        |        |        |        |        |   |   |
|  | DCMT11T304-KM | 11.6          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |   |
|                                                                                     | DCMT11T308-KM | 11.6          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |   |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |   |
|  | DCGX070202-AL | 7.8           | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      |        |        |        |   |   |
|                                                                                     | DCGX070204-AL | 7.8           | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |   |
|                                                                                     | DCGX070208-AL | 7.8           | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      | ○      |        |   |   |
|                                                                                     | DCGX11T302-AL | 11.6          | 9.525 | 3.97 | 4.4  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |   |
|                                                                                     | DCGX11T304-AL | 11.6          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |   |   |
|                                                                                     | DCGX11T308-AL | 11.6          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      | ○      |        |   |   |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**SC** □ □

Square 90° with Hole



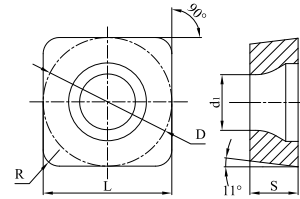
| Ordering Code                                                                       |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | SCMT09T308-MM | 9.525         | 9.525 | 3.97 | 4.4            | 0.8 |        | ●      |        | ●      |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|   | SCMT09T304-GP | 9.525         | 9.525 | 3.97 | 4.4            | 0.4 |        | ○      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | SCMT09T308-GP | 9.525         | 9.525 | 3.97 | 4.4            | 0.8 |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | SCMT120404-GP | 12.7          | 12.7  | 4.76 | 5.56           | 0.4 |        | ○      |        | ●      |        |        | ○      | ○      |        |        |        |        | ○      |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | SCMT120408-GP | 12.7          | 12.7  | 4.76 | 5.56           | 0.8 |        | ○      |        | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |          |        |        |        |        |        | ○      | ○ |
|  | SCMT09T308-KM | 9.525         | 9.525 | 3.97 | 4.4            | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |        |   |
|                                                                                     | SCMT120408-KM | 12.7          | 12.7  | 4.76 | 5.56           | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|  | SCGX09T304-AL | 9.525         | 9.525 | 3.97 | 4.4            | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | SCGX09T308-AL | 9.525         | 9.525 | 3.97 | 4.4            | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | SCGX120404-AL | 12.7          | 12.7  | 4.76 | 5.5            | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | SCGX120408-AL | 12.7          | 12.7  | 4.76 | 5.5            | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**SP**□□

Square 90° with Hole



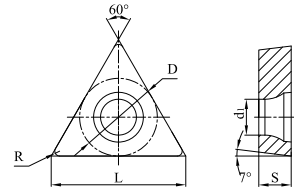
| Ordering Code                                                                     |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |        |        |        |
|-----------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--------|
|                                                                                   |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120   | GK1125 | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |
|  | SPMT090304-GP | 9.525         | 9.525 | 3.18 | 4.4            | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        | ○      | ○      |
|                                                                                   |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |        |
|                                                                                   |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |        |
|                                                                                   |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |        |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**TC□□**

Triangle 60° with Hole



| Ordering Code                                                                       |                | Dimension(mm) |      |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |
|-------------------------------------------------------------------------------------|----------------|---------------|------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|
|                                                                                     |                | L             | D    | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |
|    | TCET080201R-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET080201L-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET080202R-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET080202L-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET080204R-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET080204L-PS | 8.2           | 4.76 | 2.38 | 2.3            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET110201R-PS | 11            | 6.35 | 2.38 | 2.8            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET110201L-PS | 11            | 6.35 | 2.38 | 2.8            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET110202R-PS | 11            | 6.35 | 2.38 | 2.8            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET110202L-PS | 11            | 6.35 | 2.38 | 2.8            | 0.2 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        | ●      |
|                                                                                     | TCET110204R-PS | 11            | 6.35 | 2.38 | 2.8            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        |        | ○      |
|                                                                                     | TCET110204L-PS | 11            | 6.35 | 2.38 | 2.8            | 0.4 |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |        |          |        |        |        |        | ●      |
|  | TCET080201R-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET080201L-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET080202R-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET080202L-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET080204R-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET080204L-GS | 8.2           | 4.76 | 2.38 | 2.3            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110201R-GS | 11            | 6.35 | 2.38 | 2.8            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110201L-GS | 11            | 6.35 | 2.38 | 2.8            | 0.1 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110202R-GS | 11            | 6.35 | 2.38 | 2.8            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110202L-GS | 11            | 6.35 | 2.38 | 2.8            | 0.2 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110204R-GS | 11            | 6.35 | 2.38 | 2.8            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |
|                                                                                     | TCET110204L-GS | 11            | 6.35 | 2.38 | 2.8            | 0.4 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |        |          |        |        |        | ○      |        |

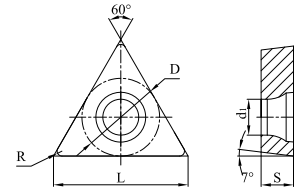
● Stock ○ Available Upon Order



## Turning Inserts(Positive)

**TC□□**

Triangle 60° with Hole



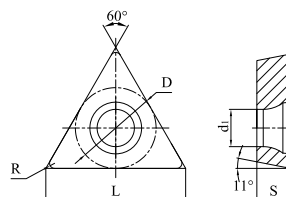
| Ordering Code                                                                       |               | Dimension(mm) |       |      |      |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|-------------------------------------------------------------------------------------|---------------|---------------|-------|------|------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|                                                                                     |               | L             | D     | S    | d1   | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | TCMT110202-MM | 11            | 6.35  | 2.38 | 2.8  | 0.2 |        | ●      |        | ●      |        | ●      | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        | ○      | ○ |
|                                                                                     | TCMT110204-MM | 11            | 6.35  | 2.38 | 2.8  | 0.4 |        | ●      |        | ●      |        | ●      | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        | ●      | ● |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     |               |               |       |      |      |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|  | TCMT090204-GP | 9.6           | 5.56  | 2.38 | 2.5  | 0.4 |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |        |          |        |        |        | ○      | ○      |   |
|                                                                                     | TCMT110202-GP | 11            | 6.35  | 2.38 | 2.8  | 0.2 |        | ○      |        | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        | ○      | ○      |   |
|                                                                                     | TCMT110204-GP | 11            | 6.35  | 2.38 | 2.8  | 0.4 |        | ●      |        | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      |        |        |          |        |        |        | ●      | ●      |   |
|                                                                                     | TCMT110208-GP | 11            | 6.35  | 2.38 | 2.8  | 0.8 |        | ○      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |        |          |        |        |        | ○      | ○      |   |
|                                                                                     | TCMT16T304-GP | 16.5          | 9.525 | 3.97 | 4.4  | 0.4 |        | ○      |        | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      | ●      |        |          |        |        |        | ●      | ●      |   |
|                                                                                     | TCMT16T308-GP | 16.5          | 9.525 | 3.97 | 4.4  | 0.8 |        | ●      |        | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      | ●      | ●      |          |        |        |        | ●      | ●      |   |
|                                                                                     | TCMT16T312-GP | 16.5          | 9.525 | 3.97 | 4.4  | 1.2 |        |        |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      | ○      |        |          |        |        |        |        |        |   |
|                                                                                     | TCMT220408-GP | 22            | 12.7  | 4.76 | 5.56 | 0.8 |        | ○      |        | ○      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT090204-GP | 9.6           | 5.56  | 2.38 | 2.5  | 0.4 |        |        |        |        |        |        |        |        | ○      | ○      |        |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT110202-GP | 11            | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        |        | ●      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT110204-GP | 11            | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT110208-GP | 11            | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT16T304-GP | 16.5          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        |        | ●      |        |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT16T308-GP | 16.5          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCGT220408-GP | 22            | 12.7  | 4.76 | 5.16 | 0.8 |        |        |        |        |        |        |        | ○      | ○      | ○      | ○      |        |        |        |        |          |        |        |        |        |        |   |
|  | TCMT110204-KM | 11            | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCMT16T304-KM | 16.5          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|                                                                                     | TCMT16T308-KM | 16.5          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|  | TCGX090204-AL | 9.6           | 5.56  | 2.38 | 2.5  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ●      | ○      |        |        |   |
|                                                                                     | TCGX110202-AL | 11            | 6.35  | 2.38 | 2.8  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ○      |        |        |        |   |
|                                                                                     | TCGX110204-AL | 11            | 6.35  | 2.38 | 2.8  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ○      | ○      |        |        |   |
|                                                                                     | TCGX110208-AL | 11            | 6.35  | 2.38 | 2.8  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ●      | ○      |        |        |   |
|                                                                                     | TCGX16T302-AL | 16.5          | 9.525 | 3.97 | 4.4  | 0.2 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ○      |        |        |        |   |
|                                                                                     | TCGX16T304-AL | 16.5          | 9.525 | 3.97 | 4.4  | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ●      | ○      |        |        |   |
|                                                                                     | TCGX16T308-AL | 16.5          | 9.525 | 3.97 | 4.4  | 0.8 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ●      | ○      |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**TP□□**

Triangle 60° with Hole



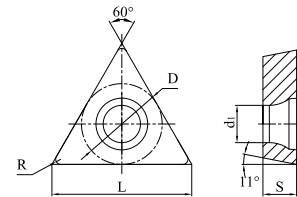
| Ordering Code                                                                       |                | Dimension(mm) |      |      |     |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |  |
|-------------------------------------------------------------------------------------|----------------|---------------|------|------|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--|
|                                                                                     |                | L             | D    | S    | d1  | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |  |
|    | TPET080201R-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080201L-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080202R-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080202L-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|                                                                                     | TPET080204R-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080204L-PS | 8.2           | 4.76 | 2.38 | 2.3 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|  | TPET080201R-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080201L-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080202R-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080202L-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080204R-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPET080204L-GS | 8.2           | 4.76 | 2.38 | 2.3 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|  | TPEH090201R-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090201L-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090202R-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090202L-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|                                                                                     | TPEH090204R-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090204L-PS | 9.6           | 5.56 | 2.38 | 3.0 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|                                                                                     | TPEH110301R-PS | 11            | 6.35 | 3.18 | 3.4 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110301L-PS | 11            | 6.35 | 3.18 | 3.4 | 0.1 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110302R-PS | 11            | 6.35 | 3.18 | 3.4 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110302L-PS | 11            | 6.35 | 3.18 | 3.4 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|                                                                                     | TPEH110304R-PS | 11            | 6.35 | 3.18 | 3.4 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110304L-PS | 11            | 6.35 | 3.18 | 3.4 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |  |
|  | TPEH090202R-GS | 9.6           | 5.56 | 2.38 | 3.0 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090202L-GS | 9.6           | 5.56 | 2.38 | 3.0 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090204R-GS | 9.6           | 5.56 | 2.38 | 3.0 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH090204L-GS | 9.6           | 5.56 | 2.38 | 3.0 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110302R-GS | 11            | 6.35 | 3.18 | 3.4 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110302L-GS | 11            | 6.35 | 3.18 | 3.4 | 0.2 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110304R-GS | 11            | 6.35 | 3.18 | 3.4 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |
|                                                                                     | TPEH110304L-GS | 11            | 6.35 | 3.18 | 3.4 | 0.4 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |  |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**TP□□**

Triangle 60° with Hole



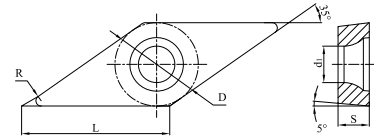
| Ordering Code                                                                      |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |  |
|------------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|--|
|                                                                                    |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |  |
|   | TPMT110202-MM | 11            | 6.35  | 2.38 | 2.8            | 0.2 |        | ●      |        | ●      |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        | ○ |  |
|                                                                                    | TPMT110204-MM | 11            | 6.35  | 2.38 | 2.8            | 0.4 |        | ●      |        | ●      |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |          |        |        |        |        |        |        | ○ |  |
|                                                                                    | TPMT110304-MM | 11            | 6.35  | 3.18 | 3.4            | 0.4 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        | ○ |  |
|                                                                                    |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |  |
|  | TPGT110204-GP | 11            | 6.35  | 2.38 | 2.8            | 0.4 |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                    | TPGT110208-GP | 11            | 6.35  | 2.38 | 2.8            | 0.8 |        |        |        |        |        |        | ○      |        | ○      | ○      |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                    | TPGT16T304-GP | 16.5          | 9.525 | 3.97 | 4.4            | 0.4 |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |  |
|                                                                                    | TPGT16T308-GP | 16.5          | 9.525 | 3.97 | 4.4            | 0.8 |        |        |        |        |        | ●      |        |        | ○      | ●      |        |        |        |        |          |        |        |        |        |        |        |   |  |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**VB□□**

Rhombic 35° with Hole



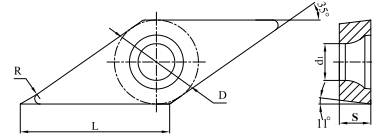
| Ordering Code |                 | Dimension(mm) |       |      |     |       | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |   |
|---------------|-----------------|---------------|-------|------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|---|
|               |                 | L             | D     | S    | d1  | R     | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125 | GK1130   | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|               | VBET1103005R-PS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET1103005L-PS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110301R-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110301L-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110302R-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |
|               | VBET110302L-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET1103005R-GS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET1103005L-GS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110301R-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110301L-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBET110302R-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ●      |   |
|               | VBET110302L-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |   |
|               | VBMT110304-MM   | 11.2          | 6.35  | 3.18 | 2.8 | 0.4   |        | ●      |        | ●      |        | ●      | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        | ○      | ○ |
|               | VBMT160402-MM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.2   |        |        |        |        |        |        | ●      | ○      | ○      | ●      | ○      |        |        |        |        |          |        |        |        |        | ○      | ○ |
|               | VBMT160404-MM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   | ●      | ●      |        | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        | ●      | ● |
|               | VBMT160408-MM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   | ●      | ●      |        | ●      |        | ●      | ●      | ●      | ●      | ●      | ●      |        |        |        |        |          |        |        |        |        | ○      | ○ |
|               | VBMT160404-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   |        | ●      |        | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      |        |        |          |        |        |        |        | ●      | ● |
|               | VBMT160408-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        | ●      |        | ●      |        | ●      | ●      | ●      | ○      | ●      |        |        | ●      |        |        |          |        |        |        |        | ○      | ● |
|               | VBMT160412-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 1.2   |        |        |        | ○      |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|               |                 |               |       |      |     |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |
|               | VBMT160408-KM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        |   |
|               |                 |               |       |      |     |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |   |

● Stock ○ Available Upon Order

## Turning Inserts(Positive)

**VC□□**

Rhombic 35° with Hole



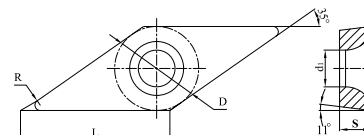
| Ordering Code                                                                       |                 | Dimension(mm) |       |      |     |       | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated | Cermet |        |        |        |        |        |   |
|-------------------------------------------------------------------------------------|-----------------|---------------|-------|------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                     |                 | L             | D     | S    | d1  | R     | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|    | VCET1103005R-PS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET1103005L-PS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110301R-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110301L-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110302R-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ●      |   |
|                                                                                     | VCET110302L-PS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|  | VCET1103005R-GS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET1103005L-GS | 11.2          | 6.35  | 3.18 | 2.8 | <0.05 |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110301R-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110301L-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.1   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|                                                                                     | VCET110302R-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ●      |   |
|                                                                                     | VCET110302L-GS  | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      |   |
|  | VCMT110304-GP   | 11.2          | 6.35  | 3.18 | 2.8 | 0.4   |        | ○      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |          |        |        |        |        |        | ●      | ● |
|                                                                                     | VCMT110308-GP   | 11.2          | 6.35  | 3.18 | 2.8 | 0.8   |        |        |        | ○      |        |        | ●      | ●      |        |        |        |        | ○      |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                     | VCMT160404-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |          |        |        |        |        |        | ●      | ● |
|                                                                                     | VCMT160408-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        | ●      |        | ●      |        |        | ●      | ●      |        |        |        |        | ●      |        |          |        |        |        |        |        | ●      | ● |
|                                                                                     | VCGT110304-GP   | 11.2          | 6.35  | 3.18 | 2.8 | 0.4   |        |        |        |        |        | ○      |        |        |        | ○      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | VCGT160404-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | VCGT160408-GP   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        |        |        |        |        |        | ○      |        |        | ○      | ○      |        |        |        |          |        |        |        |        |        |        |   |
|  |                 |               |       |      |     |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | VCMT160404-KM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |        |   |
|                                                                                     | VCMT160408-KM   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        |        |        | ●      |        |        |        |        |        |        |        |        | ●      |        |          |        |        |        |        |        |        |   |
|  |                 |               |       |      |     |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                     | VCGX110302-AL   | 11.2          | 6.35  | 3.18 | 2.8 | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        | ○      |        |        |        |   |
|                                                                                     | VCGX110304-AL   | 11.2          | 6.35  | 3.18 | 2.8 | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX110308-AL   | 11.2          | 6.35  | 3.18 | 2.8 | 0.8   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX160402-AL   | 16.6          | 9.525 | 4.76 | 4.4 | 0.2   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ○      |        |        |        |   |
|                                                                                     | VCGX160404-AL   | 16.6          | 9.525 | 4.76 | 4.4 | 0.4   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX160408-AL   | 16.6          | 9.525 | 4.76 | 4.4 | 0.8   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX160412-AL   | 16.6          | 9.525 | 4.76 | 4.4 | 1.2   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX220512-AL   | 22.1          | 12.7  | 5.56 | 5.6 | 1.2   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
|                                                                                     | VCGX220516-AL   | 22.1          | 12.7  | 5.56 | 5.6 | 1.6   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        | ○      | ●      | ○      |        |        |   |
| VCGX220530-AL                                                                       | 22.1            | 12.7          | 5.56  | 5.6  | 3   |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          | ○      | ●      | ○      |        |        |        |   |

●Stock ○Available Upon Order

## Turning Inserts(Positive)

**VP□□**

Rhombic 35° with Hole



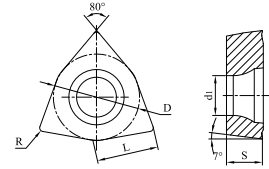
| Ordering Code                                                                       |                 | Dimension(mm) |      |      |                |       | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |
|-------------------------------------------------------------------------------------|-----------------|---------------|------|------|----------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|
|                                                                                     |                 | L             | D    | S    | d <sub>1</sub> | R     | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |
|    | VPET1103005R-PS | 11.2          | 6.35 | 3.18 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET1103005L-PS | 11.2          | 6.35 | 3.18 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110301R-PS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110301L-PS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110302R-PS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110302L-PS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|  | VPET1103005R-GS | 11.2          | 6.35 | 3.18 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET1103005L-GS | 11.2          | 6.35 | 3.18 | 2.8            | <0.05 |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110301R-GS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110301L-GS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.1   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |
|                                                                                     | VPET110302R-GS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        | ●      |        |        |        |          |        |        |        |        | ●      |        |
|                                                                                     | VPET110302L-GS  | 11.2          | 6.35 | 3.18 | 2.8            | 0.2   |        |        |        |        |        |        |        |        |        |        | ○      |        |        |        |          |        |        |        |        | ○      |        |

● Stock ○ Available Upon Order

## Turning Inserts(Positive)

**WC**□□

Trigon 60° with Hole



| Ordering Code                                                                     |               | Dimension(mm) |       |      |                |     | Coated |        |        |        |        |        |        |        |        |        |        |        |        |        | Uncoated |        |        | Cermet |        |        |        |   |
|-----------------------------------------------------------------------------------|---------------|---------------|-------|------|----------------|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|--------|--------|--------|--------|--------|---|
|                                                                                   |               | L             | D     | S    | d <sub>1</sub> | R   | GP1105 | GP1115 | GP1120 | GP1225 | GP1135 | GP3125 | GM1115 | GM1125 | GM3215 | GM3225 | GS3115 | GS3125 | GK1115 | GK1120 | GK1125   | GK1130 | GN9115 | GN9120 | GN9130 | GP91TF | GP91TM |   |
|  | WCMT06T304-GP | 6.5           | 9.525 | 3.97 | 4.4            | 0.4 |        | ●      | ●      |        |        | ○      | ○      |        |        |        |        | ●      |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                   | WCMT06T308-GP | 6.5           | 9.525 | 3.97 | 4.4            | 0.8 |        | ●      | ●      |        |        | ○      | ○      |        |        |        |        | ○      |        |        |          |        |        |        |        |        | ○      | ○ |
|                                                                                   |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |
|                                                                                   |               |               |       |      |                |     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |          |        |        |        |        |        |        |   |

● Stock ○ Available Upon Order

## Recommended Cutting Data ( Negative )

| ISO         | Workpiece material         | Hardness  | Cutting Range             | Purpose      | Geometry    | Grade           | Min-Optimum-Max            |                        |                        |                |
|-------------|----------------------------|-----------|---------------------------|--------------|-------------|-----------------|----------------------------|------------------------|------------------------|----------------|
|             |                            |           |                           |              |             |                 | Cutting Speed<br>Vc(m/min) | Depth of Cut<br>ap(mm) | Feed rate<br>f(mm/rev) |                |
| P           | Low Carbon Steel           | ≤HB180    | Superfinishing &Finishing | Continu-ous  | PS          | GP91TF          | 220-300-380                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |                |
|             |                            |           | Finishing                 | Continu-ous  | QF          | GP91TF          | 220-300-380                | 0.40-0.80-1.50         | 0.04-0.12-0.22         |                |
|             |                            |           |                           |              |             | GP91TM          | 200-280-350                | 0.40-1.00-2.00         | 0.08-0.15-0.30         |                |
|             |                            |           |                           |              |             | GP1105          | 220-280-380                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1115          | 200-260-360                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1120          | 200-260-360                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1225          | 180-240-320                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           | Semi-finishing            | Continu-ous  | QM          | GP91TF          | 200-280-350                | 0.50-1.20-3.00         | 0.15-0.15-0.30         |                |
|             |                            |           |                           |              |             | GP91TM          | 200-260-330                | 0.50-1.50-3.00         | 0.15-0.20-0.35         |                |
|             |                            |           |                           |              |             | GP1105          | 200-260-360                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
|             |                            |           |                           |              |             | GP1115          | 180-230-320                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
|             |                            |           |                           |              |             | GP1120          | 180-230-320                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
|             |                            |           |                           |              |             | GP1225          | 160-210-300                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
|             |                            |           |                           | Continu-ous  | TS          | SV              | GP91TM                     | 200-260-330            | 0.50-1.20-3.00         | 0.10-0.20-0.35 |
|             |                            |           |                           |              |             |                 | GP91TF                     | 180-240-330            | 1.00-1.50-3.50         | 0.18-0.15-0.35 |
|             |                            |           |                           | Interrupted  | GP91TM      |                 | 180-230-320                | 1.00-1.50-3.50         | 0.18-0.20-0.40         |                |
|             |                            |           |                           |              | GP1120      |                 | 180-220-320                | 1.00-2.50-4.50         | 0.18-0.25-0.45         |                |
|             |                            |           |                           | Interrupted  | GP1225      |                 | 160-200-300                | 1.00-2.50-4.50         | 0.18-0.25-0.45         |                |
|             |                            |           | Roughing                  |              | Continu-ous |                 | QR                         | GP1105                 | 130-190-270            | 1.50-3.50-6.00 |
|             |                            |           |                           | GP1225       |             | 120-170-250     |                            | 1.50-3.50-6.00         | 0.20-0.30-0.60         |                |
|             |                            |           | Heavy Cutting             | Continu-ous  | QH          | GP1105          | 100-150-240                | 3.00-6.00-12.00        | 0.35-0.60-1.10         |                |
|             |                            |           |                           |              |             | GP1225          | 90-140-210                 | 3.00-6.00-12.00        | 0.35-0.60-1.10         |                |
|             |                            |           | Interrupted               | GP1135       | 80-130-190  | 3.00-6.00-12.00 | 0.35-0.60-1.10             |                        |                        |                |
|             |                            |           |                           |              |             |                 |                            |                        |                        |                |
|             | Carbon Steel & Alloy Steel | HB180-280 | Superfinishing &Finishing | Continu-ous  | PS          | GP91TF          | 200-270-350                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |                |
|             |                            |           | Finishing                 | Interru-pted | QF          | GP91TF          | 200-270-350                | 0.40-0.80-1.50         | 0.04-0.12-0.22         |                |
|             |                            |           |                           |              |             | GP91TM          | 180-250-330                | 0.40-1.00-2.00         | 0.08-0.15-0.30         |                |
|             |                            |           |                           |              |             | GP1105          | 200-250-340                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1115          | 180-230-320                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1120          | 180-230-320                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1225          | 160-200-300                | 0.40-0.80-2.00         | 0.08-0.15-0.35         |                |
|             |                            |           | Finishing &Semi-finishing | Continu-ous  | QM          | GP91TF          | 180-250-330                | 0.50-1.20-3.00         | 0.15-0.12-0.30         |                |
|             |                            |           |                           |              |             | GP91TM          | 180-230-310                | 0.50-1.50-3.00         | 0.15-0.15-0.35         |                |
|             |                            |           |                           |              |             | GP1105          | 160-230-320                | 0.80-2.00-4.00         | 0.15-0.22-0.40         |                |
|             |                            |           |                           |              |             | GP1115          | 140-210-300                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
|             |                            |           |                           |              |             | GP1120          | 140-210-300                | 0.80-2.00-4.00         | 0.15-0.20-0.40         |                |
| GP1225      |                            |           |                           |              |             | 120-190-280     | 0.80-2.00-4.00             | 0.15-0.20-0.40         |                        |                |
| Continu-ous |                            |           |                           | TS           | GP91TM      | 180-230-310     | 0.50-1.20-3.00             | 0.10-0.20-0.35         |                        |                |
| Continu-ous |                            |           |                           | SV           | GP91TF      | 160-220-310     | 1.00-1.50-3.50             | 0.18-0.15-0.35         |                        |                |
|             |                            |           |                           |              | GP91TM      | 160-210-300     | 1.00-1.50-3.50             | 0.18-0.20-0.40         |                        |                |
|             |                            |           |                           |              | GP1120      | 140-200-300     | 1.00-2.50-4.50             | 0.18-0.25-0.45         |                        |                |
| Interrupted |                            |           |                           |              | GP1225      | 120-180-280     | 1.00-2.50-4.50             | 0.18-0.25-0.45         |                        |                |



## Recommended Cutting Data ( Negative )

| ISO | Workpiece material         | Hardness  | Cutting Range  | Purpose      | Geometry | Grade  | Min-Optimum-Max         |                     |                     |
|-----|----------------------------|-----------|----------------|--------------|----------|--------|-------------------------|---------------------|---------------------|
|     |                            |           |                |              |          |        | Cutting Speed Vc(m/min) | Depth of Cut ap(mm) | Feed rate f(mm/rev) |
| P   | Carbon Steel & Alloy Steel | HB180-280 | Roughing       | Continuous   | QR       | GP1105 | 120-180-260             | 1.50-3.50-6.00      | 0.20-0.30-0.60      |
|     |                            |           |                | Interru-pted |          | GP1225 | 110-160-240             | 1.50-3.50-6.00      | 0.20-0.30-0.60      |
|     |                            |           |                |              |          | GP1135 | 100-140-220             | 1.50-3.50-6.00      | 0.20-0.30-0.60      |
|     |                            |           | Heavy Cutting  | Continuous   | QH       | GP1105 | 90-140-230              | 3.00-6.00-12.00     | 0.35-0.60-1.10      |
|     |                            |           |                | Interru-pted |          | GP1225 | 80-130-200              | 3.00-6.00-12.00     | 0.35-0.60-1.10      |
|     |                            |           |                |              |          | GP1135 | 70-120-180              | 3.00-6.00-12.00     | 0.35-0.60-1.10      |
|     | Carbon Steel & Alloy Steel | HB280-350 | Finishing      | Continuous   | QF       | GP91TF | 180-250-320             | 0.40-0.80-1.50      | 0.04-0.12-0.22      |
|     |                            |           |                |              |          | GP91TM | 170-230-300             | 0.40-1.00-2.00      | 0.08-0.15-0.30      |
|     |                            |           |                |              |          | GP1105 | 160-200-270             | 0.40-0.80-2.00      | 0.08-0.15-0.35      |
|     |                            |           |                |              |          | GP1115 | 150-180-250             | 0.40-0.80-2.00      | 0.08-0.15-0.35      |
|     |                            |           |                |              |          | GP1120 | 150-180-250             | 0.40-0.80-2.00      | 0.08-0.15-0.35      |
|     |                            |           |                |              |          | GP1225 | 130-150-230             | 0.40-0.80-2.00      | 0.08-0.15-0.35      |
|     |                            |           | Semi-finishing | Continuous   | QM       | GP91TF | 160-230-310             | 0.50-1.20-3.00      | 0.15-0.15-0.30      |
|     |                            |           |                |              |          | GP91TM | 160-210-300             | 0.50-1.50-3.00      | 0.15-0.20-0.35      |
|     |                            |           |                |              |          | GP1105 | 120-180-250             | 0.80-2.00-4.00      | 0.15-0.20-0.40      |
|     |                            |           |                |              |          | GP1115 | 110-170-240             | 0.80-2.00-4.00      | 0.15-0.20-0.40      |
|     |                            |           |                |              |          | GP1120 | 110-170-240             | 0.80-2.00-4.00      | 0.15-0.20-0.40      |
|     |                            |           |                |              |          | GP1225 | 100-150-220             | 0.80-2.00-4.00      | 0.15-0.20-0.40      |
|     |                            |           |                | Continuous   | TS       | GP91TM | 150-210-280             | 0.50-1.20-3.00      | 0.10-0.15-0.35      |
|     |                            |           |                |              |          | GP91TF | 140-190-270             | 1.00-1.50-3.50      | 0.18-0.15-0.35      |
|     |                            |           |                |              |          | GP91TM | 140-180-260             | 1.00-1.50-3.50      | 0.18-0.20-0.40      |
|     |                            |           |                | Interru-pted | SV       | GP1120 | 110-160-240             | 1.00-2.50-4.50      | 0.18-0.25-0.45      |
|     |                            |           |                |              |          | GP1225 | 100-140-220             | 1.00-2.50-4.50      | 0.18-0.25-0.45      |
|     |                            |           |                |              |          |        |                         |                     |                     |
|     |                            |           | Roughing       | Continuous   | QR       | GP1105 | 100-150-210             | 2.00-3.50-6.50      | 0.20-0.30-0.60      |
|     |                            |           |                | Interru-pted |          | GP1225 | 90-140-200              | 2.00-3.50-6.50      | 0.20-0.30-0.60      |
|     |                            |           |                |              |          | GP1135 | 80-120-180              | 2.00-3.50-6.50      | 0.20-0.30-0.60      |
|     |                            |           | Heavy Cutting  | Continuous   | QH       | GP1105 | 80-110-190              | 3.00-6.00-12.00     | 0.35-0.60-1.10      |
|     |                            |           |                | Interru-pted |          | GP1225 | 70-100-170              | 3.00-6.00-12.00     | 0.35-0.60-1.10      |
|     |                            |           |                |              |          | GP1135 | 60-90-150               | 3.00-6.00-12.00     | 0.35-0.60-1.10      |

## Recommended Cutting Data ( Negative )

| ISO | Workpiece material                    | Hardness | Cutting Range              | Purpose     | Geometry | Grade  | Min-Optimum-Max            |                        |                        |
|-----|---------------------------------------|----------|----------------------------|-------------|----------|--------|----------------------------|------------------------|------------------------|
|     |                                       |          |                            |             |          |        | Cutting Speed<br>Vc(m/min) | Depth of Cut<br>ap(mm) | Feed rate<br>f(mm/rev) |
| M   | stainless steel 304 and 316, etc.     | ≤HB300   | superfinishing & Finishing | Continuous  | PS       | GS3115 | 120-190-250                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |
|     |                                       |          |                            |             |          | GS3125 | 100-170-230                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |
|     |                                       |          | Finishing                  | Continuous  | SF       | GS3115 | 120-190-250                | 0.10-0.80-1.50         | 0.08-0.10-0.30         |
|     |                                       |          | Semi-finishing             | Continuous  | SM       | GM1115 | 200-250-300                | 0.50-1.20-2.00         | 0.10-0.20-0.40         |
|     |                                       |          |                            |             |          | GM1125 | 180-230-280                | 0.50-1.80-3.00         | 0.10-0.20-0.40         |
|     |                                       |          |                            | Interrupted |          | GM3215 | 100-160-220                | 1.00-2.50-4.00         | 0.10-0.20-0.40         |
|     |                                       |          |                            |             |          | GM3225 | 100-160-220                | 1.00-2.50-4.00         | 0.10-0.20-0.40         |
| K   | Gray cast iron FC200 , FC250 etc.     | ≤HB250   | Finishing & Semi-finishing | Continuous  | UK       | GK1115 | 230-350-500                | 0.50-1.50-3.00         | 0.10-0.20-0.40         |
|     |                                       |          |                            | Interrupted |          | GK1125 | 220-320-480                | 0.50-1.50-3.00         | 0.10-0.20-0.40         |
|     |                                       |          | Roughing                   | Continuous  | HK       | GK1115 | 220-320-480                | 0.50-2.00-4.00         | 0.10-0.25-0.50         |
|     |                                       |          |                            | Interrupted |          | GK1125 | 210-300-450                | 0.50-2.00-4.00         | 0.10-0.25-0.50         |
|     |                                       |          | Heavy Cutting              | Continuous  | Flat     | GK1115 | 210-300-450                | 1.00-2.50-6.00         | 0.20-0.30-0.60         |
|     |                                       |          |                            | Interrupted |          | GK1125 | 200-280-430                | 1.00-2.50-6.00         | 0.20-0.30-0.60         |
|     | Ductile cast iron FCD450, FCD600 etc. | ≤HB270   | Finishing & Semi-finishing | Continuous  | UK       | GK1120 | 180-260-380                | 0.50-1.50-3.00         | 0.10-0.20-0.40         |
|     |                                       |          |                            | Interrupted |          | GK1130 | 160-230-350                | 0.50-1.50-3.00         | 0.10-0.20-0.40         |
|     |                                       |          | Roughing                   | Continuous  | HK       | GK1120 | 180-240-360                | 0.50-2.00-4.00         | 0.10-0.25-0.50         |
|     |                                       |          |                            | Interrupted |          | GK1130 | 160-210-340                | 0.50-2.00-4.00         | 0.10-0.25-0.50         |
|     |                                       |          | Heavy Cutting              | Continuous  | Flat     | GK1120 | 180-220-350                | 1.00-2.50-6.00         | 0.20-0.30-0.60         |
|     |                                       |          |                            | Interrupted |          | GK1130 | 160-200-330                | 1.00-2.50-6.00         | 0.20-0.30-0.60         |

## Recommended Cutting Data ( Positive )

| ISO | Workpiece material         | Hardness  | Cutting Range              | Purpose     | Geometry | Grade  | Min-Optimum-Max            |                        |                        |
|-----|----------------------------|-----------|----------------------------|-------------|----------|--------|----------------------------|------------------------|------------------------|
|     |                            |           |                            |             |          |        | Cutting Speed<br>Vc(m/min) | Depth of Cut<br>ap(mm) | Feed rate<br>f(mm/rev) |
| P   | Low Carbon Steel           | ≤HB180    | Superfinishing & Finishing | Continuous  | PS       | GP91TF | 220-300-380                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |
|     |                            |           |                            | Continuous  | GS       | GP91TF | 220-300-380                | 0.20-0.30-1.50         | 0.02-0.05-0.08         |
|     |                            |           | Finishing                  | Continuous  | MM       | GP91TF | 220-280-340                | 0.10-0.50-1.00         | 0.03-0.10-0.20         |
|     |                            |           |                            |             |          | GP91TM | 200-250-310                | 0.10-0.60-1.50         | 0.03-0.10-0.20         |
|     |                            |           |                            |             |          | GP1105 | 190-240-320                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1115 | 180-220-300                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP3125 | 160-200-260                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1225 | 170-200-280                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           | Finishing & Semi-finishing | Continuous  | GP       | GP91TF | 200-250-300                | 0.30-0.80-1.50         | 0.05-0.10-0.22         |
|     |                            |           |                            |             |          | GP91TM | 180-230-300                | 0.30-1.00-1.80         | 0.05-0.12-0.22         |
|     |                            |           |                            |             |          | GP1115 | 170-200-280                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP1120 | 170-200-280                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP3125 | 140-180-230                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP1225 | 150-180-260                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           | Roughing                   | Continuous  | KM       | GP1225 | 140-160-240                | 1.00-2.00-3.50         | 0.13-0.20-0.40         |
|     |                            |           |                            | Interrupted |          | GP1225 | 130-150-230                | 1.00-2.00-3.50         | 0.13-0.20-0.40         |
|     | Carbon Steel & Alloy Steel | HB180-280 | Superfinishing & Finishing | Continuous  | PS       | GP91TF | 200-250-330                | 0.08-0.15-0.30         | 0.03-0.08-0.15         |
|     |                            |           |                            | Continuous  | GS       | GP91TF | 200-250-330                | 0.20-0.30-1.50         | 0.02-0.05-0.08         |
|     |                            |           | Finishing                  | Continuous  | MM       | GP91TF | 200-250-330                | 0.10-0.50-1.00         | 0.03-0.08-0.20         |
|     |                            |           |                            |             |          | GP91TM | 180-230-300                | 0.10-0.60-1.50         | 0.03-0.10-0.20         |
|     |                            |           |                            |             |          | GP1105 | 160-200-270                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1115 | 150-180-260                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP3125 | 130-160-220                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1225 | 140-160-240                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           | Finishing & Semi-finishing | Continuous  | GP       | GP91TF | 180-210-280                | 0.30-0.80-1.50         | 0.05-0.10-0.22         |
|     |                            |           |                            |             |          | GP91TM | 160-190-270                | 0.30-1.00-1.80         | 0.05-0.12-0.22         |
|     |                            |           |                            |             |          | GP1115 | 140-160-240                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP1120 | 140-160-240                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP3125 | 110-140-210                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP1225 | 120-140-220                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           | Roughing                   | Continuous  | KM       | GP1225 | 110-130-200                | 1.00-2.00-3.50         | 0.13-0.20-0.40         |
|     |                            |           |                            | Interrupted |          | GP1225 | 100-120-190                | 1.00-2.00-3.50         | 0.13-0.20-0.40         |
|     |                            | HB280-350 | Finishing                  | Continuous  | MM       | GP91TF | 160-220-300                | 0.10-0.50-1.00         | 0.03-0.08-0.20         |
|     |                            |           |                            |             |          | GP91TM | 140-200-280                | 0.10-0.60-1.50         | 0.03-0.10-0.20         |
|     |                            |           |                            |             |          | GP1105 | 140-180-240                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1115 | 130-160-230                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP3125 | 110-140-200                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           |                            |             |          | GP1225 | 120-140-210                | 0.10-0.60-1.50         | 0.05-0.10-0.20         |
|     |                            |           | Finishing & Semi-finishing | Continuous  | GP       | GP91TF | 160-200-270                | 0.30-0.80-1.50         | 0.05-0.10-0.22         |
|     |                            |           |                            |             |          | GP91TM | 130-160-250                | 0.30-1.00-1.80         | 0.05-0.12-0.22         |
|     |                            |           | Finishing & Semi-finishing | Continuous  | GP       | GP1115 | 120-160-210                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |
|     |                            |           |                            |             |          | GP1120 | 120-160-210                | 0.40-1.00-2.50         | 0.07-0.12-0.30         |

## Recommended Cutting Data ( Positive )

| ISO                                   | Workpiece material                | Hardness                  | Cutting Range             | Purpose     | Geometry       | Grade  | Min-Optimum-Max                   |                     |                           |             |    |        |             |                |                |
|---------------------------------------|-----------------------------------|---------------------------|---------------------------|-------------|----------------|--------|-----------------------------------|---------------------|---------------------------|-------------|----|--------|-------------|----------------|----------------|
|                                       |                                   |                           |                           |             |                |        | Cutting Speed Vc(m/min)           | Depth of Cut ap(mm) | Feed rate f(mm/rev)       |             |    |        |             |                |                |
| P                                     | Carbon Steel & Alloy Steel        | HB280-350                 | Finishing &Semi-finishing | Interrupted | GP             | GP3125 | 90-140-210                        | 0.40-1.00-2.50      | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GP1225 | 100-140-220                       | 0.40-1.00-2.50      | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           | Roughing                  | Continuous  | KM             | GP1225 | 90-110-180                        | 1.00-2.00-3.50      | 0.13-0.20-0.40            |             |    |        |             |                |                |
|                                       |                                   |                           |                           | Interrupted |                | GP1225 | 80-100-170                        | 1.00-2.00-3.50      | 0.13-0.20-0.40            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                |        |                                   |                     |                           |             |    |        |             |                |                |
| M                                     | stainless steel 304 and 316, etc. | ≤HB300                    | Superfinishing &Finishing | Continuous  | PS             | GS3125 | 100-170-230                       | 0.08-0.15-0.30      | 0.03-0.08-0.15            |             |    |        |             |                |                |
|                                       |                                   |                           |                           | Continuous  | GS             | GS3125 | 100-170-230                       | 0.20-0.30-1.50      | 0.02-0.05-0.08            |             |    |        |             |                |                |
|                                       |                                   |                           | Finishing                 | Continuous  | MM             | GS3115 | 150-200-270                       | 0.50-0.70-1.50      | 0.05-0.10-0.20            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM1115 | 200-250-300                       | 0.50-0.70-1.50      | 0.05-0.10-0.20            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM1125 | 180-230-280                       | 0.50-0.70-1.50      | 0.05-0.10-0.20            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM3215 | 100-160-220                       | 0.50-0.70-1.50      | 0.05-0.10-0.20            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM3225 | 100-160-220                       | 0.50-0.70-1.50      | 0.05-0.10-0.20            |             |    |        |             |                |                |
|                                       |                                   |                           | Semi-finishing            | Continuous  | GP             | GM1115 | 200-250-300                       | 0.40-1.00-2.50      | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM1125 | 180-230-280                       | 0.40-1.00-2.50      | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           | Interrupted |                | GM3215 | 100-160-220                       | 0.40-1.00-2.50      | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GM3225 | 100-160-220                       | 0.40-1.00-2.5       | 0.07-0.12-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | K      | Gray cast iron FC200 , FC250 etc. | ≤HB250              | Finishing &Semi-finishing | Continuous  | GP | GK1115 | 180-280-380 | 0.30-0.80-2.00 | 0.05-0.12-0.25 |
|                                       |                                   |                           |                           |             |                |        |                                   |                     |                           | Interrupted |    | GK1125 | 160-250-350 | 0.30-0.80-2.00 | 0.05-0.12-0.25 |
| Roughing                              | Continuous                        | KM                        | GK1115                    | 180-260-360 | 1.00-2.00-4.00 |        |                                   |                     | 0.13-0.20-0.40            |             |    |        |             |                |                |
|                                       | Interrupted                       |                           | GK1125                    | 160-230-340 | 1.00-2.00-4.00 |        |                                   |                     | 0.13-0.20-0.40            |             |    |        |             |                |                |
| Ductile cast iron FCD450, FCD600 etc. | ≤HB270                            | Finishing &Semi-finishing | Continuous                | GP          | GK1115         |        | 160-250-350                       | 0.30-0.80-2.00      | 0.05-0.12-0.25            |             |    |        |             |                |                |
|                                       |                                   |                           | Interrupted               |             | GK1125         |        | 140-230-330                       | 0.30-0.80-2.00      | 0.05-0.12-0.25            |             |    |        |             |                |                |
|                                       |                                   | Roughing                  | Continuous                | KM          | GK1115         |        | 160-230-330                       | 1.00-2.00-4.00      | 0.13-0.20-0.40            |             |    |        |             |                |                |
|                                       |                                   |                           | Interrupted               |             | GK1125         |        | 140-200-310                       | 1.00-2.00-4.00      | 0.13-0.20-0.40            |             |    |        |             |                |                |
| N                                     | Titanium Alloy                    | HB90-100                  | Finishing &Semi-finishing | Continuous  | AL             | GN9115 | 250-700-970                       | 0.50-1.20-3.00      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           | Interrupted |                | GN9120 | 250-680-960                       | 0.50-1.20-3.50      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   | HB60-90                   |                           | Continuous  |                | GN9130 | 250-650-950                       | 0.50-1.20-4.00      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GN9115 | 1000-1400-2100                    | 0.50-1.20-3.00      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GN9120 | 950-1300-2000                     | 0.50-1.20-3.50      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                | GN9130 | 950-1200-1950                     | 0.50-1.20-4.00      | 0.05-0.10-0.30            |             |    |        |             |                |                |
|                                       |                                   |                           |                           |             |                |        |                                   |                     |                           |             |    |        |             |                |                |

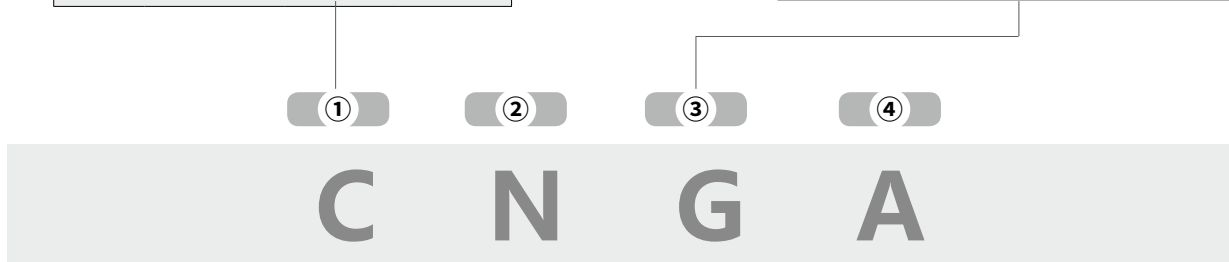
## PCBN/PCD TURNING



## PCBN/PCD Turning Inserts Identification System

| Symbol         | Shape         | Corner Angle(°) | Figure                                                                            |
|----------------|---------------|-----------------|-----------------------------------------------------------------------------------|
| S              | Square        | 90°             |  |
| T              | Triangle      | 60°             |  |
| C              | Rhombic       | 80°             |  |
| D              |               | 55°             |                                                                                   |
| V              |               | 35°             |                                                                                   |
| W              | Trigon        | 80°             |  |
| L              | Rectangle     | 90°             |  |
| A              | Parallelogram | 85°             |  |
| R              | Round         | --              |  |
| ① Shape Symbol |               |                 |                                                                                   |

| Symbol             | Tolerance(mm)    |                  |                  |
|--------------------|------------------|------------------|------------------|
|                    | Corner Height    | Thickness        | I.C. size (Ød)   |
| A                  | ±0.005<br>±0.005 | ±0.025<br>±0.025 | ±0.025<br>±0.013 |
| C                  | ±0.013           | ±0.025           | ±0.025           |
| H                  | ±0.013           | ±0.025           | ±0.013           |
| E                  | ±0.025           | ±0.025           | ±0.025           |
| G                  | ±0.025           | ±0.13            | ±0.025           |
| K                  | ±0.013           | ±0.025           | ±0.05~<br>±0.13  |
| L                  | ±0.025           | ±0.025           | ±0.05~<br>±0.13  |
| M                  | ±0.08~<br>±0.18  | ±0.13            | ±0.05~<br>±0.13  |
| ③ Tolerance Symbol |                  |                  |                  |



| ② Clearance Angle Symbol                                                            |                    |
|-------------------------------------------------------------------------------------|--------------------|
|  |                    |
| Symbol                                                                              | Clearance Angle(°) |
| A                                                                                   | 3°                 |
| B                                                                                   | 5°                 |
| C                                                                                   | 7°                 |
| D                                                                                   | 15°                |
| E                                                                                   | 20°                |
| F                                                                                   | 25°                |
| G                                                                                   | 30°                |
| N                                                                                   | 0°                 |
| P                                                                                   | 11°                |
| O                                                                                   | Other              |

| ④ Chipbreaker / Hole Symbol |         |                                  |             |                                                                                                                                                                             |
|-----------------------------|---------|----------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Symbol                      | Hole    | Hole Shape                       | Chipbreaker | Shape                                                                                                                                                                       |
| N                           | Without | —                                | Without     |   |
| A(G)                        | With    | With Hole                        | Without     |   |
| W(T)                        | With    | With hole and countersink 40°-60 | Without     |   |
| X                           | —       | —                                | —           |                                                                                                                                                                             |

|                                  |        |        |        |        |        |        |        | I.C. Size (mm) |
|----------------------------------|--------|--------|--------|--------|--------|--------|--------|----------------|
| Symbol                           | Symbol | Symbol | Symbol | Symbol | Symbol | Symbol | Symbol |                |
|                                  | 03     | 03     |        | 06     | 04     |        |        | 3.97           |
|                                  | 04     | 04     |        | 08     | 05     |        |        | 4.76           |
| 05                               |        |        |        |        |        |        |        | 5              |
|                                  | 05     | 05     | 03     | 09     | 06     |        |        | 5.56           |
| 06                               |        |        |        |        |        |        |        | 6              |
|                                  | 06     | 06     | 04     | 11     | 07     | 11     |        | 6.35           |
|                                  | 07     | 08     | 05     | 13     | 09     |        |        | 7.94           |
| 08                               |        |        |        |        |        |        |        | 8              |
| 09                               | 09     | 09     | 06     | 16     | 11     | 16     | 16     | 9.525          |
| 10                               |        |        |        |        |        |        |        | 10             |
| 12                               |        |        |        |        |        |        |        | 12             |
| 12                               | 12     | 12     | 08     | 22     | 15     | 22     |        | 12.7           |
| 15                               | 15     | 16     | 10     | 27     | 19     |        |        | 15.875         |
| 16                               |        |        |        |        |        |        |        | 16             |
| 19                               | 19     | 19     | 13     | 33     | 23     |        |        | 19.05          |
| 20                               |        |        |        |        |        |        |        | 20             |
|                                  | 22     | 22     |        | 38     | 27     |        |        | 22.225         |
| 25                               |        |        |        |        |        |        |        | 25             |
| 25                               | 25     | 25     |        | 44     | 31     |        |        | 25.4           |
| 31                               | 31     | 32     |        | 55     | 38     |        |        | 31.75          |
| 31                               |        |        |        |        |        |        | —      | 32             |
| ⑤Cutting Edge Length Symbol (mm) |        |        |        |        |        |        |        |                |

Indicates the cutting properties and chipbreaker

⑨PCBN Geometry Symbol

⑤ ⑥ ⑦ ⑧ ⑨

**09 T3 04 - 2 GN**

| ⑥Thickness Symbol |           |
|-------------------|-----------|
|                   |           |
| Symbol            | Thickness |
| 01                | 1.59      |
| 02                | 2.38      |
| T2                | 2.78      |
| 03                | 3.18      |
| T3                | 3.97      |
| 04                | 4.76      |
| 05                | 5.56      |
| 06                | 6.35      |
| 07                | 7.94      |
| 09                | 9.52      |

| ⑦Corner Symbol |                |
|----------------|----------------|
|                |                |
| Symbol         | Corner Rc (mm) |
| 00             | 0.03           |
| 02             | 0.2            |
| 04             | 0.4            |
| 08             | 0.8            |
| 12             | 1.2            |
| 16             | 1.6            |
| 20             | 2.0            |
| 24             | 2.4            |
| 28             | 2.8            |
| 32             | 3.2            |

| ⑧NO. of Cutting Edge |      |
|----------------------|------|
| Symbol               | Edge |
| 1                    | 1    |
| 2                    | 2    |
| 3                    | 3    |
| 4                    | 4    |
| 6                    | 6    |
| 8                    | 8    |

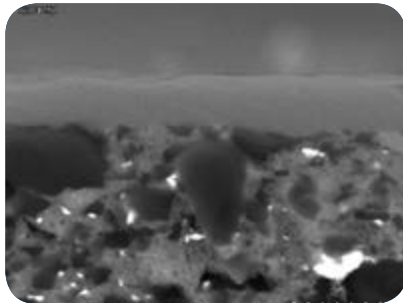
| ⑨PCD Rake Angle Symbol |               |
|------------------------|---------------|
|                        |               |
| Symbol                 | Rake Angle(°) |
| GN                     | 0°            |
| GB                     | 5°            |
| GC                     | 7°            |
| GT                     | 10°           |

## Application of PCBN Grades

| Workpiece Material | Cutting Mode        | Recommended Grade       | Recommended Cutting Speed (m/min) | ISO | Application Range |
|--------------------|---------------------|-------------------------|-----------------------------------|-----|-------------------|
| <b>K</b>           | Continuous Cutting  | BKN115P                 | 400-1500                          | K01 | BKN115P           |
|                    |                     | BKN115S                 | 100-800                           | K10 | BKN115S           |
|                    | Interrupted Cutting | BKN125S                 | 400-1000                          | K20 | BKN125S           |
|                    |                     | BKN135S                 | 400-1000                          | K30 | BKN135S           |
| <b>H</b>           | Continuous Cutting  | BHN105S                 | 120-200                           | H01 | BHN115P           |
|                    |                     | BHN115P/BHN115S         | 120-220                           | H10 | BHN125P           |
|                    | Interrupted Cutting | BHN125P/BHN125S/BHC125P | 100-200                           | H20 | BHN135P           |
|                    |                     | BHN135P/ BHC135P        | 50-130                            | H30 | BHN105S           |
|                    |                     |                         |                                   |     | BHN115S           |
|                    |                     |                         |                                   |     | BHN125S           |
|                    |                     |                         |                                   |     | BHC125P           |
|                    |                     |                         |                                   |     | BHC135P           |

**NEW**

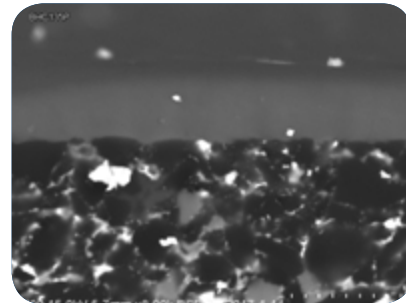
General-purpose Coated PCBN  
Grade-BHC125P



- Suitable for general hardened steel machining.
- A latest ALTIN+ layer with Excellent heat and oxidation resistance.
- Multi-modal grained CBN substrate with superior toughness and greatly improved wear resistance.

**NEW**

Heavy Interrupted Machining  
Coated PCBN Grade-BHC135P



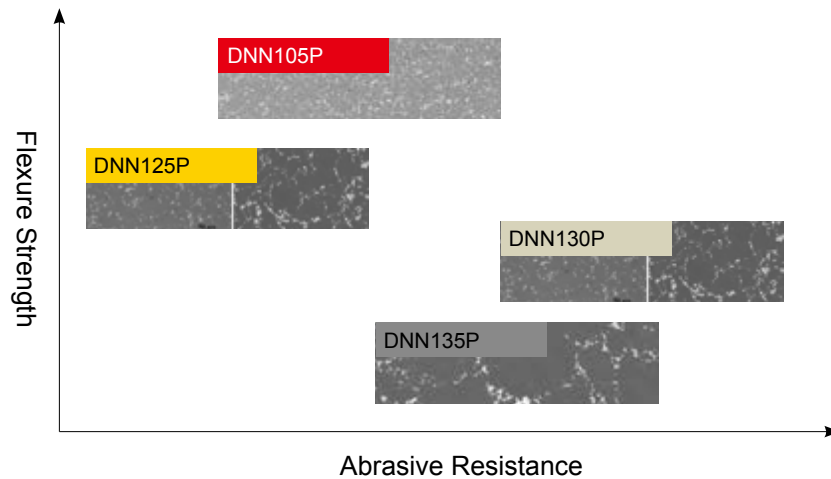
- Applicable to heavy interrupted machining for hardened steel.
- A latest ALTIN+ layer with Excellent heat and oxidation resistance.
- High-content CBN substrate with excellent impact resistance and chemical stability.



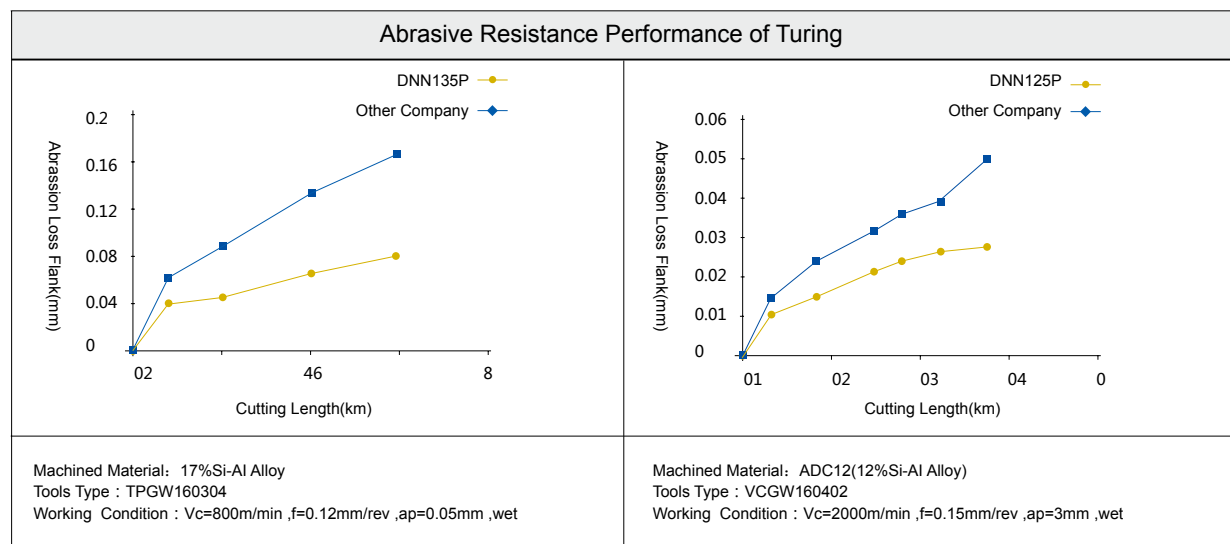
## Application of PCD Grades

| Workpiece Material | Cutting Mode        | Recommended Grade | Recommended Cutting Speed (m/min) | ISO | Application Range |
|--------------------|---------------------|-------------------|-----------------------------------|-----|-------------------|
| N                  | Continuous Cutting  | DNN105P           | 300~3000                          | N01 | DNN105P           |
|                    |                     | DNN125P           | 300~3600                          | N10 |                   |
|                    | Interrupted Cutting | DNN130P           | 300~2400                          | N20 | DNN125P DNN130P   |
|                    |                     | DNN135P           | 300~2000                          | N30 |                   |
|                    |                     |                   |                                   |     | DNN135P           |

## Application of PCD products



## Cutting Performance of PCD Grades



## Range of PCBN Turning Inserts

### PCBN (Negative)

| TYPE          | Advantages                                                                                                                                                                                                                                                                  | Rhombic 80°                                                                         | Rhombic 55°                                                                         | Square 90°                                                                        | Triangle 60°                                                                         | Rhombic 35°                                                                           | Trigon 80°                                                                            | Round 360°                                                                          |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Brazed        | <ul style="list-style-type: none"> <li>• Higher precision and longer cutting life</li> <li>• Wide range of insert types</li> <li>• Smaller PCBN tip , space more economical</li> </ul>                                                                                      |    |    |                                                                                   |    |    |    |                                                                                     |
|               |                                                                                                                                                                                                                                                                             | CNGA                                                                                | DNGA                                                                                |                                                                                   | TNGA                                                                                 | VNGA                                                                                  | WNGA                                                                                  |                                                                                     |
|               |                                                                                                                                                                                                                                                                             | P068                                                                                | P069                                                                                |                                                                                   | P071                                                                                 | P072                                                                                  | P073                                                                                  |                                                                                     |
| Solid         | <ul style="list-style-type: none"> <li>• Higher impact resistance</li> <li>• Both sides of the insert can be used for cutting</li> <li>• Suitable for roughing at large cutting depth</li> <li>• Space more economical</li> </ul>                                           |    |                                                                                     |  |                                                                                      |                                                                                       |    |  |
|               |                                                                                                                                                                                                                                                                             | CNGN                                                                                |                                                                                     | SNGN                                                                              |                                                                                      |                                                                                       | WNGN                                                                                  | RNGN                                                                                |
|               |                                                                                                                                                                                                                                                                             | P074                                                                                |                                                                                     | P074                                                                              |                                                                                      |                                                                                       | P075                                                                                  | P075                                                                                |
| Solid welding | <ul style="list-style-type: none"> <li>• More cutting edges, both sides of the insert can be used for cutting</li> <li>• Standard hole for easy use in existing tool holders</li> <li>• Higher productive efficiency depth , improving the productive efficiency</li> </ul> |  |  |                                                                                   |  |  |  |                                                                                     |
|               |                                                                                                                                                                                                                                                                             | CNGA                                                                                | DNGA                                                                                |                                                                                   | TNGA                                                                                 | VNGA                                                                                  | WNGA                                                                                  |                                                                                     |
|               |                                                                                                                                                                                                                                                                             | P068                                                                                | P070                                                                                |                                                                                   | P071                                                                                 | P072                                                                                  | P073                                                                                  |                                                                                     |

## Range of PCBN Turning Inserts

PCD (Positive)

| TYPE   | Advantages                                                                                                                                                                                                                | Rhombic 80°                                                                       | Rhombic 55°                                                                       | Square 90°                                                                        | Triangle 60°                                                                      | Rhombic 35°                                                                         | Trigon 80° | Round 360° |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------|------------|
| Brazen | <ul style="list-style-type: none"> <li>Higher precision and longer cutting life</li> <li>Wide range of insert types</li> <li>Smaller PCBN tip, space more economical</li> </ul>                                           |  |  |                                                                                   |  |  |            |            |
|        |                                                                                                                                                                                                                           | CCGW                                                                              | DCGW                                                                              |                                                                                   | TCGW                                                                              | VBGW                                                                                |            |            |
|        |                                                                                                                                                                                                                           | P076                                                                              | P076                                                                              |                                                                                   | P077                                                                              | P079                                                                                |            |            |
|        |                                                                                                                                                                                                                           |                                                                                   |                                                                                   |                                                                                   | TPGW                                                                              | VCGW                                                                                |            |            |
|        |                                                                                                                                                                                                                           |                                                                                   |                                                                                   |                                                                                   | P078                                                                              | P079                                                                                |            |            |
| Solid  | <ul style="list-style-type: none"> <li>Higher impact resistance</li> <li>Both sides of the insert can be used for cutting</li> <li>Suitable for roughing at large cutting depth</li> <li>Space more economical</li> </ul> |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |            |            |
|        |                                                                                                                                                                                                                           |                                                                                   |                                                                                   | SCGN                                                                              |                                                                                   |                                                                                     |            |            |
|        |                                                                                                                                                                                                                           |                                                                                   |                                                                                   | P080                                                                              |                                                                                   |                                                                                     |            |            |

## Range of PCD Turning Inserts

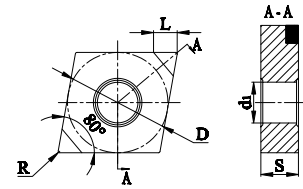
PCD(Positive)

| TYPE   | Advantages                                                                                                                                                                                                                                                          | Rhombic 80                                                                          | Rhombic 55°                                                                         | Triangle 60°                                                                          | Rhombic 35°                                                                           |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Brazen | <ul style="list-style-type: none"> <li>More cutting edges, both side of the insert can be used for cutting</li> <li>Standard hole for easy use in existing tool holders</li> <li>Higher productive efficiency depth, improving the productive efficiency</li> </ul> |  |  |  |  |
|        |                                                                                                                                                                                                                                                                     | CCGW                                                                                | DCGW                                                                                | TCGW                                                                                  | VCGW                                                                                  |
|        |                                                                                                                                                                                                                                                                     | P081                                                                                | P083                                                                                | P084                                                                                  | P086                                                                                  |
|        |                                                                                                                                                                                                                                                                     | CPGW                                                                                |                                                                                     | TPGW                                                                                  |                                                                                       |
|        |                                                                                                                                                                                                                                                                     | P082                                                                                |                                                                                     | P085                                                                                  |                                                                                       |

## PCBN Turning Insert ( Negative )

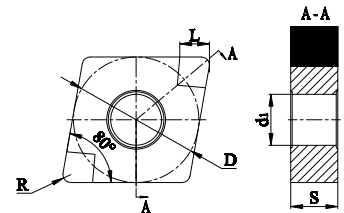
**CNGA**

Rhombic 80°, With Hole



| Ordering Code |              | Edge | Dimension ( mm ) |      |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D    | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | CNGA120402-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | CNGA120404-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.4 | ○                  | ○       | ○       |         | ○       |         |
|               | CNGA120404-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 0.4 |                    |         |         |         | ○       |         |
|               | CNGA120408-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.8 | ○                  | ○       | ○       | ●       | ●       | ○       |
|               | CNGA120408-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 0.8 |                    |         |         |         | ○       |         |
|               | CNGA120412-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 1.2 | ○                  | ○       | ○       | ○       | ●       | ○       |
|               | CNGA120412-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 1.2 |                    |         |         |         | ○       |         |
|               | CNGA120416-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 1.6 |                    |         |         |         |         |         |

● Stock ○ Available upon Order



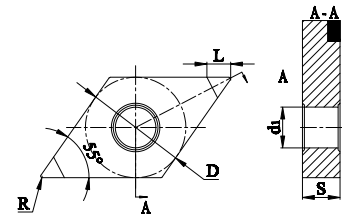
| Ordering Code                                                                       |              | Edge | Dimension ( mm ) |      |      |      |     | Grades of the PCBN |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------|--------------|------|------------------|------|------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                     |              |      | L                | D    | S    | d1   | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | CNGA120404-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16 | 0.4 | ●                  | ○       |         | ○       | ○       |         |         |
|                                                                                     | CNGA120408-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16 | 0.8 | ○                  | ○       |         | ●       | ○       | ○       | ●       |
|                                                                                     | CNGA120412-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16 | 1.2 | ○                  | ○       |         | ●       | ○       | ○       | ○       |
|                                                                                     | CNGA120416-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16 | 1.6 | ○                  | ○       |         |         |         |         |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

**DNGA**

Rhombic 55°, With Hole



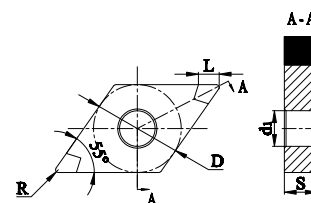
| Ordering Code |              | Edge | Dimension ( mm ) |      |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D    | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | DNGA150402-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | DNGA150404-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.4 | ●                  | ○       | ○       |         | ○       |         |
|               | DNGA150404-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 0.4 |                    |         |         |         | ○       |         |
|               | DNGA150408-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 0.8 | ○                  | ●       | ●       | ●       | ●       | ○       |
|               | DNGA150408-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 0.8 |                    |         |         |         | ○       |         |
|               | DNGA150412-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 1.2 | ○                  | ○       | ○       | ○       | ○       | ○       |
|               | DNGA150416-2 | 2    | 2.5              | 12.7 | 4.76 | 5.16           | 1.6 | ○                  |         |         |         |         |         |
|               | DNGA150412-4 | 4    | 2.5              | 12.7 | 4.76 | 5.16           | 1.2 |                    |         |         |         | ○       |         |
|               | DNGA150604-2 | 2    | 2.5              | 12.7 | 6.35 | 5.16           | 0.4 | ○                  | ○       | ○       |         | ○       |         |
|               | DNGA150604-4 | 4    | 2.5              | 12.7 | 6.35 | 5.16           | 0.4 |                    |         |         |         | ○       |         |
|               | DNGA150608-2 | 2    | 2.2              | 12.7 | 6.35 | 5.16           | 0.8 | ○                  | ○       | ○       |         | ○       |         |
|               | DNGA150608-4 | 4    | 2.2              | 12.7 | 6.35 | 5.16           | 0.8 |                    |         |         |         | ○       |         |
|               | DNGA150612-2 | 2    | 2.2              | 12.7 | 6.35 | 5.16           | 1.2 | ○                  | ○       | ○       |         | ○       |         |
|               | DNGA150612-4 | 4    | 2.2              | 12.7 | 6.35 | 5.16           | 1.2 |                    |         |         |         | ○       |         |
|               | DNGA150616-2 | 2    | 2.2              | 12.7 | 6.35 | 5.16           | 1.6 | ○                  |         |         |         |         |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

# DNGA

Rhombic 55°, With Hole



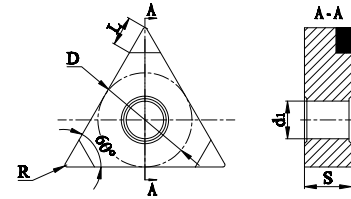
| Ordering Code                                                                     |              | Edge | Dimension ( mm ) |      |      |                |     | Grades of the PCBN |         |         |         |         |         |         |
|-----------------------------------------------------------------------------------|--------------|------|------------------|------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                   |              |      | L                | D    | S    | d <sub>1</sub> | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | DNGA150404-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16           | 0.4 | ○                  | ○       |         | ○       | ○       |         |         |
|                                                                                   | DNGA150408-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16           | 0.8 | ●                  | ●       |         | ○       | ○       | ○       | ○       |
|                                                                                   | DNGA150412-4 | 4    | 2.2              | 12.7 | 4.76 | 5.16           | 1.2 | ○                  | ○       |         | ○       | ○       | ○       | ○       |
|                                                                                   | DNGA150604-4 | 4    | 2.2              | 12.7 | 6.35 | 5.16           | 0.4 |                    |         |         | ○       | ○       |         |         |
|                                                                                   | DNGA150608-4 | 4    | 2.2              | 12.7 | 6.35 | 5.16           | 0.8 |                    |         |         | ○       | ○       | ○       | ○       |
|                                                                                   | DNGA150612-4 | 4    | 2.2              | 12.7 | 6.35 | 5.16           | 1.2 |                    |         |         | ○       | ○       | ○       | ○       |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

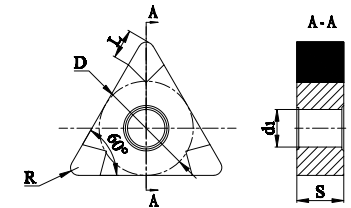
**TNGA**

Triangle 60°, With Hole



| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | TNGA160402-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | TNGA160404-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.4 | ○                  | ○       | ○       |         | ●       | ○       |
|               | TNGA160408-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.8 | ○                  | ●       | ●       | ●       | ●       | ●       |
|               | TNGA160412-3 | 3    | 2.2              | 9.525 | 4.76 | 3.81           | 1.2 | ○                  | ○       | ○       | ○       | ○       | ○       |
|               | TNGA160416-3 | 3    | 2.2              | 9.525 | 4.76 | 3.81           | 1.6 | ○                  |         |         |         |         |         |

● Stock ○ Available upon Order



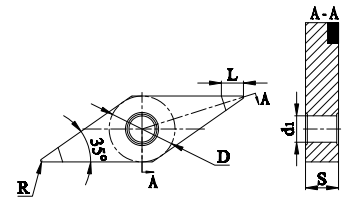
| Ordering Code                                                                       |              | Edge | Dimension (mm) |       |      |      |     | Grades of the PCBN |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------|--------------|------|----------------|-------|------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                     |              |      | L              | D     | S    | d1   | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | TNGA160404-6 | 6    | 2.2            | 9.525 | 4.76 | 3.81 | 0.4 | ●                  | ○       |         | ○       | ○       |         |         |
|                                                                                     | TNGA160408-6 | 6    | 2.2            | 9.525 | 4.76 | 3.81 | 0.8 | ●                  | ○       |         | ○       | ●       | ○       | ○       |
|                                                                                     | TNGA160412-6 | 6    | 2.2            | 9.525 | 4.76 | 3.81 | 1.2 | ○                  | ○       |         | ○       | ○       | ○       | ○       |
|                                                                                     | TNGA160416-6 | 6    | 2.2            | 9.525 | 4.76 | 3.81 | 1.6 | ○                  | ○       |         |         |         |         |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

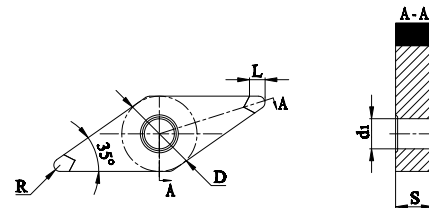
# VNGA

Rhombic 35°, With Hole



| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | VNGA160402-2 | 2    | 3.0              | 9.525 | 4.76 | 3.81           | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | VNGA160404-2 | 2    | 2.5              | 9.525 | 4.76 | 3.81           | 0.4 | ○                  | ●       | ●       |         | ●       | ○       |
|               | VNGA160404-4 | 4    | 2.5              | 9.525 | 4.76 | 3.81           | 0.4 |                    |         |         |         | ○       |         |
|               | VNGA160408-2 | 2    | 2.2              | 9.525 | 4.76 | 3.81           | 0.8 | ○                  | ●       | ●       | ●       | ●       | ●       |
|               | VNGA160408-4 | 4    | 2.2              | 9.525 | 4.76 | 3.81           | 0.8 |                    |         |         |         | ○       |         |
|               | VNGA160412-2 | 2    | 2                | 9.525 | 4.76 | 3.81           | 1.2 | ○                  | ●       | ●       | ○       | ○       | ○       |
|               | VNGA160412-4 | 4    | 2                | 9.525 | 4.76 | 3.81           | 1.2 |                    |         |         |         | ○       |         |
|               | VNGA160416-2 | 2    | 2                | 9.525 | 4.76 | 3.81           | 1.6 | ○                  |         |         |         |         |         |

●Stock ○Available upon Order



| Ordering Code                                                                       |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                     |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | VNGA160404-4 | 4    | 2.2              | 9.525 | 4.76 | 3.81           | 0.4 | ○                  | ○       |         | ○       | ●       |         |         |
|                                                                                     | VNGA160408-4 | 4    | 2.2              | 9.525 | 4.76 | 3.81           | 0.8 | ○                  | ○       |         | ○       | ●       | ○       | ○       |
|                                                                                     | VNGA160412-4 | 4    | 2.2              | 9.525 | 4.76 | 3.81           | 1.2 | ○                  | ○       |         | ○       | ○       | ○       | ○       |
|                                                                                     | VNGA160416-4 | 4    | 2.2              | 9.525 | 4.76 | 3.81           | 1.6 | ○                  | ○       |         |         |         |         |         |

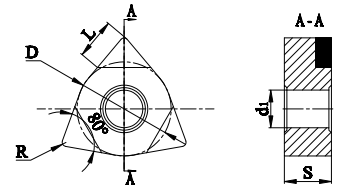
●Stock ○Available upon Order



## PCBN Turning Insert ( Negative )

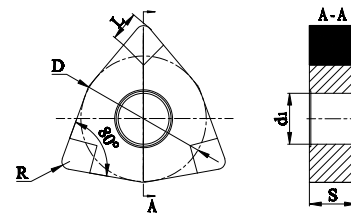
**WNGA**

Trigon 80°, With Hole



| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | WNGA060402-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.2 | ○                  |         |         |         |         |         |
|               | WNGA060404-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.4 | ○                  |         |         |         |         |         |
|               | WNGA060408-3 | 3    | 2.5              | 9.525 | 4.76 | 3.81           | 0.8 | ●                  |         |         |         |         |         |
|               | WNGA060412-3 | 3    | 2.2              | 9.525 | 4.76 | 3.81           | 1.2 | ○                  |         |         |         |         |         |
|               | WNGA060416-3 | 3    | 2.2              | 9.525 | 4.76 | 3.81           | 1.6 | ○                  |         |         |         |         |         |
|               | WNGA080402-3 | 3    | 2.5              | 12.7  | 4.76 | 3.81           | 0.2 | ○                  |         |         |         |         |         |
|               | WNGA080404-3 | 3    | 2.5              | 12.7  | 4.76 | 3.81           | 0.4 | ○                  |         |         |         |         |         |
|               | WNGA080408-3 | 3    | 2.5              | 12.7  | 4.76 | 3.81           | 0.8 | ○                  |         |         |         |         |         |
|               | WNGA080412-3 | 3    | 2.2              | 12.7  | 4.76 | 3.81           | 1.2 | ○                  |         |         |         |         |         |
|               | WNGA080416-3 | 3    | 2.2              | 12.7  | 4.76 | 3.81           | 1.6 | ○                  |         |         |         |         |         |

● Stock ○ Available upon Order



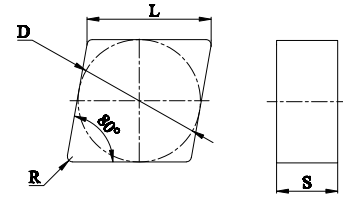
| Ordering Code                                                                       |              | Edge | Dimension ( mm ) |      |      |                |     | Grades of the PCBN |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------|--------------|------|------------------|------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                     |              |      | L                | D    | S    | d <sub>1</sub> | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | WNGA080404-6 | 6    | 2.2              | 12.7 | 4.76 | 3.81           | 0.4 | ●                  | ○       |         | ○       | ○       |         |         |
|                                                                                     | WNGA080408-6 | 6    | 2.2              | 12.7 | 4.76 | 3.81           | 0.8 | ●                  | ○       |         | ○       | ●       | ○       | ○       |
|                                                                                     | WNGA080412-6 | 6    | 2.2              | 12.7 | 4.76 | 3.81           | 1.2 | ○                  | ○       |         | ○       | ○       | ○       | ○       |
|                                                                                     | WNGA080416-6 | 6    | 2.2              | 12.7 | 4.76 | 3.81           | 1.6 | ○                  | ○       |         |         |         |         |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

# CNGN

Rhombic 80°, Without hole

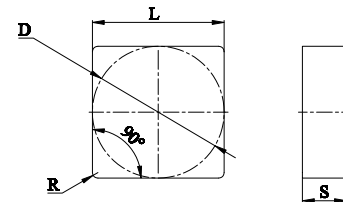


| Ordering Code |              | Edge | Dimension ( mm ) |      |      |     | Grades of the PCBN |         |         |         |         |         |         |
|---------------|--------------|------|------------------|------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|               |              |      | L                | D    | S    | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|               | CNGN120404-4 | 4    | 12.7             | 12.7 | 4.76 | 0.4 | ○                  | ○       | ○       |         |         |         |         |
|               | CNGN120408-4 | 4    | 12.7             | 12.7 | 4.76 | 0.8 | ○                  | ○       | ○       |         |         |         |         |
|               | CNGN120412-4 | 4    | 12.7             | 12.7 | 4.76 | 1.2 | ○                  | ○       | ○       |         |         |         |         |
|               | CNGN120704-4 | 4    | 12.7             | 12.7 | 7.94 | 0.4 | ○                  | ○       | ○       |         |         |         |         |
|               | CNGN120708-4 | 4    | 12.7             | 12.7 | 7.94 | 0.8 | ○                  | ○       | ●       |         |         | ○       |         |
|               | CNGN120712-4 | 4    | 12.7             | 12.7 | 7.94 | 1.2 | ●                  | ●       | ●       |         | ○       | ○       |         |
|               | CNGN120716-4 | 4    | 12.7             | 12.7 | 7.94 | 1.6 | ○                  | ○       | ○       |         |         |         |         |

● Stock ○ Available upon Order

# SNGN

Square 90°, Without hole



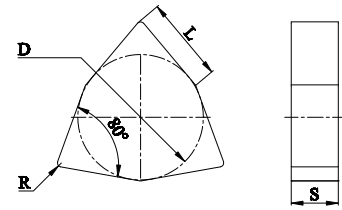
| Ordering Code |              | Edge | Dimension ( mm ) |        |      |     | Grades of the PCBN |         |         |         |         |         |         |
|---------------|--------------|------|------------------|--------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|               |              |      | L                | D      | S    | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|               | SNGN090404-8 | 8    | 9.525            | 9.525  | 4.76 | 0.4 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN090408-8 | 8    | 9.525            | 9.525  | 4.76 | 0.8 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN090412-8 | 8    | 9.525            | 9.525  | 4.76 | 1.2 | ●                  | ●       | ○       |         |         |         |         |
|               | SNGN120404-8 | 8    | 12.7             | 12.7   | 4.76 | 0.4 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN120408-8 | 8    | 12.7             | 12.7   | 4.76 | 0.8 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN120412-8 | 8    | 12.7             | 12.7   | 4.76 | 1.2 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN120708-8 | 8    | 12.7             | 12.7   | 7.94 | 0.8 | ○                  | ○       | ●       |         |         |         |         |
|               | SNGN120712-8 | 8    | 12.7             | 12.7   | 7.94 | 1.2 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN120716-8 | 8    | 12.7             | 12.7   | 7.94 | 1.6 | ○                  | ○       | ○       |         |         |         |         |
|               | SNGN150708-8 | 8    | 15.875           | 15.875 | 7.94 | 0.8 |                    |         |         |         |         | ○       |         |
|               | SNGN150712-8 | 8    | 15.875           | 15.875 | 7.94 | 1.2 |                    |         |         |         |         | ○       |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Negative )

**WNGN**

Trigon 80°, Without hole

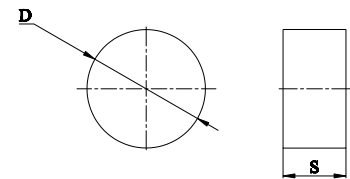


| Ordering Code                                                                     |              | Edge | Dimension ( mm ) |      |      |     | Grades of the PCBN |         |         |         |         |         |         |  |
|-----------------------------------------------------------------------------------|--------------|------|------------------|------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|--|
|                                                                                   |              |      | L                | D    | S    | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |  |
|  | WNGN080404-6 | 6    | 8.72             | 12.7 | 4.76 | 0.4 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080408-6 | 6    | 8.72             | 12.7 | 4.76 | 0.8 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080412-6 | 6    | 8.72             | 12.7 | 4.76 | 1.2 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080416-6 | 6    | 8.72             | 12.7 | 4.76 | 1.6 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080604-6 | 6    | 8.72             | 12.7 | 6.35 | 0.4 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080608-6 | 6    | 8.72             | 12.7 | 6.35 | 0.8 | ○                  | ○       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080612-6 | 6    | 8.72             | 12.7 | 6.35 | 1.2 | ○                  | ●       | ○       |         |         |         |         |  |
|                                                                                   | WNGN080616-6 | 6    | 8.72             | 12.7 | 6.35 | 1.6 | ○                  | ○       | ○       |         |         |         |         |  |

● Stock ○ Available upon Order

**RNGN**

Round 360°, Without hole



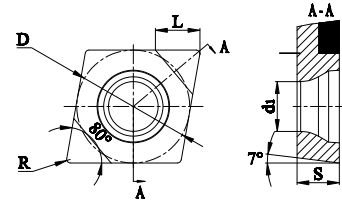
| Ordering Code                                                                       |            | Edge | Dimension<br>( mm ) |      | Grades of the PCBN |         |         |         |         |         |         |
|-------------------------------------------------------------------------------------|------------|------|---------------------|------|--------------------|---------|---------|---------|---------|---------|---------|
|                                                                                     |            |      | D                   | S    | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|  | RNGN060300 | /    | 6                   | 3.18 |                    |         |         | ○       | ○       | ○       |         |
|                                                                                     | RNGN090300 |      | 9.525               | 3.18 | ○                  | ○       | ○       | ○       | ○       | ○       |         |
|                                                                                     | RNGN120400 |      | 12.7                | 4.76 | ○                  | ○       | ○       | ○       | ○       | ○       |         |
|                                                                                     | RNGN120700 |      | 12.7                | 7.94 | ○                  | ○       | ○       |         |         |         |         |
|                                                                                     | RNGN150700 |      | 15.875              | 7.94 | ○                  | ○       | ○       |         |         |         |         |
|                                                                                     | RNGN201000 |      | 20                  | 10   |                    |         |         | ○       |         | ○       |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Positive )

**CCGW**

Rhombic 80°, With Hole

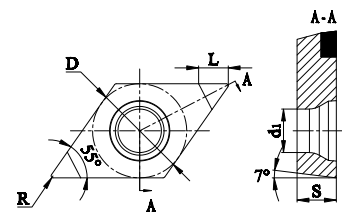


| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | CCGW060202-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | CCGW060204-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.4 | ○                  | ○       | ○       |         | ●       |         |
|               | CCGW060208-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.8 | ○                  | ○       | ○       |         | ○       |         |
|               | CCGW09T302-2 | 2    | 2.5              | 9.525 | 3.97 | 4.4            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | CCGW09T304-2 | 2    | 2.5              | 9.525 | 3.97 | 4.4            | 0.4 | ○                  | ●       | ●       |         | ●       |         |
|               | CCGW09T308-2 | 2    | 2.5              | 9.525 | 3.97 | 4.4            | 0.8 | ○                  | ●       | ●       |         | ●       |         |

● Stock ○ Available upon Order

**DCGW**

Rhombic 55°, With Hole



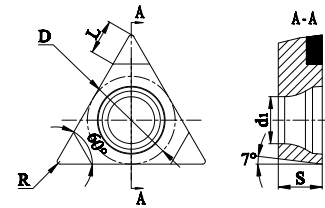
| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | DCGW070202-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | DCGW070204-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.4 | ○                  | ○       | ○       |         | ○       |         |
|               | DCGW070208-2 | 2    | 2.5              | 6.35  | 2.38 | 2.8            | 0.8 | ○                  | ○       | ○       |         | ○       |         |
|               | DCGW11T302-2 | 2    | 2.5              | 9.525 | 3.97 | 4.4            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | DCGW11T304-2 | 2    | 2.5              | 9.525 | 3.97 | 4.4            | 0.4 | ●                  | ●       | ●       |         | ●       |         |
|               | DCGW11T308-2 | 2    | 2.2              | 9.525 | 3.97 | 4.4            | 0.8 | ○                  | ●       | ●       |         | ●       |         |
|               | DCGW11T312-2 | 2    | 2.2              | 9.525 | 3.97 | 4.4            | 1.2 |                    | ○       | ○       |         | ○       |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Positive )

**TCGW**

Triangle 60°, With Hole



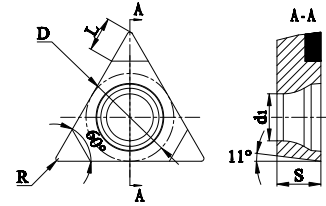
| Ordering Code                                                                     |              | Edge | Dimension ( mm ) |      |      |                |     | Grades of the PCBN |         |         |         |         |         |
|-----------------------------------------------------------------------------------|--------------|------|------------------|------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|                                                                                   |              |      | L                | D    | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|  | TCGW110302-3 | 3    | 2.5              | 6.35 | 3.18 | 3.4            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|                                                                                   | TCGW110304-3 | 3    | 2.5              | 6.35 | 3.18 | 3.4            | 0.4 | ○                  | ●       | ○       |         | ●       |         |
|                                                                                   | TCGW110308-3 | 3    | 2.2              | 6.35 | 3.18 | 3.4            | 0.8 | ○                  | ●       | ○       |         | ●       |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Positive )

**TPGW**

Triangle 60°, With Hole



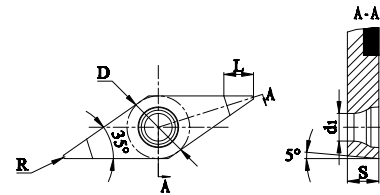
| Ordering Code                                                                       | Edge         | Dimension ( mm ) |     |       |                |      | Grades of the PCBN |         |         |         |         |         |
|-------------------------------------------------------------------------------------|--------------|------------------|-----|-------|----------------|------|--------------------|---------|---------|---------|---------|---------|
|                                                                                     |              | L                | D   | S     | d <sub>1</sub> | R    | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|  | TPGW080202-3 | 3                | 2.5 | 4.76  | 2.38           | 2.34 | 0.2                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW080204-3 | 3                | 2.5 | 4.76  | 2.38           | 2.34 | 0.4                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW080208-3 | 3                | 2.2 | 4.76  | 2.38           | 2.34 | 0.8                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW090202-3 | 3                | 2.5 | 5.56  | 2.38           | 2.8  | 0.2                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW090204-3 | 3                | 2.5 | 5.56  | 2.38           | 2.8  | 0.4                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW090208-3 | 3                | 2.2 | 5.56  | 2.38           | 2.8  | 0.8                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW110202-3 | 3                | 2.5 | 6.35  | 3.18           | 2.8  | 0.2                | ○       |         |         |         |         |
|                                                                                     | TPGW110204-3 | 3                | 2.5 | 6.35  | 3.18           | 2.8  | 0.4                | ○       |         |         |         |         |
|                                                                                     | TPGW110208-3 | 3                | 2.2 | 6.35  | 3.18           | 2.8  | 0.8                | ○       |         |         |         |         |
|                                                                                     | TPGW110302-3 | 3                | 2.5 | 6.35  | 3.18           | 3.4  | 0.2                | ○       | ○       | ○       |         | ○       |
|                                                                                     | TPGW110304-3 | 3                | 2.5 | 6.35  | 3.18           | 3.4  | 0.4                | ○       | ●       | ○       |         | ●       |
|                                                                                     | TPGW110308-3 | 3                | 2.2 | 6.35  | 3.18           | 3.4  | 0.8                | ○       | ●       | ○       |         | ●       |
|                                                                                     | TPGW160302-3 | 3                | 2.5 | 9.525 | 3.18           | 4.4  | 0.2                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW160304-3 | 3                | 2.5 | 9.525 | 3.18           | 4.4  | 0.4                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW160308-3 | 3                | 2.2 | 9.525 | 3.18           | 4.4  | 0.8                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW160402-3 | 3                | 2.5 | 9.525 | 4.76           | 4.4  | 0.2                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW160404-3 | 3                | 2.5 | 9.525 | 4.76           | 4.4  | 0.4                |         | ○       | ○       |         | ○       |
|                                                                                     | TPGW160408-3 | 3                | 2.2 | 9.525 | 4.76           | 4.4  | 0.8                |         | ○       | ○       |         | ○       |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Positive )

**VBGW**

Rhombic 35°, With Hole

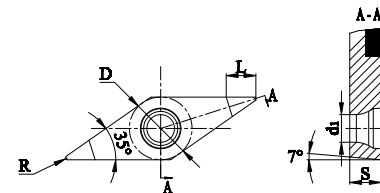


| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | VBGW110302-2 | 2    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | VBGW110304-2 | 2    | 2.5              | 6.35  | 3.18 | 2.8            | 0.4 | ○                  | ○       | ○       |         | ○       |         |
|               | VBGW110308-2 | 2    | 2.2              | 6.35  | 3.18 | 2.8            | 0.8 | ○                  | ○       | ○       |         | ○       |         |
|               | VBGW160402-2 | 2    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | ○                  | ○       | ○       |         | ○       |         |
|               | VBGW160404-2 | 2    | 2.5              | 9.525 | 4.76 | 4.4            | 0.4 | ○                  | ●       | ●       |         | ●       |         |
|               | VBGW160408-2 | 2    | 2.2              | 9.525 | 4.76 | 4.4            | 0.8 | ○                  | ●       | ●       |         | ●       |         |

● Stock ○ Available upon Order

**VCGW**

Rhombic 35°, With Hole



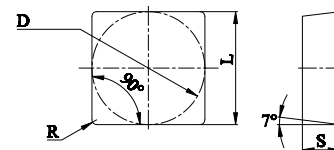
| Ordering Code |              | Edge | Dimension ( mm ) |       |      |                |     | Grades of the PCBN |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|----------------|-----|--------------------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | d <sub>1</sub> | R   | BKN115P            | BHN115P | BHN125P | BHN135P | BHC125P | BHC135P |
|               | VCGW110302-2 | 2    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | ○                  | ○       |         |         | ○       |         |
|               | VCGW110304-2 | 2    | 2.5              | 6.35  | 3.18 | 2.8            | 0.4 | ○                  | ○       | ○       |         | ○       |         |
|               | VCGW110308-2 | 2    | 2.5              | 6.35  | 3.18 | 2.8            | 0.8 | ○                  |         |         |         |         |         |
|               | VCGW160402-2 | 2    | 2.5              | 9.525 | 4.76 | 4.4            | 0.2 | ○                  |         |         |         |         |         |
|               | VCGW160404-2 | 2    | 2.5              | 9.525 | 4.76 | 4.4            | 0.4 | ○                  | ●       | ●       |         | ○       |         |
|               | VCGW160408-2 | 2    | 2.2              | 9.525 | 4.76 | 4.4            | 0.8 | ○                  | ●       | ●       |         | ○       |         |

● Stock ○ Available upon Order

## PCBN Turning Insert ( Positive )

**SCGN**

Square 90°, Without hole



| Ordering Code |              | Edge | Dimension ( mm ) |       |      |     | Grades of the PCBN |         |         |         |         |         |         |
|---------------|--------------|------|------------------|-------|------|-----|--------------------|---------|---------|---------|---------|---------|---------|
|               |              |      | L                | D     | S    | R   | BKN115S            | BKN125S | BKN135S | BHN105S | BHN115S | BHN125S | BHN135S |
|               | SCGN090404-4 | 4    | 9.525            | 9.525 | 4.76 | 0.4 | ○                  | ○       | ○       |         |         |         |         |
|               | SCGN090408-4 | 4    | 9.525            | 9.525 | 4.76 | 0.8 | ○                  | ○       | ○       |         |         |         |         |
|               | SCGN090412-4 | 4    | 9.525            | 9.525 | 4.76 | 1.2 | ○                  | ○       | ○       |         |         |         |         |

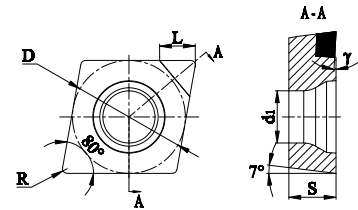
●Stock ○Available upon Order



## PCD Turning Insert ( Positive )

**CCGW**

Rhombic 80°, With Hole



| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | CCGW060201-1GN | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.1 | 0       | ○                 | ○       | ○       | ○       |
|               | CCGW060202-1GN | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CCGW060201-1GC | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.1 | 7       | ○                 | ○       | ○       | ○       |
|               | CCGW060202-1GC | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | CCGW09T302-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | CCGW09T304-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | CCGW09T308-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 0       | ●                 | ●       | ○       | ○       |
|               | CCGW09T302-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | CCGW09T304-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | CCGW09T308-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 7       | ●                 | ●       | ○       | ○       |
|               | CCGW09T301-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.1 | 10      | ●                 | ●       | ○       | ○       |
|               | CCGW09T302-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 10      | ○                 | ●       | ○       | ○       |
|               | CCGW09T304-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 10      | ○                 | ○       | ○       | ○       |
|               | CCGW09T308-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 10      | ○                 | ○       | ○       | ○       |
|               | CCGW120402-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CCGW120404-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ●       | ○       | ○       |
|               | CCGW120408-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ●       | ○       | ○       |
|               | CCGW120412-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CCGW120402-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | CCGW120404-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | CCGW120408-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | CCGW120412-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ●                 | ●       | ○       | ○       |

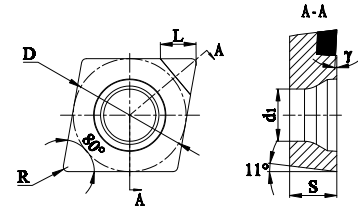


● Stock ○ Available upon Order

## PCD Turning Insert ( Positive )

**CPGW**

Rhombic 80°, With Hole



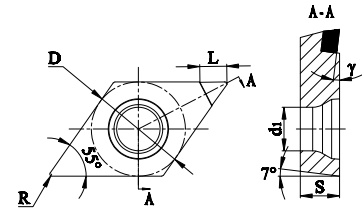
| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | CPGW060201-1GN | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.1 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW060202-1GN | 1    | 2.5              | 6.35  | 6.35 | 2.8            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW09T302-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW09T304-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | CPGW09T308-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 0       | ●                 | ●       | ○       | ○       |
|               | CPGW09T302-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | CPGW09T304-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | CPGW09T308-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 7       | ○                 | ○       | ○       | ○       |
|               | CPGW09T301-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.1 | 10      | ○                 | ○       | ○       | ○       |
|               | CPGW09T302-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 10      | ○                 | ○       | ○       | ○       |
|               | CPGW09T304-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 10      | ○                 | ○       | ○       | ○       |
|               | CPGW09T308-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 10      | ○                 | ○       | ○       | ○       |
|               | CPGW120402-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW120404-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | CPGW120408-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW120412-1GN | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | CPGW120402-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | CPGW120404-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | CPGW120408-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | CPGW120412-1GC | 1    | 3.0              | 12.7  | 4.76 | 5.5            | 0.2 | 7       | ○                 | ○       | ○       | ○       |

●Stock ○Available upon Order

## PCD Turning Insert ( Positive )

**DCGW**

Rhombic 55°, With Hole



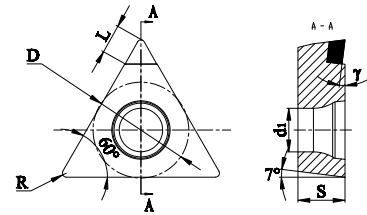
| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | DCGW11T302-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | DCGW11T304-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | DCGW11T308-1GN | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 0       | ●                 | ●       | ○       | ○       |
|               | DCGW11T302-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | DCGW11T304-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | DCGW11T308-1GC | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 7       | ●                 | ●       | ○       | ○       |
|               | DCGW11T301-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.1 | 10      | ●                 | ●       | ○       | ○       |
|               | DCGW11T302-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.2 | 10      | ●                 | ●       | ○       | ○       |
|               | DCGW11T304-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.4 | 10      | ○                 | ○       | ○       | ○       |
|               | DCGW11T308-1GT | 1    | 3.0              | 9.525 | 3.97 | 4.4            | 0.8 | 10      | ○                 | ○       | ○       | ○       |

● Stock ○ Available upon Order

## PCD Turning Insert ( Positive )

**TCGW**

Triangle 60°, With Hole



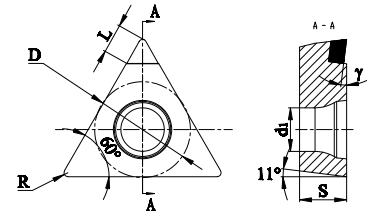
| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | TCGW110302-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | TCGW110304-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 0       | ○                 | ○       | ○       | ○       |
|               | TCGW110308-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 0       | ○                 | ○       | ○       | ○       |
|               | TCGW110302-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | TCGW110304-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | TCGW110308-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 7       | ○                 | ○       | ○       | ○       |
|               | TCGW160402-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 0       | ○                 | ○       | ○       | ○       |
|               | TCGW160404-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | TCGW160408-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 0       | ●                 | ●       | ○       | ○       |
|               | TCGW160402-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 7       | ●                 | ●       | ○       | ○       |
|               | TCGW160404-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | TCGW160408-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 7       | ●                 | ●       | ○       | ○       |

● Stock ○ Available upon Order

## PCD Turning Insert ( Positive )

**TPGW**

Triangle 60°, With Hole



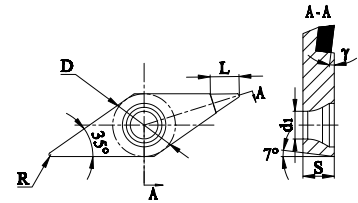
| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | TPGW110302-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | TPGW110304-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | TPGW110308-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 0       | ○                 | ○       | ○       | ○       |
|               | TPGW110302-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | TPGW110304-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | TPGW110308-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 7       | ○                 | ○       | ○       | ○       |
|               | TPGW160402-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 0       | ○                 | ●       | ○       | ○       |
|               | TPGW160404-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 0       | ○                 | ●       | ○       | ○       |
|               | TPGW160408-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 0       | ○                 | ○       | ○       | ○       |
|               | TPGW160402-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 7       | ○                 | ●       | ○       | ○       |
|               | TPGW160404-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 7       | ○                 | ●       | ○       | ○       |
|               | TPGW160408-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 7       | ○                 | ○       | ○       | ○       |

● Stock ○ Available upon Order

## PCD Turning Insert ( Positive )

**VCGW**

Rhombic 35°, With Hole



| Ordering Code |                | Edge | Dimension ( mm ) |       |      |                |     |         | Grades of the PCD |         |         |         |
|---------------|----------------|------|------------------|-------|------|----------------|-----|---------|-------------------|---------|---------|---------|
|               |                |      | L                | D     | S    | d <sub>1</sub> | R   | γ ( ° ) | DNN105P           | DNN125P | DNN130P | DNN135P |
|               | VCGW110302-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW110304-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW110308-1GN | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 0       | ○                 | ○       | ○       | ○       |
|               | VCGW110302-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | VCGW110304-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 7       | ●                 | ●       |         |         |
|               | VCGW110308-1GC | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 7       | ○                 | ○       | ○       | ○       |
|               | VCGW110302-1GT | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.2 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW110304-1GT | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.4 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW110308-1GT | 1    | 3.0              | 6.35  | 3.18 | 2.8            | 0.8 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW160402-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW160404-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW160408-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW160412-1GN | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 1.2 | 0       | ●                 | ●       | ○       | ○       |
|               | VCGW160402-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 7       | ○                 | ○       | ○       | ○       |
|               | VCGW160404-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 7       | ●                 | ●       | ○       | ○       |
|               | VCGW160408-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 7       | ●                 | ●       | ○       | ○       |
|               | VCGW160412-1GC | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 1.2 | 7       | ○                 | ○       | ○       | ○       |
|               | VCGW160402-1GT | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.2 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW160404-1GT | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.4 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW160408-1GT | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 0.8 | 10      | ○                 | ○       | ○       | ○       |
|               | VCGW160412-1GT | 1    | 3.0              | 9.525 | 4.76 | 4.4            | 1.2 | 10      | ○                 | ○       | ○       | ○       |

● Stock ○ Available upon Order

## PCBN Recommended Cutting Data

| ISO | Workpiece material | Hardness | Cutting Range              | Purpose     | Grade   | Min-Optimum-Max                         |                                     |                        |
|-----|--------------------|----------|----------------------------|-------------|---------|-----------------------------------------|-------------------------------------|------------------------|
|     |                    |          |                            |             |         | Cutting Speed<br>V <sub>c</sub> (m/min) | Depth of cut<br>a <sub>p</sub> (mm) | Feed rate<br>f(mm/rev) |
| K   | Gray cast iron     | ≥HB200   | Superfinishing & Finishing | General     | BKN115P | 600-800-1500                            | 0.05-0.20-0.50                      | 0.05-0.10-0.50         |
|     |                    |          | Finishing                  | General     | BKN115P | 400-600-1200                            | 0.05-0.20-0.50                      | 0.05-0.10-0.50         |
|     |                    |          |                            | Continuous  | BKN115S | 100-600-1200                            | 0.05-0.20-0.50                      | 0.10-0.20-5.00         |
|     |                    |          |                            | Interrupted | BKN125S | 400-500-1200                            | 0.05-0.10-1.00                      | 0.10-0.20-5.00         |
|     |                    |          | Semi-finishing             | Interrupted | BKN125S | 400-600-1000                            | 0.05-0.40-1.00                      | 0.10-0.50-5.00         |
|     |                    |          | Roughing                   | Continuous  | BKN135S | 400-500-800                             | 0.10-0.30-0.50                      | 0.10-0.50-5.00         |
|     | Alloy cast iron    | ≥HRC40   | Finishing & Semi-Finishing | Interrupted | BKN135S | 10-50-100                               | 0.10-0.30-2.00                      | 0.10-0.50-10.0         |
|     | Power metallurgy   | ≥HB200   | Finishing                  | Continual   | BKN115P | 80-120-200                              | 0.05-0.10-0.20                      | 0.05-0.10-1.00         |
| H   | Hardened Material  | ≥HRC50   | Superfinishing & Finishing | General     | BHC125P | 100-180-200                             | 0.05-0.10-0.20                      | 0.05-0.08-0.20         |
|     |                    |          |                            | Continual   | BHN115P | 120-180-220                             | 0.05-0.10-0.20                      | 0.05-0.08-0.20         |
|     |                    |          | Finishing                  | General     | BHC125P | 100-150-200                             | 0.05-0.10-0.20                      | 0.05-0.10-0.50         |
|     |                    |          |                            | Continual   | BHN105S | 100-120-200                             | 0.05-0.10-0.20                      | 0.05-0.10-0.50         |
|     |                    |          |                            | Interrupted | BHN125P | 90-140-180                              | 0.05-0.10-0.20                      | 0.05-0.10-0.50         |
|     |                    |          | Semi-finishing             | General     | BHC125P | 100-150-200                             | 0.05-0.20-0.20                      | 0.05-0.20-0.50         |
|     |                    |          |                            | General     | BHN115S | 100-150-220                             | 0.10-0.20-0.50                      | 0.05-0.20-1.00         |
|     |                    |          |                            | Interrupted | BHN135P | 60-120-130                              | 0.05-0.20-0.40                      | 0.05-0.20-0.40         |
|     |                    |          |                            | Interrupted | BHN125S | 50-100-160                              | 0.10-0.20-0.50                      | 0.05-0.20-1.00         |
|     |                    |          |                            | Interrupted | BHN135S | 50-100-150                              | 0.10-0.20-0.50                      | 0.05-0.20-1.00         |
|     |                    |          |                            | Interrupted | BHC135P | 80-100-150                              | 0.05-0.20-0.20                      | 0.05-0.20-0.40         |
|     |                    |          | Roughing                   | General     | BHC125P | 100-150-200                             | 0.05-0.5-0.20                       | 0.05-0.20-0.50         |
|     |                    |          |                            | General     | BHN115S | 100-150-220                             | 0.10-0.5-0.50                       | 0.05-0.20-1.00         |
|     |                    |          |                            | Interrupted | BHN125S | 50-100-160                              | 0.10-0.5-0.50                       | 0.05-0.20-1.00         |
|     |                    |          |                            | Interrupted | BHN135S | 50-100-150                              | 0.10-0.5-0.50                       | 0.05-0.20-1.00         |

# TURNING TOOLHOLDERS

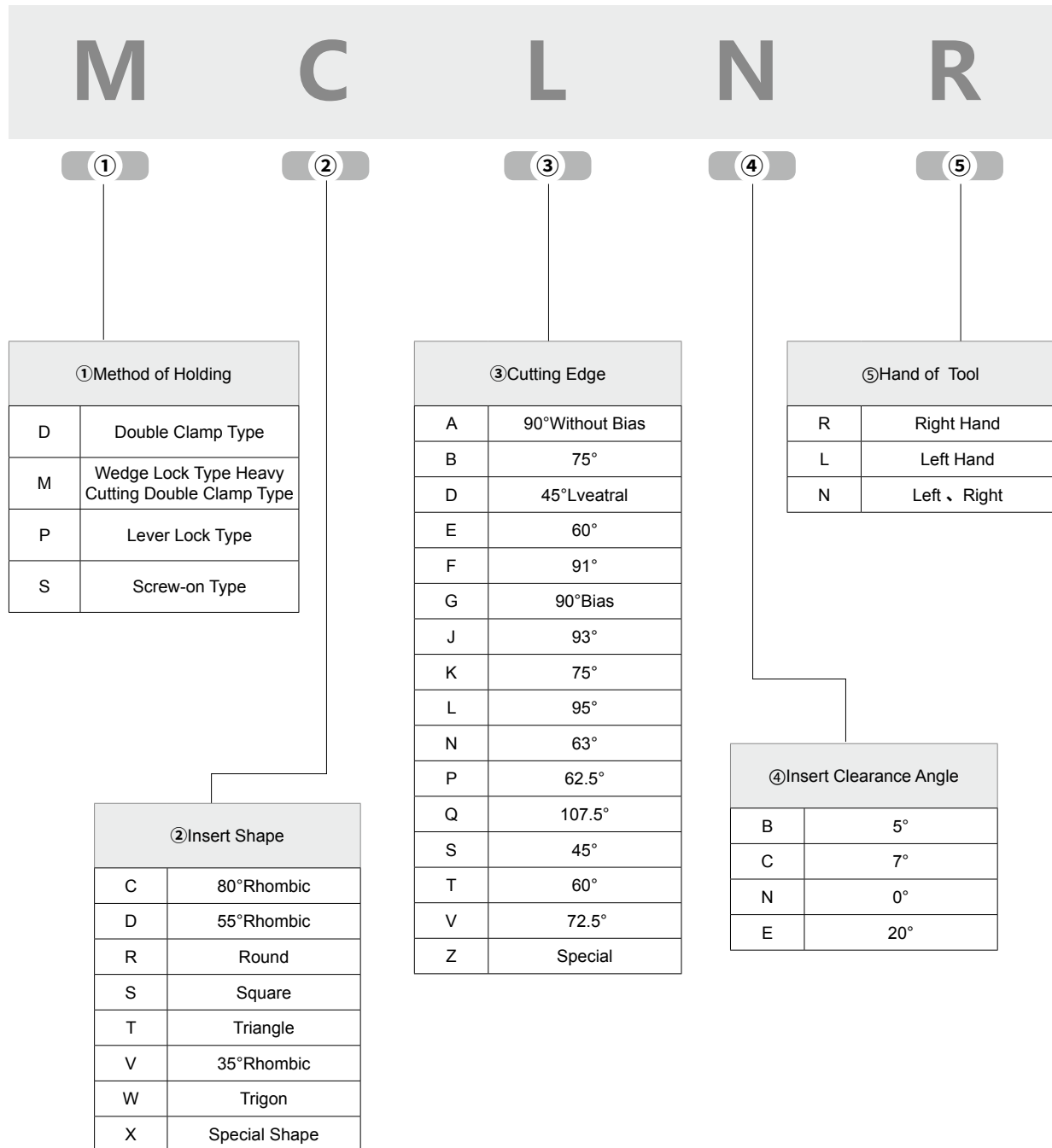




## Features of Turning Toolholders

|                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| MCBNR                                                                               | MCLNR                                                                               | MDJNR                                                                               | MDPNN                                                                                | MDQNR                                                                                 |
| P092                                                                                | P092                                                                                | P093                                                                                | P093                                                                                 | P094                                                                                  |
|    |    |    |    |    |
| MSBNR                                                                               | MSKNR                                                                               | MSSNR                                                                               | MTENN                                                                                | MTFNR                                                                                 |
| P094                                                                                | P095                                                                                | P095                                                                                | P096                                                                                 | P097                                                                                  |
|    |    |    |    |    |
| MTGNR                                                                               | MTJNR                                                                               | MVJNR                                                                               | MVQNR                                                                                | MWLNR                                                                                 |
| P097                                                                                | P097                                                                                | P098                                                                                | P098                                                                                 | P099                                                                                  |
|   |   |   |   |   |
| SCLCR                                                                               | SDJCR                                                                               | SSDCN                                                                               | STGCR                                                                                | SVJCR                                                                                 |
| P100                                                                                | P100                                                                                | P101                                                                                | P101                                                                                 | P102                                                                                  |
|  |  |  |  |  |
| SWLCR                                                                               | SCLCR                                                                               | SCKCR                                                                               | SCLCR-A16                                                                            | SDUCR                                                                                 |
| P103                                                                                | P106                                                                                | P106                                                                                | P107                                                                                 | P107                                                                                  |
|  |  |  |  |  |
| SDQCR                                                                               | SDXCR                                                                               | STUCR                                                                               | STWCR                                                                                | STFCR                                                                                 |
| P108                                                                                | P108                                                                                | P109                                                                                | P109                                                                                 | P110                                                                                  |
|  |  |  |  |  |
| SVUCR                                                                               | SSKCR                                                                               | SWLCR                                                                               | SCLPR                                                                                | STFPR                                                                                 |
| P110                                                                                | P111                                                                                | P111                                                                                | P112                                                                                 | P112                                                                                  |
|  |  |  |  |  |

## External Turning Toolholders Identification System



25

25

M

12

⑥

⑥

⑦

⑧

⑥ Tool Section

|    |    |
|----|----|
| 8  | 8  |
| 10 | 10 |
| 12 | 12 |
| 16 | 16 |
| 20 | 20 |
| 25 | 25 |
| 32 | 32 |

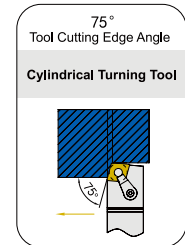
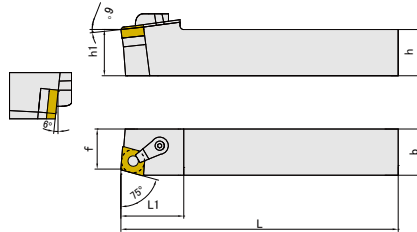
⑦ Tool Length (mm)

|   |     |
|---|-----|
| D | 60  |
| E | 70  |
| F | 80  |
| H | 100 |
| K | 125 |
| M | 150 |
| P | 170 |
| Q | 180 |
| R | 200 |

⑧ Cutting Edge Length (mm)

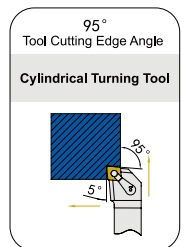
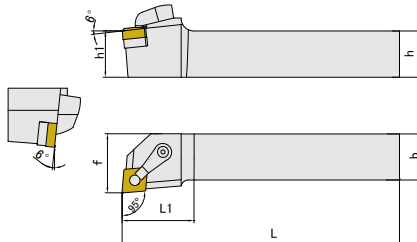
| Insert I.C.<br>(mm) | Insert Shape |          |       |                |                |                |
|---------------------|--------------|----------|-------|----------------|----------------|----------------|
|                     | Square       | Triangle | Round | 80°<br>Rhombic | 55°<br>Rhombic | 35°<br>Rhombic |
| 6                   | -            | -        | 06    | -              | -              | -              |
| 6.35                |              | 11       |       | 06             | 07             | 11             |
| 7.94                | -            | 13       | -     | -              | -              | -              |
| 8                   |              |          | 08    |                |                |                |
| 9.525               | 09           | 16       | -     | 09             | 11             | 16             |
| 10                  | -            | -        | 10    | -              | -              | -              |
| 12                  | -            | -        | 12    | -              | -              | -              |
| 12.7                | -            | 22       | -     | 12             | 15             | -              |
| 15.875              | 15           | 27       | -     | 16             | -              | -              |
| 16                  | -            | -        | 16    | -              | -              | -              |
| 19.05               | 19           | -        | 19    | -              | -              | -              |
| 20                  | -            | -        | 20    | -              | -              | -              |
| 25                  | -            | -        | 25    | -              | -              | -              |
| 25.4                | 25           | -        | -     | -              | -              | -              |
| 32                  | -            | -        | 32    | -              | -              | -              |

## External Turning Toolholder(Negative)

**MCBNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MCBNR/L2020K12 | ●     | ○ | 20            | 20 | 125 | 32 | 20 | 17 | CN**1204** | 720500<br>763036 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MCBNR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 22 |            |                  |                  |                  |                  |                                       |
| MCBNR/L3232P12 | ●     | ○ | 32            | 32 | 170 | 32 | 32 | 27 |            |                  |                  |                  |                  |                                       |
| MCBNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 33 | CN**1606** | 720500<br>763037 | 730109<br>001574 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456/<br>720301<br>260458 |
| MCBNR/L3232P19 | ○     | ○ | 32            | 32 | 170 | 40 | 32 | 29 | CN**1906** | 720500<br>763038 | 730109<br>001577 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456                      |

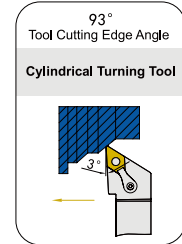
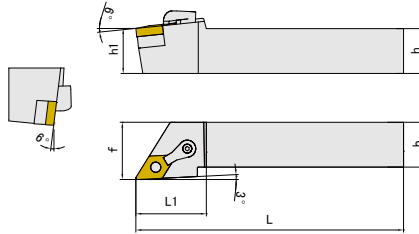
●Stock ○Available Upon Order

**MCLNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MCLNR/L2020K12 | ●     | ○ | 20            | 20 | 125 | 25 | 20 | 32 | CN**1204** | 720500<br>763036 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MCLNR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MCLNR/L3232P12 | ●     | ○ | 32            | 32 | 170 | 40 | 32 | 32 |            |                  |                  |                  |                  |                                       |
| MCLNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 33 | CN**1606** | 720500<br>763037 | 730109<br>001574 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456/<br>720301<br>260458 |
| MCLNR/L3232P19 | ○     | ○ | 32            | 32 | 170 | 38 | 32 | 40 | CN**1906** | 720500<br>763038 | 730109<br>001577 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456/<br>720301<br>260458 |

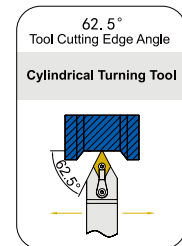
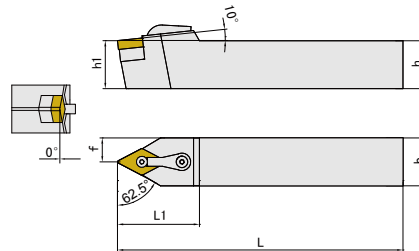
●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

**MDJNR**

| Ordering Code    | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|------------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                  | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MDJNR/L2020K11   | ●     | ○ | 20            | 20 | 125 | 34 | 20 | 25 | DN**1104** | 720500<br>763039 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MDJNR/L2020K1504 | ●     | ○ | 20            | 20 | 125 | 38 | 20 | 25 | DN**1504** | 720500<br>763040 | 730109<br>001567 | 720500<br>762967 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MDJNR/L2525M1504 | ●     | ○ | 25            | 25 | 150 | 38 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MDJNR/L3232P1506 | ○     | ○ | 32            | 32 | 170 | 38 | 32 | 40 | DN**1506** | 720500<br>763041 |                  |                  |                  |                                       |

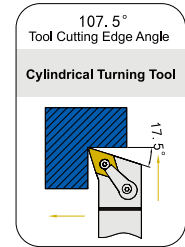
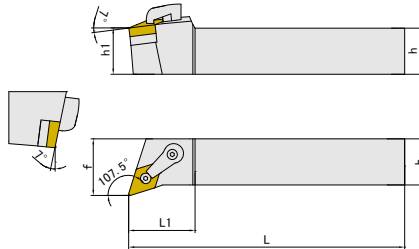
●Stock ○Available Upon Order

**MDPNN**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |      | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|------|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f    |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MDPNN2020K11   | ●     |   | 20            | 20 | 125 | 36 | 20 | 10   | DN**1104** | 720500<br>763039 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MDPNN2020K1504 | ●     |   | 20            | 20 | 125 | 42 | 20 | 10   | DN**1504** | 720500<br>763040 | 730109<br>001567 | 720500<br>762967 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MDPNN2525M1504 | ●     |   | 25            | 25 | 150 | 42 | 25 | 12.5 |            |                  |                  |                  |                  |                                       |
| MDPNN3232P1506 | ○     |   | 32            | 32 | 170 | 42 | 32 | 16   | DN**1506** | 720500<br>763041 |                  |                  |                  |                                       |

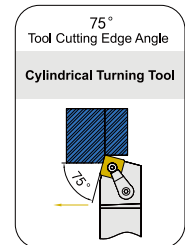
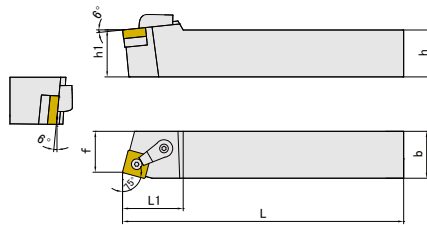
●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

**MDQNR**

| Ordering Code    | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|------------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                  | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MDQNR/L2020K11   | ●     | ○ | 20            | 20 | 125 | 32 | 20 | 25 | DN**1104** | 720500<br>763039 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MDQNR/L2020K1504 | ●     | ○ | 20            | 20 | 125 | 36 | 20 | 25 | DN**1504** | 720500<br>763040 | 730109<br>001567 | 720500<br>762967 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MDQNR/L2525M1504 | ●     | ○ | 25            | 25 | 150 | 36 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MDQNR/L3232P1506 | ○     | ○ | 32            | 32 | 170 | 36 | 32 | 40 | DN**1506** | 720500<br>763041 |                  |                  |                  |                                       |

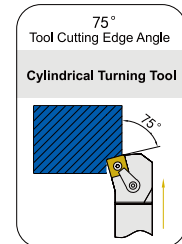
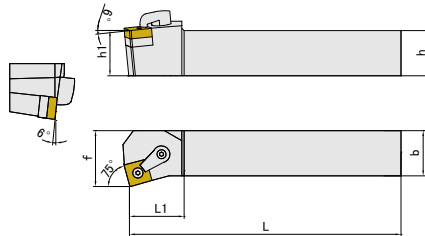
●Stock ○Available Upon Order

**MSBNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |      |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|------|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1   | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MSBNR/L2020K12 | ●     | ○ | 20            | 20 | 125 | 32.5 | 20 | 17 | SN**1204** | 720500<br>763042 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MSBNR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 32.5 | 25 | 22 |            |                  |                  |                  |                  |                                       |
| MSBNR/L3232P12 | ●     | ○ | 32            | 32 | 170 | 32.5 | 32 | 27 |            |                  |                  |                  |                  |                                       |
| MSBNR/L2525M15 | ○     | ○ | 25            | 25 | 150 | 38   | 25 | 22 | SN**1506** | 720500<br>763043 | 730109<br>001574 | 720500<br>762969 | 730100<br>460070 | 720301<br>260455/<br>720301<br>260456 |
| MSBNR/L3232P19 | ○     | ○ | 32            | 32 | 170 | 42   | 32 | 27 | SN**1906** | 720500<br>763044 | 730109<br>001577 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456                      |

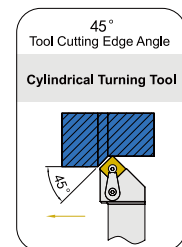
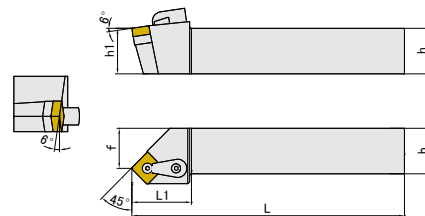
●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

**MSKNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MSKNR/L2020K12 | ●     | ○ | 20            | 20 | 125 | 29 | 20 | 25 | SN**1204** | 720500<br>763042 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MSKNR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 29 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MSKNR/L3232P12 | ○     | ○ | 32            | 32 | 170 | 29 | 32 | 40 |            |                  |                  |                  |                  |                                       |
| MSKNR/L2525M15 | ○     | ○ | 25            | 25 | 150 | 34 | 25 | 32 | SN**1506** | 720500<br>763043 | 730109<br>001574 | 720500<br>762969 | 730100<br>460070 | 720301<br>260455/<br>720301<br>260456 |
| MSKNR/L3232P19 | ○     | ○ | 32            | 32 | 170 | 35 | 32 | 40 | SN**1906** | 720500<br>763044 | 730109<br>001577 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456                      |

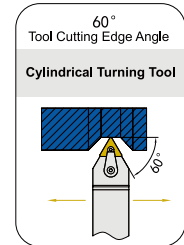
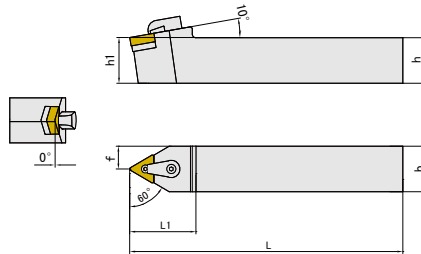
●Stock ○Available Upon Order

**MSSNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MSSNR/L2020K12 | ●     | ○ | 20            | 20 | 125 | 32 | 20 | 17 | SN**1204** | 720500<br>763042 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MSSNR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 22 |            |                  |                  |                  |                  |                                       |
| MSSNR/L3232P12 | ●     | ○ | 32            | 32 | 170 | 32 | 32 | 27 |            |                  |                  |                  |                  |                                       |
| MSSNR/L2525M15 | ●     | ○ | 25            | 25 | 150 | 40 | 25 | 32 | SN**1506** | 720500<br>763043 | 730109<br>001574 | 720500<br>762969 | 730100<br>460070 | 720301<br>260455/<br>720301<br>260456 |
| MSSNR/L3232P19 | ○     | ○ | 32            | 32 | 170 | 43 | 32 | 40 | SN**1906** | 720500<br>763044 | 730109<br>001577 | 720500<br>762969 | 730100<br>460070 | 720301<br>260456                      |

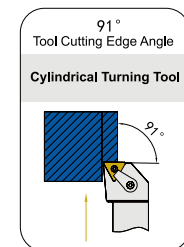
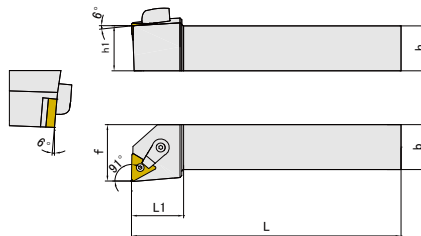
●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

**MTENN**

| Ordering Code | Stock | Dimension(mm) |    |     |    |    |      | Insert     | Spare Parts      |                  |                  |                  |                                       |
|---------------|-------|---------------|----|-----|----|----|------|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|               |       | h             | b  | L   | L1 | h1 | f    |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MTENN2020K16  | ●     | 20            | 20 | 125 | 35 | 20 | 10   | TN**1604** | 720500<br>763045 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MTENN2525M16  | ●     | 25            | 25 | 150 | 35 | 25 | 12.5 |            |                  |                  |                  |                  |                                       |
| MTENN3232P16  | ○     | 32            | 32 | 170 | 35 | 32 | 16   |            |                  |                  |                  |                  |                                       |
| MTENN3232P22  | ○     | 32            | 32 | 170 | 38 | 32 | 16   | TN**2204** | 720500<br>763046 | 730109<br>001574 | 720500<br>762966 | 730100<br>460070 | 720301<br>260453/<br>720301<br>260456 |

●Stock ○Available Upon Order

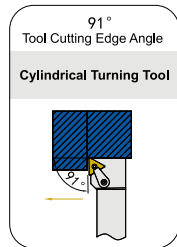
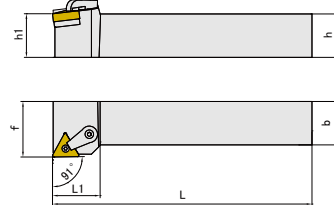
**MTFNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MTFNR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 28 | 20 | 25 | TN**1604** | 720500<br>763045 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452<br>720301/<br>260455 |
| MTFNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 28 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MTFNR/L3232P16 | ○     | ○ | 32            | 32 | 170 | 28 | 32 | 40 |            |                  |                  |                  |                  |                                       |
| MTFNR/L3232P22 | ○     | ○ | 32            | 32 | 170 | 32 | 32 | 32 | TN**2204** | 720500<br>763046 | 730109<br>001574 | 720500<br>762966 | 730100<br>460070 | 720301<br>260453/<br>720301<br>260456 |

●Stock ○Available Upon Order

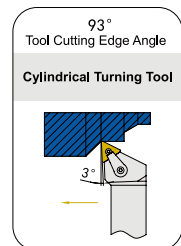
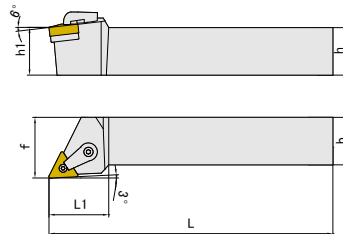


## External Turning Toolholder(Negative)

**MTGNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MTGNR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 28 | 20 | 25 | TN**1604** | 720500<br>763045 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301                                |
| MTGNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 28 | 25 | 32 |            |                  |                  |                  |                  | 260452/<br>720301                     |
| MTGNR/L3232P16 | ○     | ○ | 32            | 32 | 170 | 34 | 32 | 40 |            |                  |                  |                  |                  | 260455                                |
| MTGNR/L3232P22 | ○     | ○ | 32            | 32 | 170 | 32 | 32 | 40 | TN**2204** | 720500<br>763046 | 730109<br>001574 | 720500<br>762966 | 730100<br>460070 | 720301<br>260453/<br>720301<br>260456 |

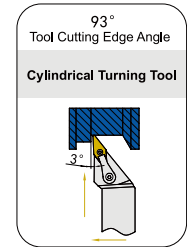
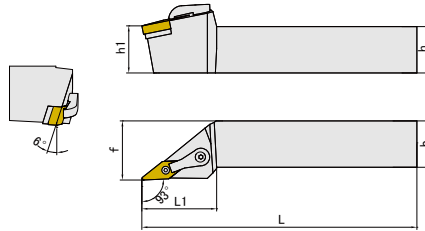
●Stock ○Available Upon Order

**MTJNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MTJNR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 32 | 20 | 25 | TN**1604** | 720500<br>763045 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301                                |
| MTJNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 32 |            |                  |                  |                  |                  | 260452/<br>720301                     |
| MTJNR/L3232P16 | ○     | ○ | 32            | 32 | 170 | 32 | 32 | 40 |            |                  |                  |                  |                  | 260455                                |
| MTJNR/L3232P22 | ○     | ○ | 32            | 32 | 170 | 38 | 32 | 16 | TN**2204** | 720500<br>763046 | 730109<br>001574 | 720500<br>762966 | 730100<br>460070 | 720301<br>260453/<br>720301<br>260456 |

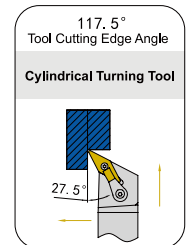
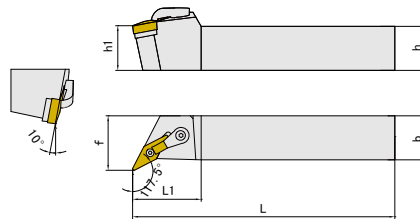
●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

**MVJNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MVJNR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 42 | 20 | 20 | VN**1604** | 720500<br>763034 | 730109<br>001565 | 720500<br>762968 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MVJNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 42 | 25 | 25 |            |                  |                  |                  |                  |                                       |
| MVJNR/L3232P16 | ○     | ○ | 32            | 32 | 170 | 42 | 32 | 32 |            |                  |                  |                  |                  |                                       |

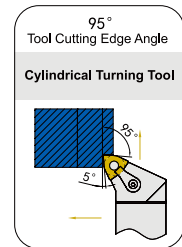
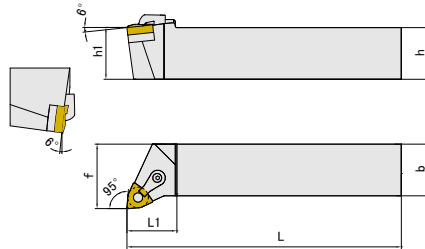
●Stock ○Available Upon Order

**MVQNR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MVQNR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 40 | 20 | 25 | VN**1604** | 720500<br>763034 | 730109<br>001565 | 720500<br>762968 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MVQNR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 40 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MVQNR/L3232P16 | ○     | ○ | 32            | 32 | 170 | 40 | 32 | 40 |            |                  |                  |                  |                  |                                       |

●Stock ○Available Upon Order

## External Turning Toolholder(Negative)

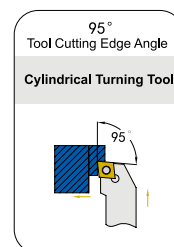
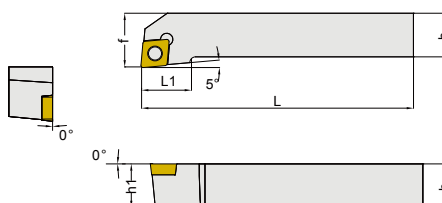
**MWLN**

| Ordering Code | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |                  |                  |                                       |
|---------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|------------------|------------------|---------------------------------------|
|               | R     | L | h             | b  | L   | L1 | h1 | f  |            | Shim             | Pin              | Clamp            | Screw            | Wrench                                |
| MWLN/L2020K06 | ●     | ○ | 20            | 20 | 125 | 25 | 20 | 32 | WN**0604** | 720500<br>763047 | 730109<br>001565 | 720500<br>762965 | 730100<br>460063 | 720301<br>260452/<br>720301<br>260455 |
| MWLN/L2020K08 | ●     | ○ | 20            | 20 | 125 | 25 | 20 | 32 | WN**0804** | 720500<br>763048 | 730109<br>001566 | 720500<br>762965 | 730100<br>460063 | 720301<br>260453/<br>720301<br>260455 |
| MWLN/L2525M08 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 32 |            |                  |                  |                  |                  |                                       |
| MWLN/L3232P08 | ●     | ○ | 32            | 32 | 170 | 40 | 32 | 32 |            |                  |                  |                  |                  |                                       |

●Stock ○Available Upon Order

## External Turning Toolholder(Positive)

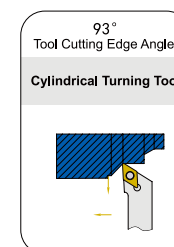
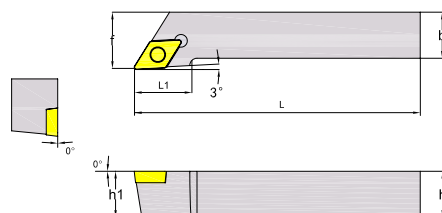
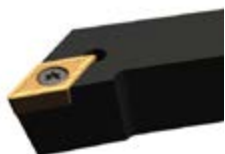
## SCLCR



| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Screw            | Wrench           |
| SCLCR/L1010F06 | ○     | ○ | 10            | 10 | 80  | 12 | 10 | 10 | CC**0602** | 730100<br>961040 | 720300<br>960508 |
| SCLCR/L1212H09 | ○     | ○ | 12            | 12 | 100 | 16 | 12 | 16 | CC**09T3** | 730100<br>961128 | 720300<br>960510 |
| SCLCR/L1616H09 | ●     | ○ | 16            | 16 | 100 | 20 | 16 | 20 |            |                  |                  |
| SCLCR/L2020K09 | ●     | ○ | 20            | 20 | 125 | 25 | 20 | 25 |            |                  |                  |
| SCLCR/L2525M12 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 32 | CC**1204** | 730100<br>961205 | 720300<br>960515 |

●Stock ○Available Upon Order

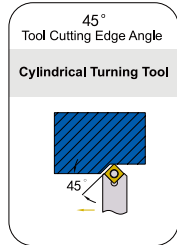
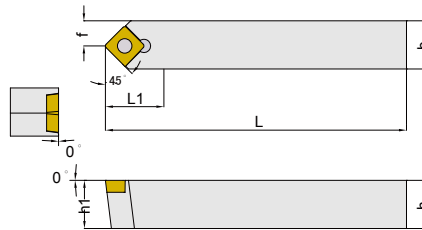
## SDJCR



| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Screw            | Wrench           |
| SDJCR/L1010E07 | ○     | ○ | 10            | 10 | 70  | 12 | 10 | 15 | DC**0702** | 730100<br>961040 | 720300<br>960508 |
| SDJCR/L1212F07 | ○     | ○ | 12            | 12 | 80  | 16 | 12 | 15 |            |                  |                  |
| SDJCR/L1616H11 | ●     | ○ | 16            | 16 | 100 | 20 | 16 | 24 | DC**11T3** | 730100<br>961128 | 720300<br>960510 |
| SDJCR/L2020K11 | ●     | ○ | 20            | 20 | 125 | 20 | 20 | 24 |            |                  |                  |
| SDJCR/L2525M11 | ●     | ○ | 25            | 25 | 150 | 23 | 25 | 29 |            |                  |                  |

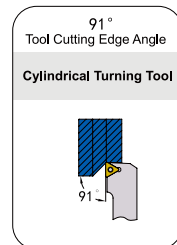
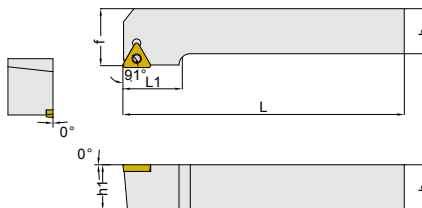
●Stock ○Available Upon Order

## External Turning Toolholder(Positive)

**SSDCN**

| Ordering Code | Stock | Dimension(mm) |    |     |    |    |      | Insert     | Spare Parts      |                  |
|---------------|-------|---------------|----|-----|----|----|------|------------|------------------|------------------|
|               |       | h             | b  | L   | L1 | h1 | f    |            | Screw            | Wrench           |
| SSDCN1212F09  | ○     | 12            | 12 | 80  | 16 | 12 | 6    | SC**09T3** | 730100<br>961128 | 720300<br>960510 |
| SSDCN1616H09  | ●     | 16            | 16 | 100 | 16 | 16 | 8    |            |                  |                  |
| SSDCN2020K09  | ●     | 20            | 20 | 125 | 16 | 20 | 10   |            |                  |                  |
| SSDCN2525M12  | ○     | 25            | 25 | 150 | 22 | 25 | 12.5 | SC**1204** | 730100<br>961205 | 720300<br>960515 |

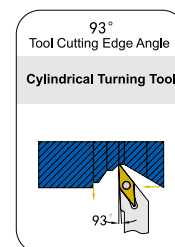
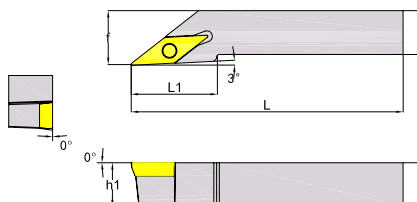
●Stock ○Available Upon Order

**STGCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Screw            | Wrench           |
| STGCR/L1010E09 | ○     | ○ | 10            | 10 | 70  | 12 | 10 | 11 | TC**0902** | 730100<br>961030 | 720300<br>960506 |
| STGCR/L1212F11 | ○     | ○ | 12            | 12 | 80  | 16 | 12 | 16 | TC**1102** | 730100<br>961040 | 720300<br>960508 |
| STGCR/L1616H11 | ●     | ○ | 16            | 16 | 100 | 20 | 16 | 20 |            |                  |                  |
| STGCR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 25 | 20 | 25 | TC**16T3** | 730100<br>961128 | 720300<br>960510 |
| STGCR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 27 | 25 | 32 |            |                  |                  |

●Stock ○Available Upon Order

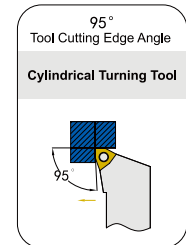
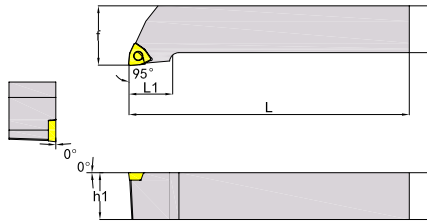
## External Turning Toolholder(Positive)

**SVJCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Screw            | Wrench           |
| SVJCR/L1212F11 | ○     | ○ | 12            | 12 | 80  | 24 | 12 | 16 | VC**11T3** | 730100<br>961040 | 720300<br>960508 |
| SVJCR/L1616H11 | ●     | ○ | 16            | 16 | 100 | 26 | 16 | 20 |            |                  |                  |
| SVJCR/L2020K16 | ●     | ○ | 20            | 20 | 125 | 32 | 20 | 25 | VC**1604** | 730100<br>961128 | 720300<br>960510 |
| SVJCR/L2525M16 | ●     | ○ | 25            | 25 | 150 | 32 | 25 | 32 |            |                  |                  |

●Stock ○Available Upon Order

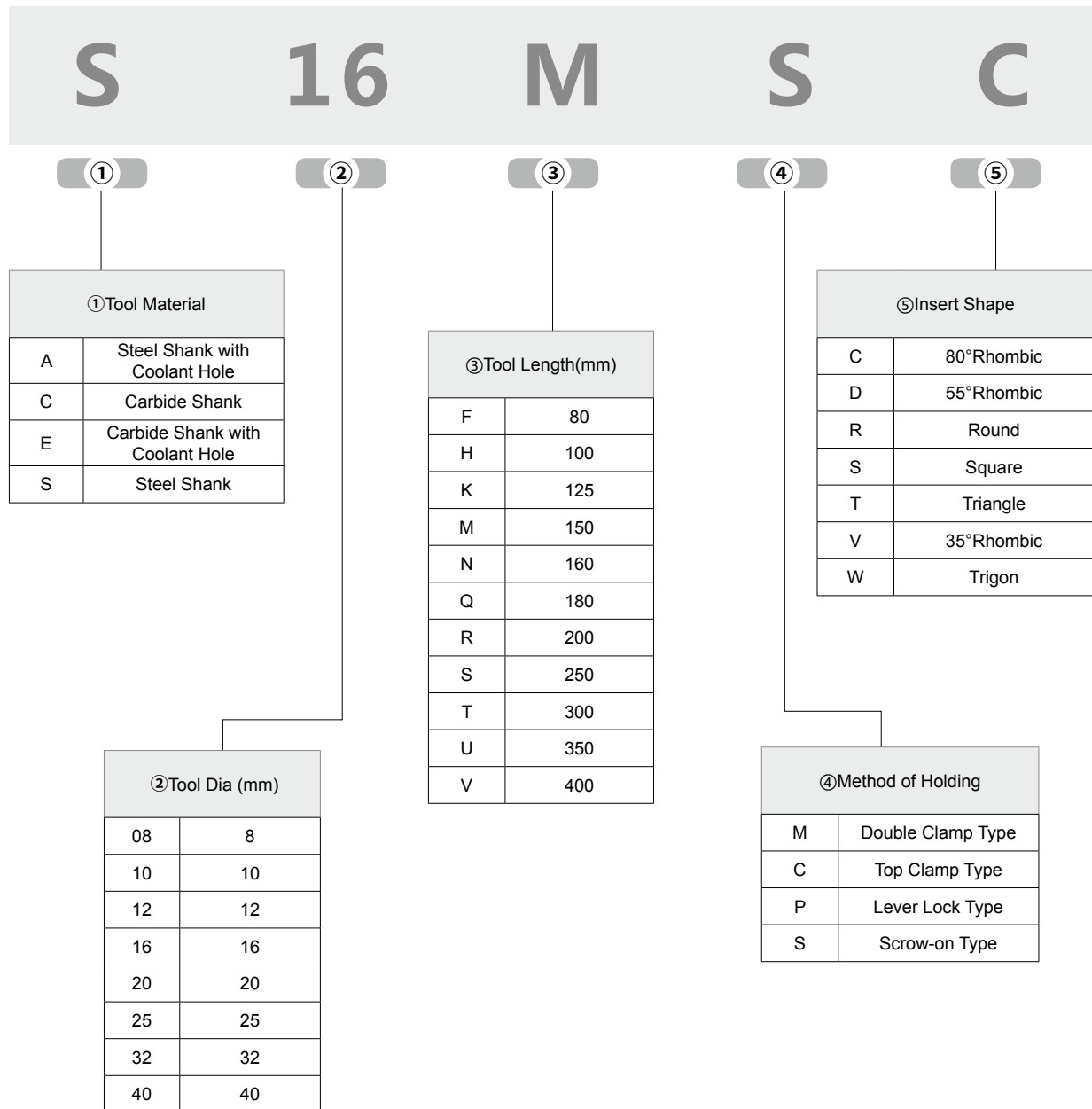
## External Turning Toolholder(Positive)

**SWLCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |     |    |    |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|-----|----|----|----|------------|------------------|------------------|
|                | R     | L | h             | b  | L   | L1 | h1 | f  |            | Screw            | Wrench           |
| SWLCR/L1212F06 | ●     | ○ | 12            | 12 | 80  | 14 | 12 | 16 | WC**06T3** | 730100<br>961128 | 720300<br>960510 |
| SWLCR/L1616H06 | ●     | ○ | 16            | 16 | 100 | 14 | 16 | 20 |            |                  |                  |
| SWLCR/L2020K06 | ●     | ○ | 20            | 20 | 125 | 15 | 20 | 25 |            |                  |                  |
| SWLCR/L2525M06 | ●     | ○ | 25            | 25 | 150 | 17 | 25 | 32 |            |                  |                  |

●Stock ○Available Upon Order

## Internal Turning Toolholders Identification System



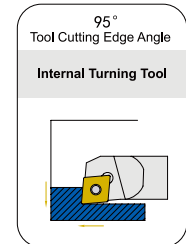
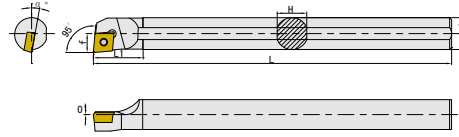


# L C R 09

|                      |        |                          |     |                |            |                            |        |          |       |             |             |             |
|----------------------|--------|--------------------------|-----|----------------|------------|----------------------------|--------|----------|-------|-------------|-------------|-------------|
| ⑥ Cutting Edge Angle |        | ⑦ Insert Clearance Angle |     | ⑧ Hand of Tool |            | ⑨ Cutting Edge Length (mm) |        |          |       |             |             |             |
| K                    | 75°    | C                        | 7°  | R              | Right Hand | Insert Shape               |        |          |       |             |             |             |
| L                    | 95°    | B                        | 5°  | L              | Left Hand  |                            |        |          |       |             |             |             |
| F                    | 91°    | N                        | 0°  |                |            | Insert I.C. (mm)           | Square | Triangle | Round | 80° Rhombic | 55° Rhombic | 35° Rhombic |
| Q                    | 107.5° | P                        | 11° |                |            | 6                          | -      | -        | 06    | -           | -           | -           |
| U                    | 93°    |                          |     |                |            | 6.35                       |        | 11       |       | 06          | 07          | 11          |
| W                    | 60°    |                          |     |                |            | 7.94                       | -      | 13       | -     | -           | -           | -           |
| X                    | 120°   |                          |     |                |            | 8                          |        |          | 08    |             |             |             |
|                      |        |                          |     |                |            | 9.525                      | 09     | 16       | -     | 09          | 11          | 16          |
|                      |        |                          |     |                |            | 10                         | -      | -        | 10    | -           | -           | -           |
|                      |        |                          |     |                |            | 12                         | -      | -        | 12    | -           | -           | -           |
|                      |        |                          |     |                |            | 12.7                       | -      | 22       | -     | 12          | 15          | -           |
|                      |        |                          |     |                |            | 15.875                     | 15     | 27       | -     | 16          | -           | -           |
|                      |        |                          |     |                |            | 16                         | -      | -        | 16    | -           | -           | -           |
|                      |        |                          |     |                |            | 19.05                      | 19     | -        | 19    | -           | -           | -           |
|                      |        |                          |     |                |            | 20                         | -      | -        | 20    | -           | -           | -           |
|                      |        |                          |     |                |            | 25                         | -      | -        | 25    | -           | -           | -           |
|                      |        |                          |     |                |            | 25.4                       | 25     | -        | -     | -           | -           | -           |
|                      |        |                          |     |                |            | 32                         | -      | -        | 32    | -           | -           | -           |

## Internal Turning Toolholder

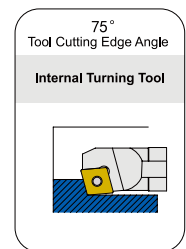
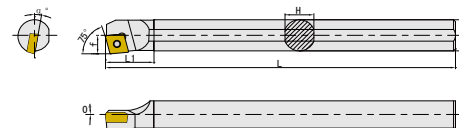
## SCLCR



| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-SCLCR/L06 | ●     | ○ | 10            | 8  | 5.5  | 125 | 12 | 7    | 13 | CC**0602** | 730100<br>961040 | 720300<br>960508 |
| S10K-SCLCR/L06 | ●     | ○ | 12            | 10 | 6    | 125 | 15 | 9    | 12 |            |                  |                  |
| S12M-SCLCR/L06 | ●     | ○ | 14            | 12 | 7    | 150 | 16 | 11   | 10 |            |                  |                  |
| S12M-SCLCR/L09 | ●     | ○ | 15            | 12 | 8    | 150 | 20 | 11   | 12 | CC**09T3** | 730100<br>961128 | 720300<br>960510 |
| S16Q-SCLCR/L09 | ●     | ○ | 18            | 16 | 9.5  | 180 | 25 | 14.8 | 10 |            |                  |                  |
| S20R-SCLCR/L09 | ●     | ○ | 22            | 20 | 11.5 | 200 | 28 | 18.4 | 8  |            |                  |                  |
| S25S-SCLCR/L09 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  | CC**1204** | 730100<br>961205 | 720300<br>960515 |
| S25S-SCLCR/L12 | ○     | ○ | 28            | 25 | 14.5 | 250 | 35 | 23.4 | 8  |            |                  |                  |

●Stock ○Available Upon Order

## SCKCR

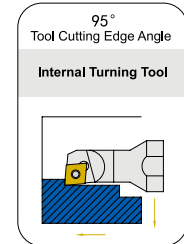
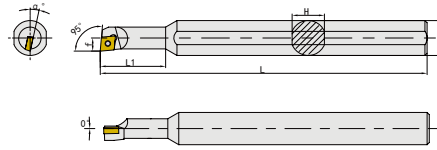


| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-SCKCR/L06 | ●     | ○ | 10            | 8  | 5.5  | 125 | 13 | 7    | 13 | CC**0602** | 730100<br>961040 | 720300<br>960508 |
| S10K-SCKCR/L06 | ●     | ○ | 12            | 10 | 6    | 125 | 14 | 9    | 12 |            |                  |                  |
| S12M-SCKCR/L06 | ●     | ○ | 14            | 12 | 7    | 150 | 16 | 11   | 10 |            |                  |                  |
| S12M-SCKCR/L09 | ●     | ○ | 15            | 12 | 8    | 150 | 23 | 11   | 12 | CC**09T3** | 730100<br>961128 | 720300<br>960510 |
| S16Q-SCKCR/L09 | ●     | ○ | 18            | 16 | 9.5  | 180 | 25 | 14.8 | 10 |            |                  |                  |
| S20R-SCKCR/L09 | ○     | ○ | 22            | 20 | 11.5 | 200 | 28 | 18.4 | 8  |            |                  |                  |
| S25S-SCKCR/L09 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

## Internal Turning Toolholder

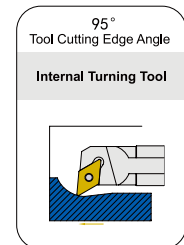
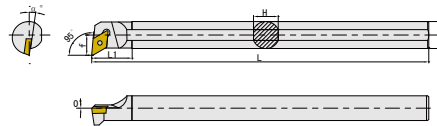
## SCLCR-A16



| Ordering Code      | Stock |   | Dimension(mm) |    |     |     |    |      |    | Insert     | Spare Parts      |                  |
|--------------------|-------|---|---------------|----|-----|-----|----|------|----|------------|------------------|------------------|
|                    | R     | L | ΦDmin         | Φd | f   | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S07M-SCLCR/L06-A16 | ●     | ○ | 9             | 7  | 4.9 | 150 | 25 | 14.8 | 15 | CC**0602** | 730100<br>961040 | 720300<br>960508 |
| S08M-SCLCR/L06-A16 | ●     | ○ | 10            | 8  | 5.5 | 150 | 28 | 14.8 | 13 |            |                  |                  |
| S10M-SCLCR/L06-A16 | ●     | ○ | 12            | 10 | 6   | 150 | 30 | 14.8 | 12 |            |                  |                  |
| S12M-SCLCR/L06-A16 | ●     | ○ | 14            | 12 | 7   | 150 | 33 | 14.8 | 10 |            |                  |                  |

●Stock ○Available Upon Order

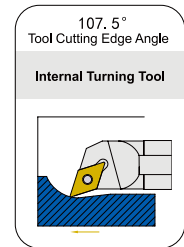
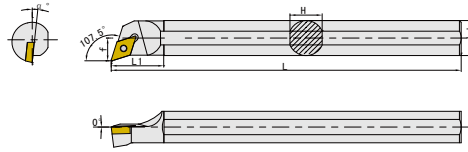
## SDUCR



| Ordering Code  | Stock |   | Dimension(mm) |    |    |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|----|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f  | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S10K-SDUCR/L07 | ●     | ○ | 14            | 10 | 8  | 125 | 16 | 9    | 10 | DC**0702** | 730100<br>961040 | 720300<br>960508 |
| S12M-SDUCR/L07 | ●     | ● | 16            | 12 | 9  | 150 | 18 | 11   | 8  |            |                  |                  |
| S16Q-SDUCR/L07 | ●     | ○ | 20            | 16 | 11 | 180 | 20 | 14.8 | 6  |            |                  |                  |
| S16Q-SDUCR/L11 | ●     | ○ | 20            | 16 | 11 | 180 | 18 | 14.8 | 6  | DC**11T3** | 730100<br>961128 | 720300<br>960510 |
| S20R-SDUCR/L11 | ●     | ○ | 24            | 20 | 13 | 200 | 28 | 18.4 | 6  |            |                  |                  |
| S25S-SDUCR/L11 | ○     | ○ | 29            | 25 | 16 | 250 | 28 | 23.4 | 4  |            |                  |                  |

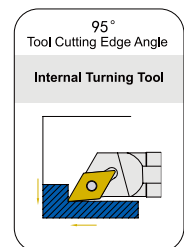
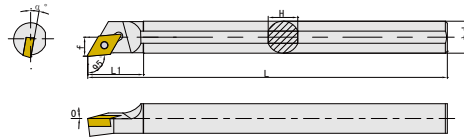
●Stock ○Available Upon Order

## Internal Turning Toolholder

**SDQCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S10K-SDQCR/L07 | ●     | ○ | 13            | 10 | 7    | 125 | 18 | 9    | 10 | DC**0702** | 730100<br>961040 | 720300<br>960508 |
| S12M-SDQCR/L07 | ●     | ○ | 16            | 12 | 9    | 150 | 18 | 11   | 8  |            |                  |                  |
| S16Q-SDQCR/L07 | ●     | ○ | 20            | 16 | 11   | 180 | 24 | 14.8 | 6  |            |                  |                  |
| S16Q-SDQCR/L11 | ●     | ○ | 20            | 16 | 10.5 | 180 | 26 | 14.8 | 6  | DC**11T3** | 730100<br>961128 | 720300<br>960510 |
| S20R-SDQCR/L11 | ●     | ○ | 24            | 20 | 13   | 200 | 30 | 18.4 | 6  |            |                  |                  |
| S25S-SDQCR/L11 | ○     | ○ | 29            | 25 | 16   | 250 | 35 | 23.4 | 4  |            |                  |                  |

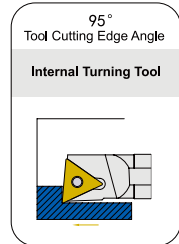
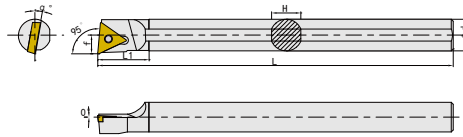
●Stock ○Available Upon Order

**SDXCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-SDXCR/L07 | ●     | ○ | 10            | 8  | 5.5  | 125 | 18 | 7    | 12 | DC**0702** | 730100<br>961040 | 720300<br>960508 |
| S10K-SDXCR/L07 | ●     | ○ | 12            | 10 | 6    | 125 | 18 | 9    | 10 |            |                  |                  |
| S12M-SDXCR/L07 | ●     | ○ | 14            | 12 | 7    | 150 | 21 | 11   | 8  |            |                  |                  |
| S16Q-SDXCR/L07 | ●     | ○ | 18            | 16 | 9    | 180 | 22 | 14.8 | 6  | DC**11T3** | 730100<br>961128 | 720300<br>960510 |
| S20R-SDXCR/L11 | ○     | ○ | 22            | 20 | 11.5 | 200 | 30 | 18.4 | 6  |            |                  |                  |
| S25S-SDXCR/L11 | ○     | ○ | 27            | 25 | 14   | 250 | 35 | 23.4 | 4  |            |                  |                  |

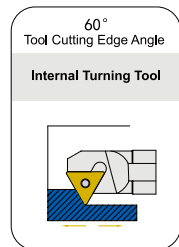
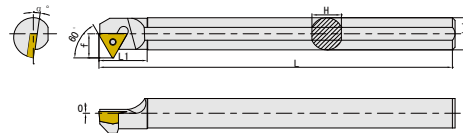
●Stock ○Available Upon Order

## Internal Turning Toolholder

**STUCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-STUCR/L09 | ●     | ○ | 10            | 8  | 5.5  | 125 | 14 | 7    | 15 | TC**0902** | 730100<br>961040 | 720300<br>960508 |
| S10K-STUCR/L09 | ●     | ○ | 12            | 10 | 6    | 125 | 15 | 9    | 13 |            |                  |                  |
| S10K-STUCR/L11 | ●     | ○ | 12            | 10 | 6    | 125 | 17 | 9    | 12 | TC**1102** |                  |                  |
| S12M-STUCR/L11 | ●     | ○ | 14            | 12 | 7    | 150 | 20 | 11   | 10 |            |                  |                  |
| S16Q-STUCR/L11 | ●     | ○ | 18            | 16 | 9    | 180 | 20 | 14.8 | 8  |            |                  |                  |
| S20R-STUCR/L11 | ○     | ○ | 22            | 20 | 11   | 200 | 22 | 18.4 | 6  |            |                  |                  |
| S20R-STUCR/L16 | ○     | ○ | 22            | 20 | 11.5 | 200 | 25 | 18.4 | 4  | TC**16T3** | 730100<br>961128 | 720300<br>960510 |
| S25S-STUCR/L16 | ○     | ○ | 28            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

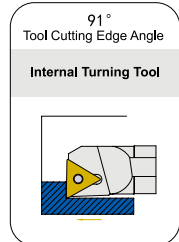
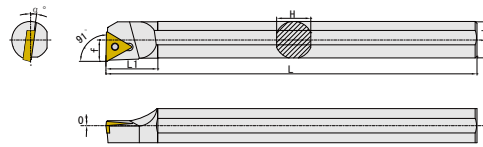
**STWCR**

| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-STWCR/L09 | ●     | ○ | 11            | 8  | 6    | 125 | 15 | 7    | 15 | TC**0902** | 730100<br>961050 | 720300<br>960508 |
| S10K-STWCR/L11 | ●     | ○ | 14            | 10 | 8    | 125 | 18 | 9    | 10 | TC**1102** | 730100<br>961050 |                  |
| S12M-STWCR/L11 | ●     | ○ | 16            | 12 | 9    | 150 | 18 | 11   | 8  |            |                  |                  |
| S16Q-STWCR/L11 | ○     | ○ | 20            | 16 | 11   | 180 | 27 | 14.8 | 6  |            |                  |                  |
| S20R-STWCR/L11 | ○     | ○ | 24            | 20 | 13   | 200 | 26 | 18.4 | 4  |            |                  |                  |
| S20R-STWCR/L16 | ○     | ○ | 25            | 20 | 14.5 | 200 | 32 | 18.4 | 8  | TC**16T3** | 730100<br>961128 | 720300<br>960510 |
| S25S-STWCR/L16 | ○     | ○ | 30            | 25 | 17   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

## Internal Turning Toolholder

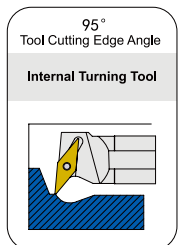
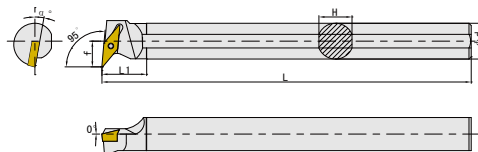
## STFCR



| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-STFCR/L09 | ●     | ○ | 10            | 8  | 5.5  | 125 | 14 | 7    | 15 | TC**0902** | 730100<br>961040 | 720300<br>960508 |
| S10K-STFCR/L09 | ●     | ○ | 12            | 10 | 6    | 125 | 15 | 9    | 13 |            |                  |                  |
| S12M-STFCR/L09 | ●     | ○ | 14            | 12 | 7    | 150 | 17 | 11   | 10 |            |                  |                  |
| S12M-STFCR/L11 | ●     | ○ | 14            | 12 | 7    | 150 | 20 | 11   | 10 | TC**1102** | 730100<br>961040 | 720300<br>960508 |
| S16Q-STFCR/L11 | ●     | ○ | 18            | 16 | 9    | 180 | 20 | 14.8 | 8  |            |                  |                  |
| S20R-STFCR/L11 | ○     | ○ | 22            | 20 | 11   | 200 | 22 | 18.4 | 6  |            |                  |                  |
| S20R-STFCR/L16 | ○     | ○ | 22            | 20 | 11.5 | 200 | 25 | 18.4 | 4  | TC**16T3** | 730100<br>961135 | 720300<br>960510 |
| S25S-STFCR/L16 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

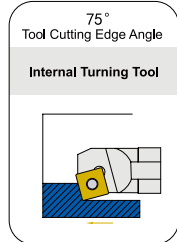
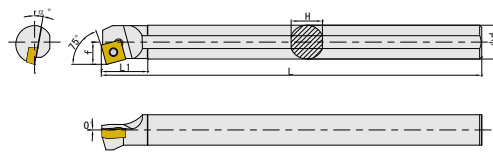
## SVUCR



| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S16Q-SVUCR/L11 | ○     | ○ | 20            | 16 | 11.5 | 180 | 20 | 14.8 | 10 | VC**1103** | 730100<br>961050 | 720300<br>960508 |
| S20R-SVUCR/L11 | ○     | ○ | 25            | 20 | 14   | 200 | 25 | 18.4 | 8  |            |                  |                  |
| S25S-SVUCR/L16 | ○     | ○ | 33            | 25 | 20   | 250 | 25 | 23.4 | 8  | VC**1604** | 730100<br>961135 | 720300<br>960510 |

## Internal Turning Toolholder

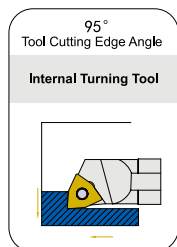
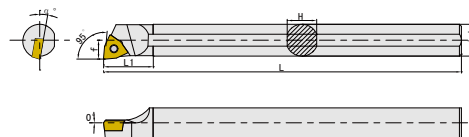
## SSKCR



| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S12M-SSKCR/L09 | ●     | ○ | 15            | 12 | 8.5  | 150 | 11 | 11   | 10 | SC**09T3** | 730100<br>961050 | 720300<br>960508 |
| S16Q-SSKCR/L09 | ●     | ○ | 19            | 16 | 10.5 | 180 | 22 | 14.8 | 10 |            |                  |                  |
| S20R-SSKCR/L09 | ○     | ○ | 23            | 20 | 12.5 | 200 | 25 | 18.4 | 8  |            |                  |                  |
| S25S-SSKCR/L12 | ○     | ○ | 28            | 25 | 15   | 250 | 40 | 23.4 | 6  | SC**1204** | 730100<br>961135 | 720300<br>960510 |

●Stock ○Available Upon Order

## SWLCR

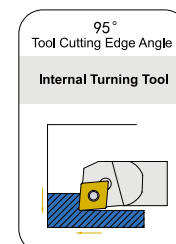
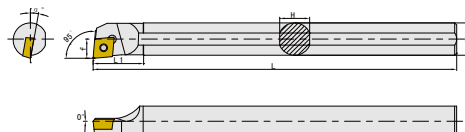


| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S12M-SWLCR/L06 | ○     | ○ | 14            | 12 | 7.5  | 150 | 20 | 11   | 12 | WC**06T3** | 730100<br>961135 | 720300<br>960510 |
| S16Q-SWLCR/L06 | ○     | ○ | 18            | 16 | 9.5  | 180 | 25 | 14.8 | 10 |            |                  |                  |
| S20R-SWLCR/L06 | ○     | ○ | 22            | 20 | 11.5 | 200 | 28 | 18.4 | 8  |            |                  |                  |
| S25S-SWLCR/L06 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

## Internal Turning Toolholder

## SCLPR

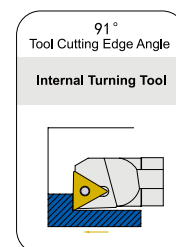
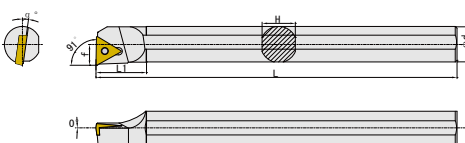


| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S08K-SCLPR/L06 | ○     | ○ | 10            | 8  | 5.5  | 125 | 12 | 7    | 13 | CP**0602** | 730100<br>961040 | 720300<br>960508 |
| S10K-SCLPR/L06 | ○     | ○ | 12            | 10 | 6    | 125 | 15 | 9    | 12 |            |                  |                  |
| S12M-SCLPR/L06 | ○     | ○ | 14            | 12 | 7    | 150 | 16 | 11   | 10 |            |                  |                  |
| S12M-SCLPR/L09 | ○     | ○ | 15            | 12 | 8    | 150 | 20 | 11   | 12 | CP**09T3** | 730100<br>961128 | 720300<br>960510 |
| S16Q-SCLPR/L09 | ○     | ○ | 18            | 16 | 9.5  | 180 | 25 | 14.8 | 10 |            |                  |                  |
| S20R-SCLPR/L09 | ○     | ○ | 22            | 20 | 11.5 | 200 | 28 | 18.4 | 8  |            |                  |                  |
| S25S-SCLPR/L09 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

●Stock ○Available Upon Order

## Internal Turning Toolholder

## STFPR



| Ordering Code  | Stock |   | Dimension(mm) |    |      |     |    |      |    | Insert     | Spare Parts      |                  |
|----------------|-------|---|---------------|----|------|-----|----|------|----|------------|------------------|------------------|
|                | R     | L | ΦDmin         | Φd | f    | L   | L1 | H    | α° |            | Screw            | Wrench           |
| S10K-STFPR/L11 | ○     | ○ | 12            | 10 | 6    | 125 | 17 | 9    | 12 | TP**1102** | 730100<br>961040 | 720300<br>960508 |
| S12M-STFPR/L11 | ○     | ○ | 14            | 12 | 7    | 150 | 20 | 11   | 10 |            |                  |                  |
| S16Q-STFPR/L11 | ○     | ○ | 18            | 16 | 9    | 180 | 20 | 14.8 | 8  |            |                  |                  |
| S20R-STFPR/L11 | ○     | ○ | 22            | 20 | 11   | 200 | 22 | 18.4 | 6  |            |                  |                  |
| S20R-STFPR/L16 | ○     | ○ | 22            | 20 | 11.5 | 200 | 25 | 18.4 | 4  | TP**16T3** | 730100<br>961128 | 720300<br>960510 |
| S25S-STFPR/L16 | ○     | ○ | 27            | 25 | 14   | 250 | 30 | 23.4 | 6  |            |                  |                  |

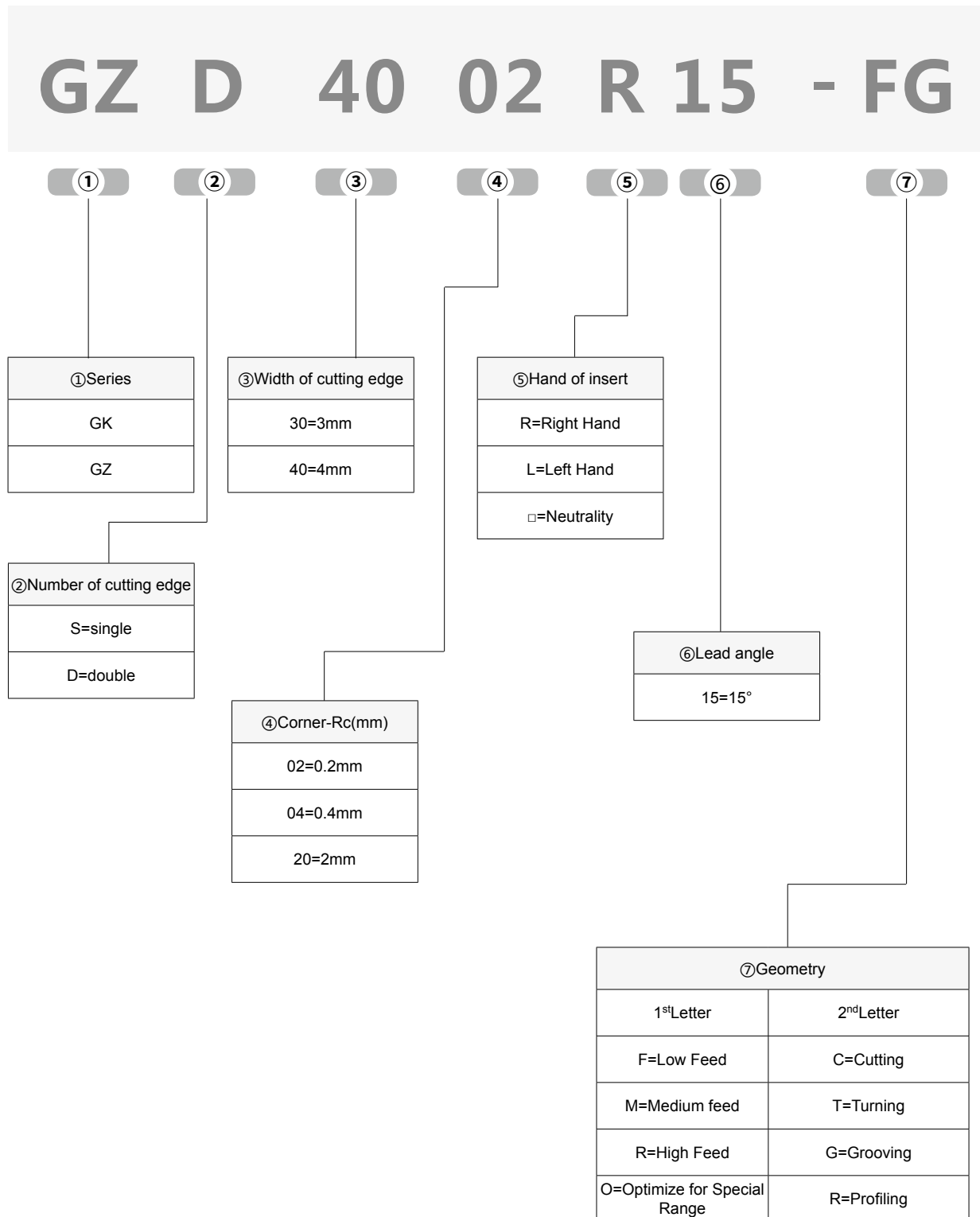
●Stock ○Available Upon Order



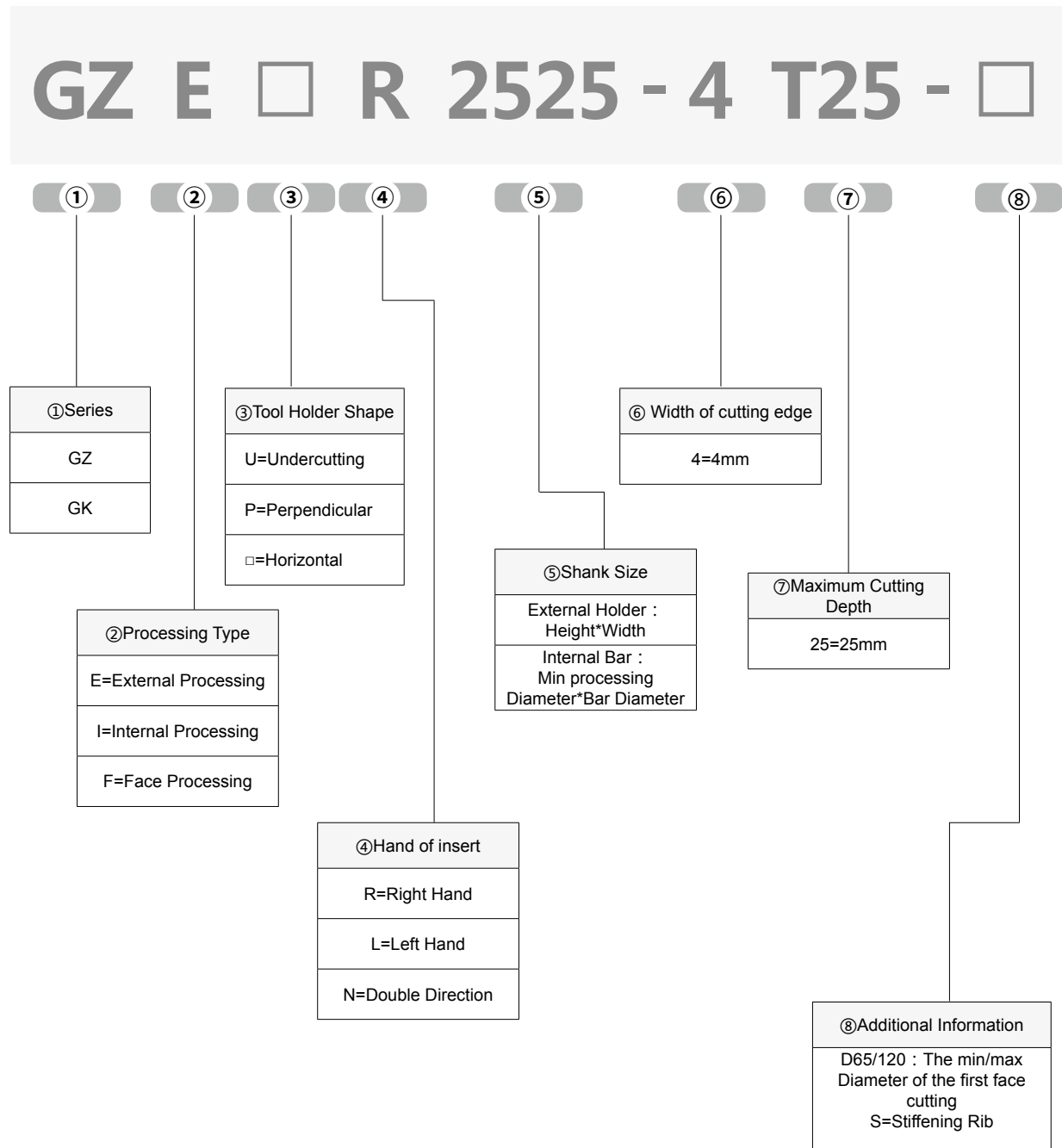
# PARTING AND GROOVING TOOLS



## Parting and Grooving Inserts Identification System



## Parting and Grooving Tools Identification System



## Overview of Parting and Grooving Inserts

| Shape                                                                             | Geometry | Application                    | Width       | Page                 |
|-----------------------------------------------------------------------------------|----------|--------------------------------|-------------|----------------------|
|  | MT       | Grooving and turning           | 2.0-8.0(mm) | <a href="#">P117</a> |
|  | FG       | Precision grooving and turning | 3.0-6.0(mm) | <a href="#">P117</a> |
|  | OR       | Precision profiling            | 3.0-6.0(mm) | <a href="#">P118</a> |

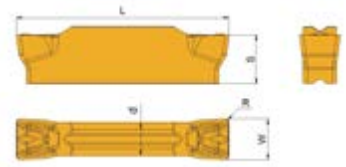
## Application Summary of Grades

| Workpiece Material |     | <div>P</div> <div>Steel</div> |        |        |    |    |    | <div>M</div> <div>Stainless Steel</div> |    |        |    |    |    | <div>K</div> <div>Cast Iron</div> |        |    |    |    |    | <div>S</div> <div>HRSA / Titanium</div> |    |    |  |
|--------------------|-----|-------------------------------|--------|--------|----|----|----|-----------------------------------------|----|--------|----|----|----|-----------------------------------|--------|----|----|----|----|-----------------------------------------|----|----|--|
|                    |     | ISO                           | 01     | 10     | 20 | 30 | 40 | 50                                      | 01 | 10     | 20 | 30 | 40 | 01                                | 10     | 20 | 30 | 40 | 10 | 20                                      | 30 | 40 |  |
| Coated             | CVD |                               |        | GP1225 |    |    |    |                                         |    |        |    |    |    |                                   | GK1115 |    |    |    |    |                                         |    |    |  |
|                    | PVD |                               | GA4230 |        |    |    |    |                                         |    | GA4230 |    |    |    |                                   |        |    |    |    |    |                                         |    |    |  |
|                    |     |                               |        |        |    |    |    |                                         |    | GS3115 |    |    |    |                                   | GA4230 |    |    |    |    | GS3115                                  |    |    |  |
| Uncoated           |     |                               |        |        |    |    |    |                                         |    | GS3125 |    |    |    |                                   |        |    |    |    |    |                                         |    |    |  |
|                    |     |                               |        |        |    |    |    |                                         |    |        |    |    |    |                                   |        |    |    |    |    | GS9125                                  |    |    |  |

## Parting and Grooving Inserts

## MT

Grooving and turning inserts



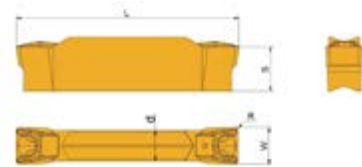
| Ordering Code                                                                     |            | Dimension |     |      |      |      | Stock  |        |        |
|-----------------------------------------------------------------------------------|------------|-----------|-----|------|------|------|--------|--------|--------|
|                                                                                   |            | W         | R   | L    | d    | S    | GP1225 | GA4230 | GK1115 |
|  | GKD2002-MT | 2.0       | 0.2 | 16.0 | 1.2  | 3.5  | ●      | ●      | ●      |
|                                                                                   | GKD2502-MT | 2.5       | 0.2 | 18.5 | 2.0  | 3.85 | ●      | ●      | ●      |
|                                                                                   | GKD3004-MT | 3.0       | 0.4 | 21.2 | 2.35 | 4.8  | ●      | ●      | ●      |
|                                                                                   | GKD4004-MT | 4.0       | 0.4 | 21.0 | 3.3  | 4.8  | ●      | ●      | ●      |
|                                                                                   | GKD5004-MT | 5.0       | 0.4 | 26.0 | 4.1  | 5.8  | ●      | ●      | ●      |
|                                                                                   | GKD5008-MT | 5.0       | 0.8 | 26.0 | 4.1  | 5.8  | ●      | ●      | ●      |
|                                                                                   | GKD6004-MT | 6.0       | 0.4 | 26.0 | 5.0  | 5.8  | ●      | ●      | ●      |
|                                                                                   | GKD6008-MT | 6.0       | 0.8 | 26.0 | 5.0  | 5.8  | ●      | ●      | ●      |
|                                                                                   | GKD8008-MT | 8.0       | 0.8 | 31.0 | 6.0  | 6.5  | ●      | ○      | ●      |

\*For tools, see page119, 120 and page122

●Stock ○Available upon order

## FG

Precision grooving and turning inserts



| Ordering Code                                                                       |            | Dimension |     |      |     |     | Stock  |        |
|-------------------------------------------------------------------------------------|------------|-----------|-----|------|-----|-----|--------|--------|
|                                                                                     |            | W         | R   | L    | d   | S   | GS3125 | GS9125 |
|  | GZD3002-FG | 3.0       | 0.2 | 20.4 | 2.3 | 4.6 | ●      | ●      |
|                                                                                     | GZD3004-FG | 3.0       | 0.4 | 20.4 | 2.3 | 4.6 | ●      | ●      |
|                                                                                     | GZD4002-FG | 4.0       | 0.2 | 24.0 | 3.3 | 4.8 | ●      | ●      |
|                                                                                     | GZD4004-FG | 4.0       | 0.4 | 24.0 | 3.3 | 4.8 | ●      | ●      |
|                                                                                     | GZD5002-FG | 5.0       | 0.2 | 24.0 | 3.3 | 4.8 | ●      | ●      |
|                                                                                     | GZD5004-FG | 5.0       | 0.4 | 24.0 | 3.3 | 4.8 | ●      | ●      |
|                                                                                     | GZD6002-FG | 6.0       | 0.2 | 26.0 | 4.2 | 4.8 | ●      | ●      |
|                                                                                     | GZD6004-FG | 6.0       | 0.4 | 26.0 | 4.2 | 4.8 | ●      | ●      |

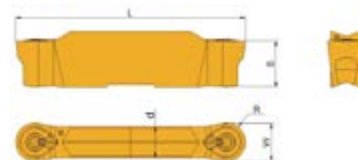
\*For tools, see page121

●Stock ○Available upon order

## Parting and Grooving Inserts

**OR**

Precision profiling inserts



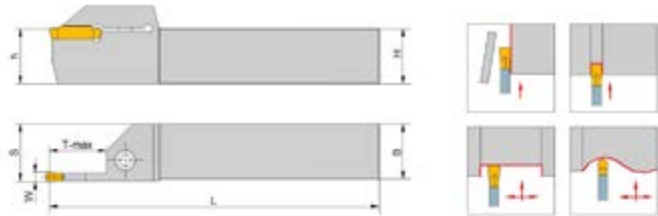
| Ordering Code                                                                     |            | Dimension |     |      |     |     | Stock  |
|-----------------------------------------------------------------------------------|------------|-----------|-----|------|-----|-----|--------|
|                                                                                   |            | W         | R   | L    | d   | S   | GS3115 |
|  | GZD3015-OR | 3.0       | 1.5 | 21.0 | 2.3 | 4.6 | ●      |
|                                                                                   | GZD4020-OR | 4.0       | 2.0 | 24.0 | 3.3 | 4.8 | ●      |
|                                                                                   | GZD5025-OR | 5.0       | 2.5 | 24.0 | 3.3 | 4.8 | ●      |
|                                                                                   | GZD6030-OR | 6.0       | 3.0 | 21.0 | 4.2 | 4.8 | ●      |

●For tools, see page121

●Stock ○Available upon order

## GK Seris

## External Holders for Parting, Grooving, Turning and Profiling



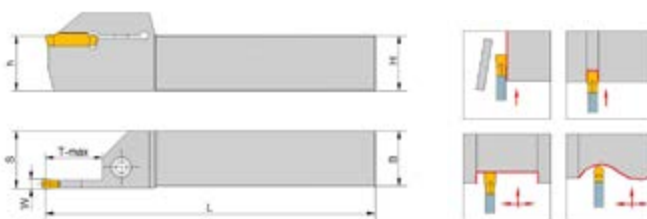
| Ordering Code     | Stock |   | Insert   | Dimension(mm) |       |     |    |     |    | Screw    | Wrench |
|-------------------|-------|---|----------|---------------|-------|-----|----|-----|----|----------|--------|
|                   | R     | L |          | W             | T-max | H=h | B  | L   | S  |          |        |
| GKER/L1616-2T14   | ●     | ● | GKD20... | 2             | 14    | 16  | 16 | 100 | 17 | SCAM5X12 | TH40L  |
| GKER/L2020-2T14   | ●     | ● | GKD20... | 2             | 14    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2525-2T14   | ●     | ● | GKD20... | 2             | 14    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L1616-2.5T16 | ●     | ● | GKD25... | 2.5           | 16    | 16  | 16 | 100 | 17 | SCAM5X12 | TH40L  |
| GKER/L2020-2.5T16 | ●     | ● | GKD25... | 2.5           | 16    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2525-2.5T16 | ●     | ● | GKD25... | 2.5           | 16    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L1616-3T18   | ●     | ● | GKD30... | 3             | 18    | 16  | 16 | 100 | 17 | SCAM5X12 | TH40L  |
| GKER/L2020-3T18   | ●     | ● | GKD30... | 3             | 18    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2020-3T10   | ○     | ○ | GKD30... | 3             | 10    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2525-3T18   | ●     | ● | GKD30... | 3             | 18    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L2525-3T10   | ○     | ○ | GKD30... | 3             | 10    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L3225-3T18   | ●     | ● | GKD30... | 3             | 18    | 32  | 25 | 170 | 26 | SCAM6X20 | TH50L  |
| GKER/L3232-3T18   | ●     | ● | GKD30... | 3             | 18    | 32  | 32 | 170 | 33 | SCAM6X20 | TH50L  |
| GKER/L3232-3T10   | ○     | ○ | GKD30... | 3             | 10    | 32  | 32 | 170 | 33 | SCAM6X20 | TH50L  |
| GKER/L2020-4T18   | ●     | ● | GKD40... | 4             | 18    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2020-4T10   | ○     | ○ | GKD40... | 4             | 10    | 20  | 20 | 125 | 21 | SCAM5X20 | TH40L  |
| GKER/L2525-4T18   | ●     | ● | GKD40... | 4             | 18    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L2525-4T10   | ○     | ○ | GKD40... | 4             | 10    | 25  | 25 | 150 | 26 | SCAM6X20 | TH50L  |
| GKER/L3225-4T18   | ●     | ● | GKD40... | 4             | 18    | 32  | 25 | 170 | 26 | SCAM6X20 | TH50L  |
| GKER/L3232-4T18   | ●     | ● | GKD40... | 4             | 18    | 32  | 32 | 170 | 33 | SCAM6X20 | TH50L  |
| GKER/L3232-4T10   | ○     | ○ | GKD40... | 4             | 10    | 32  | 32 | 170 | 33 | SCAM6X20 | TH50L  |

\*For Inserts, see page117

●Stock ○Available upon order

## GK Seris

## External Holders for Parting, Grooving, Turning and Profiling



Continue

| Ordering Code   | Stock |   | Insert   | Dimension(mm) |       |     |    |     |      | Screw    | Wrench |
|-----------------|-------|---|----------|---------------|-------|-----|----|-----|------|----------|--------|
|                 | R     | L |          | W             | T-max | H=h | B  | L   | S    |          |        |
| GKER/L2020-5T23 | ●     | ● | GKD50... | 5             | 23    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
| GKER/L2020-5T15 | ○     | ○ | GKD50... | 5             | 15    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
| GKER/L2525-5T23 | ●     | ● | GKD50... | 5             | 23    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
| GKER/L2525-5T15 | ○     | ○ | GKD50... | 5             | 15    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
| GKER/L3225-5T23 | ●     | ● | GKD50... | 5             | 23    | 32  | 25 | 170 | 26   | SCAM6X20 | TH50L  |
| GKER/L3232-5T23 | ●     | ● | GKD50... | 5             | 23    | 32  | 32 | 170 | 33   | SCAM6X20 | TH50L  |
| GKER/L3232-5T15 | ○     | ○ | GKD50... | 5             | 15    | 32  | 32 | 170 | 33   | SCAM6X20 | TH50L  |
| GKER/L2020-6T23 | ●     | ● | GKD60... | 6             | 23    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
| GKER/L2020-6T15 | ○     | ○ | GKD60... | 6             | 15    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
| GKER/L2525-6T23 | ●     | ● | GKD60... | 6             | 23    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
| GKER/L2525-6T15 | ○     | ○ | GKD60... | 6             | 15    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
| GKER/L3225-6T23 | ●     | ● | GKD60... | 6             | 23    | 32  | 25 | 170 | 26   | SCAM6X20 | TH50L  |
| GKER/L3232-6T23 | ●     | ● | GKD60... | 6             | 23    | 32  | 32 | 170 | 33   | SCAM6X20 | TH50L  |
| GKER/L3232-6T15 | ○     | ○ | GKD60... | 6             | 15    | 32  | 32 | 170 | 33   | SCAM6X20 | TH50L  |
| GKER/L2525-8T28 | ●     | ● | GKD80... | 8             | 28    | 25  | 25 | 150 | 26.5 | SCAM6X20 | TH50L  |
| GKER/L2525-8T15 | ○     | ○ | GKD80... | 8             | 15    | 25  | 25 | 150 | 26.5 | SCAM6X20 | TH50L  |
| GKER/L3232-8T28 | ●     | ● | GKD80... | 8             | 28    | 32  | 32 | 170 | 33.5 | SCAM6X20 | TH50L  |
| GKER/L3232-8T15 | ○     | ○ | GKD80... | 8             | 15    | 32  | 32 | 170 | 33.5 | SCAM6X20 | TH50L  |

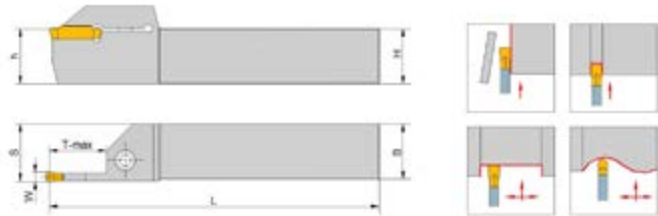
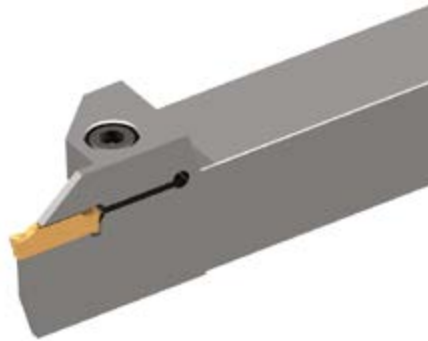
\*For inserts, see page117

●Stock ○Available upon order



## GZ Seris

## External Holders for Parting, Grooving, Turning and Profiling



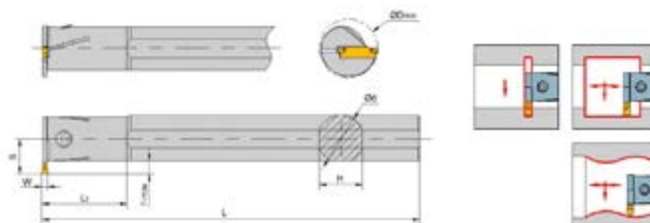
| Ordering Code   | Stock |   | Insert   | Dimension(mm) |       |     |    |     |      | Screw    | Wrench |
|-----------------|-------|---|----------|---------------|-------|-----|----|-----|------|----------|--------|
|                 | R     | L |          | W             | T-max | H=h | B  | L   | S    |          |        |
| GZER/L2020-3T20 | ●     | ● | GZD30... | 3             | 20    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
| GZER/L2525-3T20 | ●     | ● | GZD30... | 3             | 20    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
| GZER/L3225-3T20 | ●     | ● | GZD30... | 3             | 20    | 32  | 25 | 170 | 26   | SCAM6X20 | TH50L  |
| GZER/L2020-4T25 | ●     | ● | GZD40... | 4             | 25    | 20  | 20 | 125 | 21   | SCAM5X20 | TH40L  |
|                 |       |   | GZD50... | 5             | 25    | 20  | 20 | 125 | 21.5 |          |        |
| GZER/L2525-4T25 | ●     | ● | GZD40... | 4             | 25    | 25  | 25 | 150 | 26   | SCAM6X20 | TH50L  |
|                 |       |   | GZD50... | 5             | 25    | 25  | 25 | 150 | 26.5 |          |        |
| GZER/L3225-4T25 | ●     | ● | GZD40... | 4             | 25    | 32  | 25 | 170 | 26   | SCAM6X20 | TH50L  |
|                 |       |   | GZD50... | 5             | 25    | 32  | 25 | 170 | 26.5 |          |        |
| GZER/L2525-6T32 | ●     | ● | GZD60... | 6             | 32    | 25  | 25 | 150 | 26   | SCAM6X30 | TH50L  |
| GZER/L3225-6T32 | ●     | ● | GZD60... | 6             | 32    | 32  | 25 | 170 | 26   | SCAM6X30 | TH50L  |

\*For Inserts, see page117 and page118

●Stock ○Available upon order

## GK series

## Internal Bars for Grooving, Turning and Profiling



| Ordering Code     | Stock |   | Insert   | Dimension(mm) |       |       |    |      |     |    |    | Screw    | Wrench |
|-------------------|-------|---|----------|---------------|-------|-------|----|------|-----|----|----|----------|--------|
|                   | R     | L |          | W             | T-max | ΦDmin | Φd | S    | L   | L1 | H  |          |        |
| GKIR/L2016-2T04   | ●     | ● | GKD20... | 2             | 4     | 20    | 16 | 12   | 125 | 35 | 15 | SCAM4X10 | TH30L  |
| GKIR/L2520-2T05   | ●     | ● | GKD20... | 2             | 5     | 25    | 20 | 14.5 | 150 | 45 | 18 | SCAM4X12 | TH30L  |
| GKIR/L2925-2T05   | ●     | ● | GKD20... | 2             | 5     | 29    | 25 | 17   | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L2520-2.5T05 | ●     | ● | GKD25... | 2.5           | 5     | 25    | 20 | 14.5 | 150 | 45 | 18 | SCAM4X12 | TH30L  |
| GKIR/L2925-2.5T05 | ●     | ● | GKD25... | 2.5           | 5     | 29    | 25 | 17   | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L2520-3T06   | ●     | ● | GKD30... | 3             | 6     | 25    | 20 | 15.5 | 150 | 45 | 18 | SCAM4X12 | TH30L  |
| GKIR/L3125-3T06   | ●     | ● | GKD30... | 3             | 6     | 31    | 25 | 18.5 | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L3732-3T06   | ●     | ● | GKD30... | 3             | 6     | 37    | 32 | 21.5 | 250 | 65 | 30 | SCAM5X20 | TH40L  |
| GKIR/L2520-4T06   | ●     | ● | GKD40... | 4             | 6     | 25    | 20 | 15.5 | 150 | 45 | 18 | SCAM4X12 | TH30L  |
| GKIR/L3125-4T06   | ●     | ● | GKD40... | 4             | 6     | 31    | 25 | 18.5 | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L3732-4T06   | ●     | ● | GKD40... | 4             | 6     | 37    | 32 | 21.5 | 250 | 65 | 30 | SCAM5X20 | TH40L  |
| GKIR/L3125-5T08   | ●     | ● | GKD50... | 5             | 8     | 31    | 25 | 19.5 | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L3732-5T08   | ●     | ● | GKD50... | 5             | 8     | 37    | 32 | 21.5 | 250 | 65 | 30 | SCAM5X20 | TH40L  |
| GKIR/L3125-6T08   | ●     | ● | GKD60... | 6             | 8     | 31    | 25 | 19.5 | 200 | 45 | 23 | SCAM5X12 | TH40L  |
| GKIR/L3732-6T08   | ●     | ● | GKD60... | 6             | 8     | 37    | 32 | 21.5 | 250 | 65 | 30 | SCAM5X20 | TH40L  |
| GKIR/L3732-8T10   | ●     | ● | GKD80... | 8             | 10    | 37    | 32 | 23.4 | 250 | 65 | 30 | SCAM5X20 | TH40L  |
| GKIR/L4540-8T10   | ●     | ● | GKD80... | 8             | 10    | 45    | 40 | 27.2 | 300 | 70 | 37 | SCAM5X20 | TH40L  |

©For Inserts, see page117

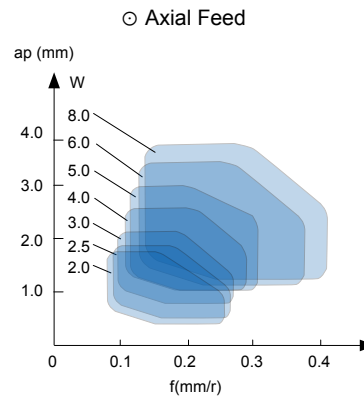
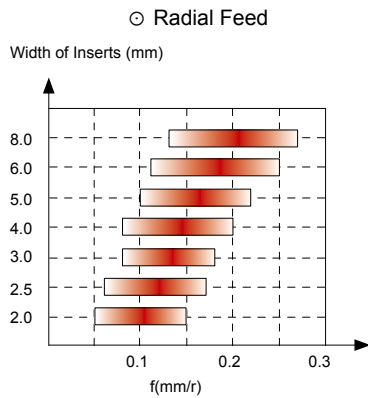
●Stock ○Available upon order

## Recommended Cutting Speed

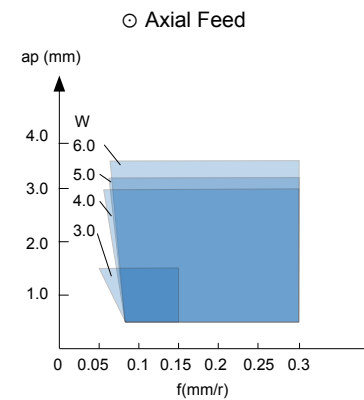
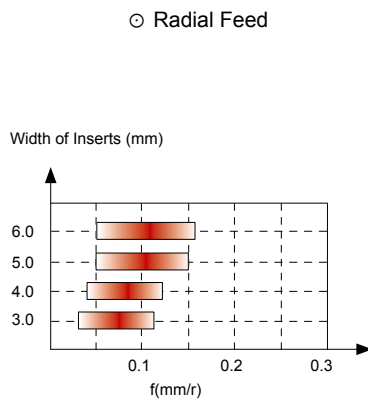
| Workpiece material |                          | Hardness<br>( HB ) | Speed Vc ( m/min ) |                   |                 |                  |                  |                 |
|--------------------|--------------------------|--------------------|--------------------|-------------------|-----------------|------------------|------------------|-----------------|
|                    |                          |                    | GA4230             | GP1225            | GK1115          | GS3115           | GS3125           | GS9125          |
| <b>P</b>           | Low carbon steel         | 80 – 170           | 110<br>(70-180)    | 120<br>(80-220)   |                 | 70<br>( 50-100 ) | 70<br>( 50-100 ) |                 |
|                    | High Carbon steel        | 170 –250           | 110<br>(70-150)    | 120<br>(80-220)   |                 |                  |                  |                 |
|                    | Low alloy steel          | 140– 260           | 110<br>(40-150)    | 110<br>( 60-180 ) |                 | 70<br>( 50-100 ) | 70<br>( 50-100 ) |                 |
|                    | High alloy steel         | 180– 300           | 110<br>(40-150)    | 110<br>( 60-180 ) |                 |                  |                  |                 |
|                    | Cast steel               | 180– 300           | 110<br>(40-150)    | 110<br>( 60-180 ) |                 |                  |                  |                 |
| <b>M</b>           | Ferritic/<br>Martensitic | 150– 270           | 110<br>(40-180)    |                   |                 | 90<br>( 50-150 ) | 90<br>( 30-180 ) |                 |
|                    | Austenitic               | 150– 270           | 110<br>(40-180)    |                   |                 | 90<br>( 50-150 ) | 90<br>( 30-180 ) |                 |
| <b>K</b>           | Malleable Cast Iron      | 150– 230           | 110<br>(50-180)    |                   | 130<br>(50-200) |                  |                  |                 |
|                    | Gray Cast Iron           | 150– 230           | 110<br>(50-180)    |                   | 130<br>(50-200) |                  |                  |                 |
|                    | Nodular Cast Iron        | 160– 260           | 100<br>(50-150)    |                   | 100<br>(50-150) |                  |                  |                 |
| <b>S</b>           | Heat-resistant alloy     | 130– 400           |                    |                   |                 | 35<br>( 15-60 )  | 35<br>( 15-70 )  |                 |
|                    | Titanium Alloys          | 130– 400           |                    |                   |                 | 35<br>( 15-60 )  | 35<br>( 15-70 )  | 35<br>( 15-60 ) |

## Recommended Feed

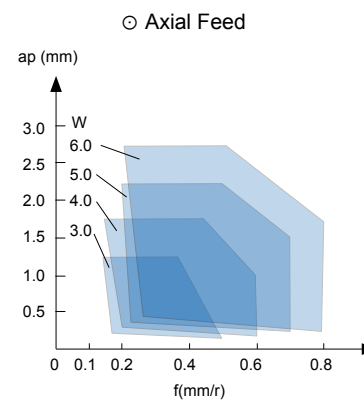
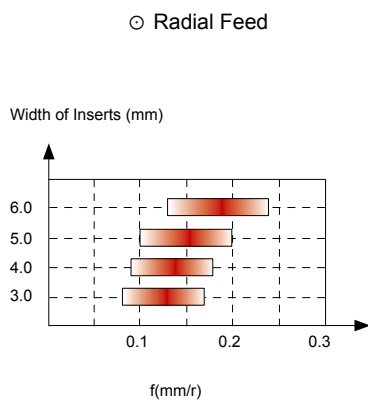
### MT



### FG



### OR

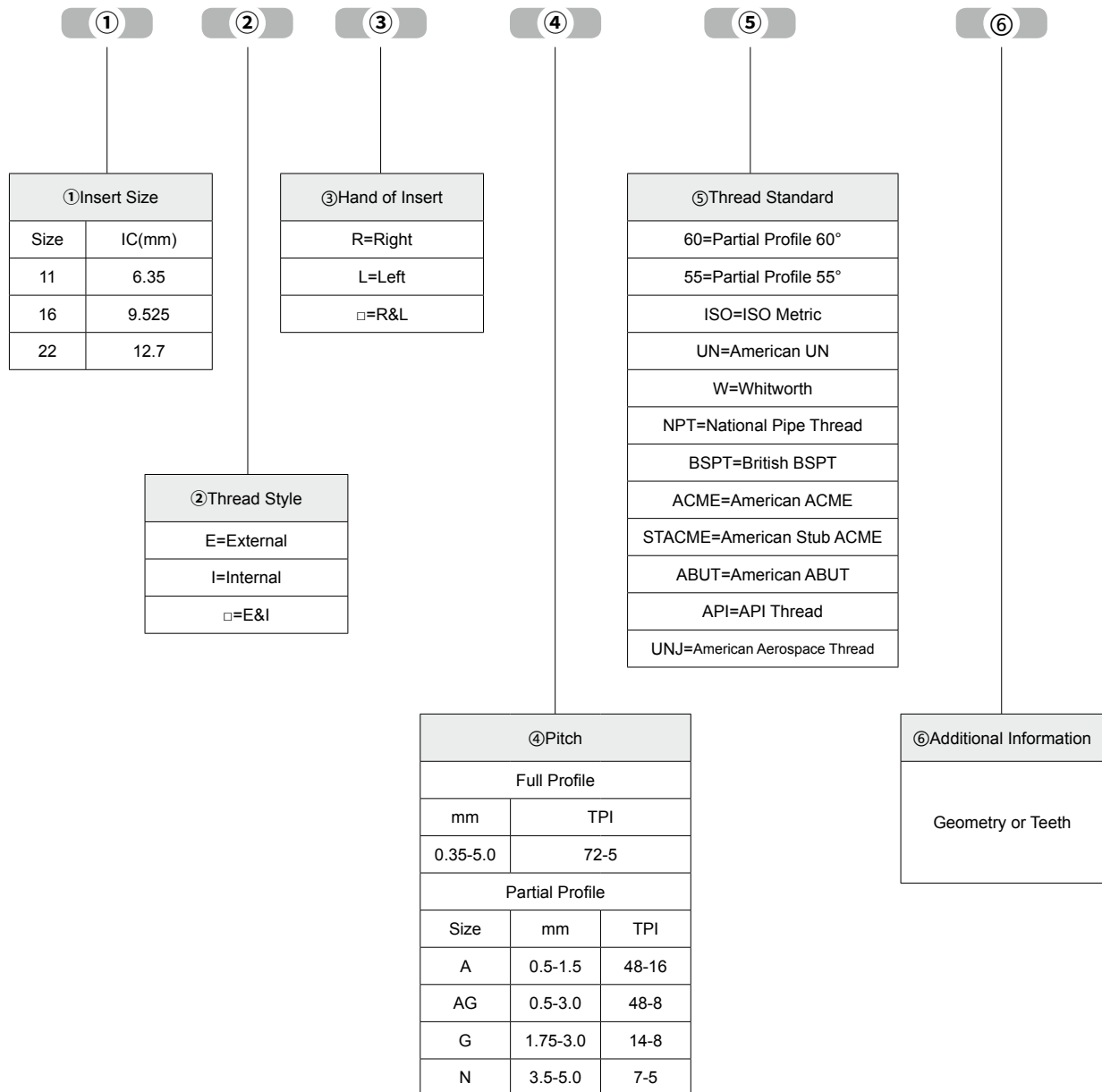


# THREADING TOOLS

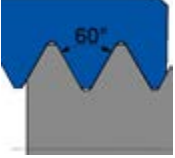
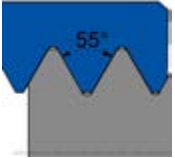
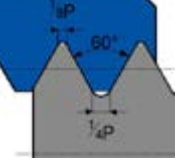
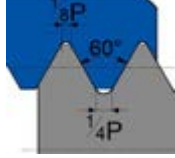
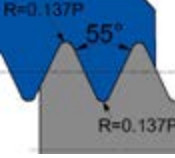
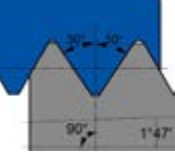
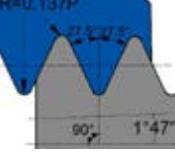
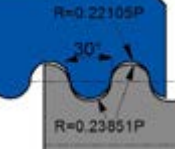


## Threading Inserts Identification System

# 16 E R 1.50 ISO - TC



## Overview of Threading Tools

| Application                                                           | Thread Type         | Thread Sketch                                                                       | Thread Code | Pitch        | Page                 |
|-----------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|-------------|--------------|----------------------|
| For general industry                                                  | Partial Profile 60° |    | 60          | 0.5-5.0 (mm) | <a href="#">P129</a> |
|                                                                       | Partial Profile 55° |    | 55          | 48-5 (TPI)   | <a href="#">P130</a> |
|                                                                       | ISO Metric          |    | ISO         | 1.0-5.0 (mm) | <a href="#">P131</a> |
|                                                                       | UN                  |  | UN          | 24-8 (TPI)   | <a href="#">P133</a> |
| Thread for pipe fittings and couplings for gas, water and sewage      | Whitworth           |  | W           | 19-11 (TPI)  | <a href="#">P134</a> |
|                                                                       | NPT                 |  | NPT         | 27-8 (TPI)   | <a href="#">P136</a> |
| Thread for pipe fittings and couplings for gas, steam and water lines | BSPT                |  | BSPT        | 28-11 (TPI)  | <a href="#">P135</a> |
| Thread for pipe couplings in food and firefighting industry           | Round (DIN 405)     |  | RD          | 10-4 (TPI)   | <a href="#">P137</a> |

## TC — Special Geometry

### Raised Platform

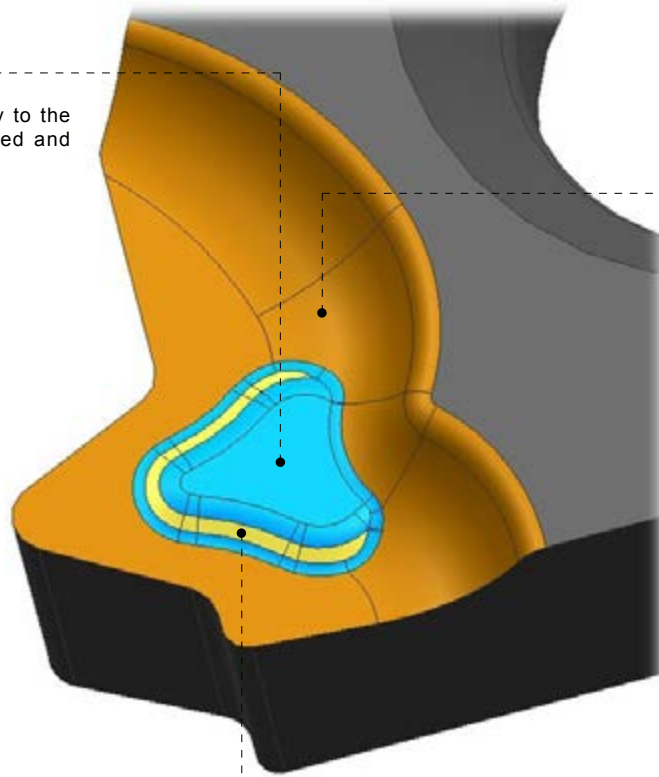
Good chip control, apply to the radial infeed, flank infeed and incremental infeed

### Wide Chip Room

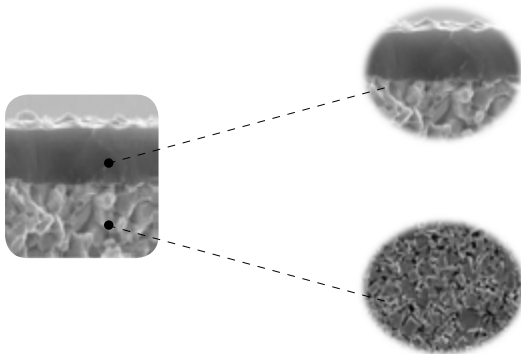
Smooth chip discharge due to wide chip room

### Curved Surface

Increase the cooling area to avoid the carter wear



## GM3225-General Grade for Thread Turning



### New TiAlN nano-structure coating

New TiAlN nano-structure coating with excellent heat resistance and bonding resistance

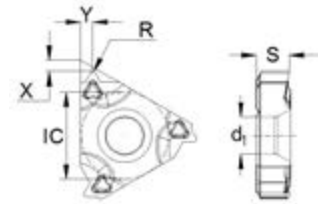
### Micro-grain carbide substrate

Micro-grain carbide substrate with high wear resistance and good roughness, suitable for thread turning of general material.



## Partial Profile 60°

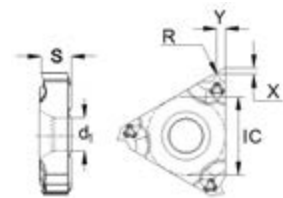
### ► External



| Ordering Code                                                                     |              | Pitch (mm) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|--------------|------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |              |            | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ERA60-TC  | 0.5-1.5    | 0.8             | 0.9 | 0.08 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ERAG60-TC | 0.5-3.0    | 1.1             | 1.5 | 0.08 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ERG60-TC  | 1.75-3.0   | 1.2             | 1.7 | 0.25 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 22 ERN60-TC  | 3.5-5.0    | 1.7             | 2.5 | 0.51 | 12.7  | 4.71 | 5  | ●      |

● Stock ○ Available Upon Order

### ► Internal

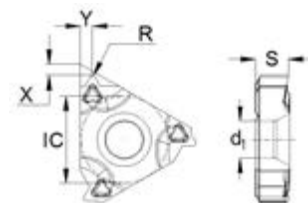


| Ordering Code                                                                       |              | Pitch (mm) | Dimensions (mm) |     |      |       |      |     | Stock  |
|-------------------------------------------------------------------------------------|--------------|------------|-----------------|-----|------|-------|------|-----|--------|
|                                                                                     |              |            | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|  | 11 IRA60-TC  | 0.5-1.5    | 0.8             | 0.9 | 0.08 | 6.35  | 3    | 3.2 | ●      |
|                                                                                     | 16 IRA60-TC  | 0.5-1.5    | 0.8             | 0.9 | 0.08 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IRAG60-TC | 0.5-3.0    | 1.1             | 1.5 | 0.08 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IRG60-TC  | 1.75-3.0   | 1.2             | 1.7 | 0.13 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 22 IRN60-TC  | 3.5-5.0    | 1.7             | 2.5 | 0.25 | 12.7  | 4.71 | 5   | ●      |

● Stock ○ Available Upon Order

## Partial Profile 55°

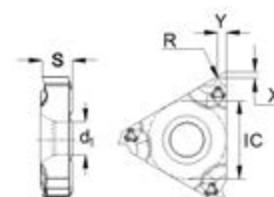
► External



| Ordering Code                                                                     |              | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|--------------|----------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |              |                | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ERA55-TC  | 48-16          | 0.8             | 0.9 | 0.08 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ERAG55-TC | 48-8           | 1.1             | 1.5 | 0.08 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ERG55-TC  | 14-8           | 1.2             | 1.7 | 0.21 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 22 ERN55-TC  | 7-5            | 1.7             | 2.5 | 0.44 | 12.7  | 4.71 | 5  | ●      |

● Stock ○ Available Upon Order

► Internal

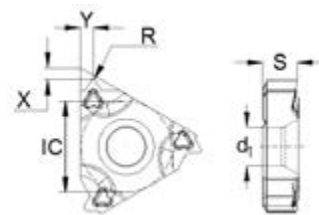


| Ordering Code                                                                       |              | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |     | Stock  |
|-------------------------------------------------------------------------------------|--------------|----------------|-----------------|-----|------|-------|------|-----|--------|
|                                                                                     |              |                | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|  | 11 IRA55-TC  | 48-16          | 0.8             | 0.9 | 0.08 | 6.35  | 3    | 3.2 | ●      |
|                                                                                     | 16 IRA55-TC  | 48-16          | 0.8             | 0.9 | 0.08 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IRAG55-TC | 48-8           | 1.1             | 1.5 | 0.08 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IRG55-TC  | 14-8           | 1.2             | 1.7 | 0.21 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 22 IRN55-TC  | 7-5            | 1.7             | 2.5 | 0.44 | 12.7  | 4.71 | 5   | ●      |

● Stock ○ Available Upon Order

## Metric 60°

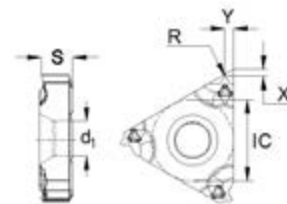
► External



| Ordering Code                                                                     |                 | Pitch (mm) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|-----------------|------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |                 |            | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ER1.00ISO-TC | 1.00       | 0.8             | 0.7 | 0.14 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER1.25ISO-TC | 1.25       | 0.8             | 0.9 | 0.18 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER1.50ISO-TC | 1.50       | 0.8             | 1.0 | 0.22 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER1.75ISO-TC | 1.75       | 1.2             | 1.2 | 0.25 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER2.00ISO-TC | 2.00       | 1.2             | 1.3 | 0.29 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER2.50ISO-TC | 2.50       | 1.2             | 1.5 | 0.36 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER3.00ISO-TC | 3.00       | 1.2             | 1.5 | 0.43 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 22 ER3.50ISO-TC | 3.50       | 1.6             | 2.3 | 0.45 | 12.7  | 4.71 | 5  | ●      |
|                                                                                   | 22 ER4.00ISO-TC | 4.00       | 1.6             | 2.3 | 0.52 | 12.7  | 4.71 | 5  | ●      |
|                                                                                   | 22 ER4.50ISO-TC | 4.50       | 1.7             | 2.4 | 0.58 | 12.7  | 4.71 | 5  | ●      |
|                                                                                   | 22 ER5.00ISO-TC | 5.00       | 1.7             | 2.5 | 0.63 | 12.7  | 4.71 | 5  | ●      |

● Stock ○ Available Upon Order

## ► Internal

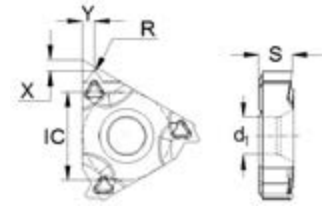


| Ordering Code                                                                      |                 | Pitch (mm) | Dimensions (mm) |     |      |       |      |     | Stock  |
|------------------------------------------------------------------------------------|-----------------|------------|-----------------|-----|------|-------|------|-----|--------|
|                                                                                    |                 |            | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|  | 11 IR1.00ISO-TC | 1.00       | 0.8             | 0.7 | 0.07 | 6.35  | 3    | 3.2 | ●      |
|                                                                                    | 11 IR1.25ISO-TC | 1.25       | 0.8             | 0.9 | 0.09 | 6.35  | 3    | 3.2 | ●      |
|                                                                                    | 11 IR1.50ISO-TC | 1.50       | 0.8             | 1.0 | 0.11 | 6.35  | 3    | 3.2 | ●      |
|                                                                                    | 11 IR1.75ISO-TC | 1.75       | 0.9             | 1.1 | 0.13 | 6.35  | 3    | 3.2 | ●      |
|                                                                                    | 11 IR2.00ISO-TC | 2.00       | 0.9             | 1.1 | 0.15 | 6.35  | 3    | 3.2 | ●      |
|                                                                                    | 16 IR1.00ISO-TC | 1.00       | 0.8             | 0.7 | 0.07 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR1.25ISO-TC | 1.25       | 0.8             | 0.9 | 0.09 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR1.50ISO-TC | 1.50       | 0.8             | 1.0 | 0.11 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR1.75ISO-TC | 1.75       | 1.2             | 1.2 | 0.13 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR2.00ISO-TC | 2.00       | 1.2             | 1.3 | 0.15 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR2.50ISO-TC | 2.50       | 1.2             | 1.5 | 0.18 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 16 IR3.00ISO-TC | 3.00       | 1.2             | 1.5 | 0.22 | 9.525 | 3.47 | 4   | ●      |
|                                                                                    | 22 IR3.50ISO-TC | 3.50       | 1.6             | 2.3 | 0.22 | 12.7  | 4.71 | 5   | ●      |
|                                                                                    | 22 IR4.00ISO-TC | 4.00       | 1.6             | 2.3 | 0.25 | 12.7  | 4.71 | 5   | ●      |
|                                                                                    | 22 IR4.50ISO-TC | 4.50       | 1.6             | 2.4 | 0.28 | 12.7  | 4.71 | 5   | ●      |
|                                                                                    | 22 IR5.00ISO-TC | 5.00       | 1.6             | 2.3 | 0.32 | 12.7  | 4.71 | 5   | ●      |

●Stock ○Available Upon Order

## UN 60°

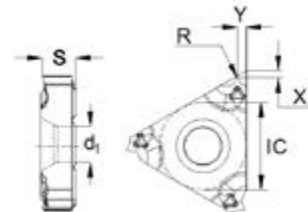
► External



| Ordering Code |              | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|---------------|--------------|----------------|-----------------|-----|------|-------|------|----|--------|
|               |              |                | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|               | 16 ER24UN-TC | 24             | 0.8             | 0.8 | 0.15 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER20UN-TC | 20             | 0.8             | 0.9 | 0.18 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER18UN-TC | 18             | 0.8             | 1.0 | 0.20 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER16UN-TC | 16             | 0.9             | 1.1 | 0.23 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER14UN-TC | 14             | 1.2             | 1.5 | 0.26 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER12UN-TC | 12             | 1.2             | 1.5 | 0.31 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER10UN-TC | 10             | 1.2             | 1.5 | 0.37 | 9.525 | 3.47 | 4  | ○      |
|               | 16 ER8UN-TC  | 8              | 1.3             | 1.7 | 0.46 | 9.525 | 3.47 | 4  | ●      |

● Stock ○ Available Upon Order

► Internal

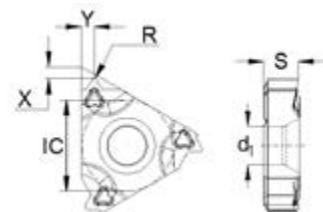


| Ordering Code |              | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |     | Stock  |
|---------------|--------------|----------------|-----------------|-----|------|-------|------|-----|--------|
|               |              |                | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|               | 11 IR20UN-TC | 20             | 0.8             | 0.9 | 0.09 | 6.35  | 3    | 3.2 | ●      |
|               | 11 IR18UN-TC | 18             | 0.8             | 1.0 | 0.10 | 6.35  | 3    | 3.2 | ●      |
|               | 16 IR24UN-TC | 24             | 0.8             | 0.8 | 0.08 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR20UN-TC | 20             | 0.8             | 0.9 | 0.09 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR18UN-TC | 18             | 0.8             | 1.0 | 0.10 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR16UN-TC | 16             | 0.9             | 1.1 | 0.12 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR14UN-TC | 14             | 1.2             | 1.5 | 0.13 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR12UN-TC | 12             | 1.2             | 1.5 | 0.16 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR10UN-TC | 10             | 1.2             | 1.5 | 0.19 | 9.525 | 3.47 | 4   | ○      |
|               | 16 IR8UN-TC  | 8              | 1.3             | 1.7 | 0.23 | 9.525 | 3.47 | 4   | ●      |

● Stock ○ Available Upon Order

## Whitworth 55°

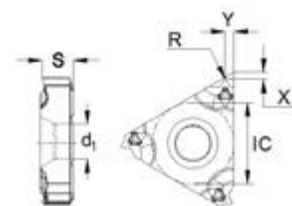
► External



| Ordering Code                                                                     |             | Pitch (TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|-------------|-------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |             |             | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ER19W-TC | 19          | 0.8             | 1.0 | 0.17 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER14W-TC | 14          | 1.2             | 1.5 | 0.24 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER11W-TC | 11          | 1.2             | 1.5 | 0.30 | 9.525 | 3.47 | 4  | ●      |

● Stock ○ Available Upon Order

► Internal

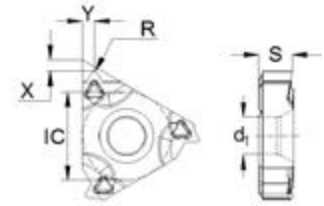


| Ordering Code                                                                       |             | Pitch (TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-------------------------------------------------------------------------------------|-------------|-------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                     |             |             | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 IR19W-TC | 19          | 0.8             | 1.0 | 0.17 | 9.525 | 3.47 | 4  | ●      |
|                                                                                     | 16 IR14W-TC | 14          | 1.2             | 1.5 | 0.24 | 9.525 | 3.47 | 4  | ●      |
|                                                                                     | 16 IR11W-TC | 11          | 1.2             | 1.5 | 0.30 | 9.525 | 3.47 | 4  | ●      |

● Stock ○ Available Upon Order

## BSPT 55°

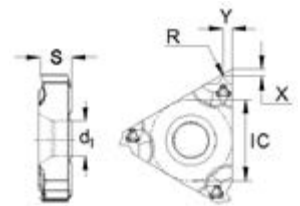
► External



| Ordering Code |                | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|---------------|----------------|----------------|-----------------|-----|------|-------|------|----|--------|
|               |                |                | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|               | 16 ER28BSPT-TC | 28             | 0.7             | 0.8 | 0.11 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER19BSPT-TC | 19             | 0.8             | 1.0 | 0.17 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER14BSPT-TC | 14             | 1.2             | 1.5 | 0.24 | 9.525 | 3.47 | 4  | ●      |
|               | 16 ER11BSPT-TC | 11             | 1.2             | 1.5 | 0.30 | 9.525 | 3.47 | 4  | ●      |

● Stock ○ Available Upon Order

► Internal

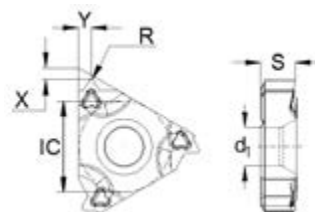


| Ordering Code |                | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |     | Stock  |
|---------------|----------------|----------------|-----------------|-----|------|-------|------|-----|--------|
|               |                |                | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|               | 11 IR19BSPT-TC | 19             | 0.8             | 1.0 | 0.18 | 6.35  | 3    | 3.2 | ●      |
|               | 11 IR14BSPT-TC | 14             | 0.9             | 1.1 | 0.24 | 6.35  | 3    | 3.2 | ●      |
|               | 16 IR28BSPT-TC | 28             | 0.7             | 0.8 | 0.11 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR19BSPT-TC | 19             | 0.8             | 1.0 | 0.17 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR14BSPT-TC | 14             | 1.2             | 1.5 | 0.24 | 9.525 | 3.47 | 4   | ●      |
|               | 16 IR11BSPT-TC | 11             | 1.2             | 1.5 | 0.30 | 9.525 | 3.47 | 4   | ●      |

● Stock ○ Available Upon Order

## NPT 60°

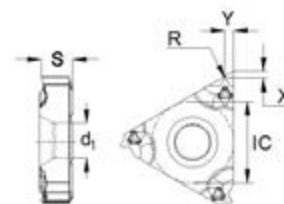
► External

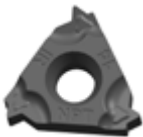


| Ordering Code                                                                     |                 | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|-----------------|----------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |                 |                | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ER27NPT-TC   | 27             | 0.7             | 0.8 | 0.13 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER18NPT-TC   | 18             | 0.8             | 1.0 | 0.20 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER14NPT-TC   | 14             | 1.2             | 1.5 | 0.22 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER11.5NPT-TC | 11.5           | 1.2             | 1.5 | 0.25 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER8NPT-TC    | 8              | 1.3             | 1.8 | 0.30 | 9.525 | 3.47 | 4  | ●      |

● Stock ○ Available Upon Order

► Internal



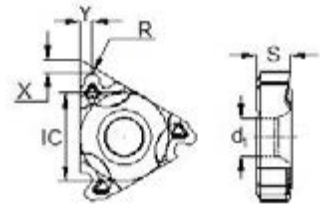
| Ordering Code                                                                       |                 | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |     | Stock  |
|-------------------------------------------------------------------------------------|-----------------|----------------|-----------------|-----|------|-------|------|-----|--------|
|                                                                                     |                 |                | X               | Y   | R    | IC    | S    | d1  | GM3225 |
|  | 11 IR18NPT-TC   | 18             | 0.8             | 1.0 | 0.20 | 6.35  | 3    | 3.2 | ●      |
|                                                                                     | 16 IR27NPT-TC   | 27             | 0.7             | 0.8 | 0.13 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IR18NPT-TC   | 18             | 0.8             | 1.0 | 0.20 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IR14NPT-TC   | 14             | 1.2             | 1.5 | 0.22 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IR11.5NPT-TC | 11.5           | 1.2             | 1.5 | 0.25 | 9.525 | 3.47 | 4   | ●      |
|                                                                                     | 16 IR8NPT-TC    | 8              | 1.3             | 1.8 | 0.30 | 9.525 | 3.47 | 4   | ●      |

● Stock ○ Available Upon Order



## Round30°

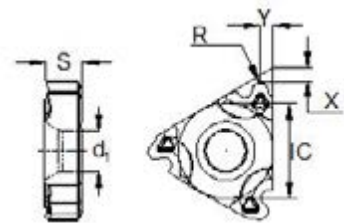
## ► External



| Ordering Code                                                                     |              | Pitch<br>(TPI) | Dimensions (mm) |     |      |       |      |    | Stock  |
|-----------------------------------------------------------------------------------|--------------|----------------|-----------------|-----|------|-------|------|----|--------|
|                                                                                   |              |                | X               | Y   | R    | IC    | S    | d1 | GM3225 |
|  | 16 ER10RD-TC | 10             | 1.1             | 1.2 | 0.60 | 9.525 | 3.47 | 4  | ○      |
|                                                                                   | 16 ER8RD-TC  | 8              | 1.4             | 1.3 | 0.75 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 16 ER6RD-TC  | 6              | 1.4             | 1.5 | 1.00 | 9.525 | 3.47 | 4  | ●      |
|                                                                                   | 22 ER4RD-TC  | 4              | 2.2             | 2.3 | 1.51 | 12.7  | 4.71 | 5  | ○      |

●Stock ○Available Upon Order

## ► Internal



| Ordering Code                                                                       |              | Pitch<br>(TPI) | Dimensions (mm) |     |       |       |      |    | Stock  |
|-------------------------------------------------------------------------------------|--------------|----------------|-----------------|-----|-------|-------|------|----|--------|
|                                                                                     |              |                | X               | Y   | R     | IC    | S    | d1 | GM3225 |
|  | 16 IR10RD-TC | 10             | 1.1             | 1.2 | 0.55  | 9.525 | 3.47 | 4  | ○      |
|                                                                                     | 16 IR8RD-TC  | 8              | 1.4             | 1.3 | 0.70  | 9.525 | 3.47 | 4  | ●      |
|                                                                                     | 16 IR6RD-TC  | 6              | 1.4             | 1.5 | 0.936 | 9.525 | 3.47 | 4  | ●      |
|                                                                                     | 22 IR4RD-TC  | 4              | 2.2             | 2.3 | 1.40  | 12.7  | 4.71 | 5  | ○      |

●Stock ○Available Upon Order

## Cutting Speed Recommendation Table

| Workpiece Material                                                                  |                          |                                  |                | Material Hardness | Cutting Speed<br>Vc ( m/min ) |
|-------------------------------------------------------------------------------------|--------------------------|----------------------------------|----------------|-------------------|-------------------------------|
|                                                                                     |                          |                                  |                |                   | Grade                         |
|                                                                                     |                          |                                  |                |                   | GM3225                        |
|    | Carbon Steel             | Low-carbon ( C=0.1-0.25% )       |                | HB125             | 160 ( 120-230 )               |
|                                                                                     |                          | Medium-carbon ( C=0.25-0.55% )   |                | HB150             | 150 ( 100-195 )               |
|                                                                                     |                          | High-carbon ( C=0.55-0.80% )     |                | HB170             | 140 ( 90-180 )                |
|                                                                                     | Low-alloy Steel          | Non-hardened                     |                | HB180             | 130 ( 100-180 )               |
|                                                                                     |                          | Hardened and tempered            |                | HB275             | 100 ( 75-140 )                |
|                                                                                     |                          | Hardened and tempered            |                | HB350             | 80 ( 60-130 )                 |
|                                                                                     | High-alloy Steel         | Annealed                         |                | HB200             | 110 ( 80-140 )                |
|                                                                                     |                          | Hardened and tempered            |                | HB325             | 90 ( 70-115 )                 |
|                                                                                     | Cast Steel               | Unalloyed                        |                | HB180             | 200 ( 180-220 )               |
|                                                                                     |                          | Low-alloy                        |                | HB200             | 110 ( 70-150 )                |
|                                                                                     |                          | High-alloy                       |                | HB225             | 100 ( 60-120 )                |
|                                                                                     |                          | Manganese steel ( 12-14% Mn )    |                | HB250             | 40 ( 40-50 )                  |
|   | Stainless Steel          | Austenitic                       |                | HB180             | 120 ( 90-140 )                |
|                                                                                     |                          | Ferrite/Martensite               |                | HB200             | 140 ( 70-170 )                |
|                                                                                     |                          | Duplex stainless steel           |                | HB230             | 90 ( 60-120 )                 |
|  | Malleable Cast Iron      | Ferrite                          |                | HB130             | 130 ( 110-170 )               |
|                                                                                     |                          | Pearlite                         |                | HB230             | 100 ( 85-145 )                |
|                                                                                     | Gray Cast Iron           | Low tensile strength             |                | HB180             | 120 ( 100-160 )               |
|                                                                                     |                          | High tensile strength            |                | HB260             | 100 ( 80-140 )                |
|                                                                                     | Nodular Cast Iron        | Ferrite                          |                | HB160             | 125 ( 110-160 )               |
|                                                                                     |                          | Pearlite                         |                | HB250             | 100 ( 80-120 )                |
|  | Wrought Aluminum Alloys  | Non aging                        |                | HB60              | 500 ( 350-700 )               |
|                                                                                     |                          | Aged                             |                | HB100             | 400 ( 300-500 )               |
|                                                                                     | Cast Aluminum Alloys     | Non aging                        |                | HB75              | 450 ( 300-500 )               |
|                                                                                     |                          | Aged                             |                | HB90              | 290 ( 200-400 )               |
|                                                                                     |                          | Containing silicon ( 13-22% Si ) |                | HB130             | 200 ( 100-300 )               |
|                                                                                     | Copper and Copper Alloys | Brass                            |                | HB90              | 220 ( 100-300 )               |
| Bronze and non-leaded copper                                                        |                          | HB100                            | 180 ( 80-255 ) |                   |                               |
|  | Heat-resistant Alloys    | Iron base                        | Annealed       | HB200             | 45 ( 35-60 )                  |
|                                                                                     |                          |                                  | Aged           | HB280             | 35 ( 25-50 )                  |
|                                                                                     |                          | Nickel base and cobalt base      | Annealed       | HB250             | 25 ( 15-30 )                  |
|                                                                                     |                          |                                  | Aged           | HB350             | 15 ( 10-25 )                  |
|                                                                                     |                          |                                  | Cast           | HB320             | 13 ( 10-20 )                  |
|                                                                                     | Titanium Alloys          | Commercial pure ( 99.5% Ti )     |                | 400Rm             | 150 ( 140-170 )               |
|                                                                                     |                          | α+ β alloys                      |                | 1050Rm            | 60 ( 50-70 )                  |
|  | High Hardness Materials  | Hardened steel                   |                | HRC55             | 45 ( 40-50 )                  |
|                                                                                     |                          | Chilled cast iron                |                | HB400             | 40 ( 30-50 )                  |

## Cutting Passes and Radial Infeed Recommendation Table

### ► ISO Metric / External

| Pitch (mm)       | 1.00                        | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
|------------------|-----------------------------|------|------|------|------|------|------|------|------|------|------|
| Total infeed(mm) | 0.65                        | 0.79 | 0.95 | 1.11 | 1.26 | 1.56 | 1.88 | 2.18 | 2.49 | 2.79 | 3.10 |
| Total passes     | 5                           | 6    | 6    | 8    | 8    | 10   | 12   | 12   | 13   | 14   | 14   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |      |      |      |      |      |      |      |
| 1                | 0.16                        | 0.17 | 0.20 | 0.17 | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.27 | 0.29 |
| 2                | 0.15                        | 0.15 | 0.19 | 0.17 | 0.19 | 0.19 | 0.19 | 0.23 | 0.22 | 0.25 | 0.28 |
| 3                | 0.14                        | 0.14 | 0.18 | 0.16 | 0.18 | 0.18 | 0.19 | 0.22 | 0.22 | 0.24 | 0.27 |
| 4                | 0.12                        | 0.13 | 0.16 | 0.15 | 0.17 | 0.17 | 0.18 | 0.21 | 0.21 | 0.23 | 0.26 |
| 5                | 0.08                        | 0.12 | 0.14 | 0.14 | 0.16 | 0.17 | 0.17 | 0.21 | 0.21 | 0.23 | 0.25 |
| 6                |                             | 0.08 | 0.08 | 0.13 | 0.15 | 0.16 | 0.17 | 0.20 | 0.20 | 0.22 | 0.25 |
| 7                |                             |      |      | 0.11 | 0.13 | 0.15 | 0.16 | 0.18 | 0.19 | 0.21 | 0.24 |
| 8                |                             |      |      | 0.08 | 0.08 | 0.14 | 0.15 | 0.17 | 0.18 | 0.20 | 0.23 |
| 9                |                             |      |      |      |      | 0.12 | 0.14 | 0.16 | 0.17 | 0.19 | 0.22 |
| 10               |                             |      |      |      |      | 0.08 | 0.13 | 0.15 | 0.16 | 0.18 | 0.20 |
| 11               |                             |      |      |      |      |      | 0.12 | 0.13 | 0.15 | 0.17 | 0.19 |
| 12               |                             |      |      |      |      |      | 0.08 | 0.08 | 0.14 | 0.16 | 0.17 |
| 13               |                             |      |      |      |      |      |      |      | 0.12 | 0.14 | 0.15 |
| 14               |                             |      |      |      |      |      |      |      | 0.18 | 0.10 | 0.10 |

### ► ISO Metric / External

| Pitch (mm)       | 1.00                        | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 |
|------------------|-----------------------------|------|------|------|------|------|------|------|------|------|------|
| Total infeed(mm) | 0.63                        | 0.77 | 0.92 | 1.05 | 1.20 | 1.48 | 1.78 | 2.03 | 2.31 | 2.61 | 2.88 |
| Total passes     | 5                           | 6    | 6    | 8    | 8    | 10   | 12   | 12   | 13   | 14   | 14   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |      |      |      |      |      |      |      |
| 1                | 0.15                        | 0.16 | 0.20 | 0.16 | 0.19 | 0.19 | 0.19 | 0.22 | 0.21 | 0.23 | 0.26 |
| 2                | 0.14                        | 0.15 | 0.18 | 0.15 | 0.18 | 0.18 | 0.18 | 0.21 | 0.21 | 0.23 | 0.26 |
| 3                | 0.13                        | 0.14 | 0.17 | 0.15 | 0.17 | 0.17 | 0.18 | 0.20 | 0.20 | 0.22 | 0.25 |
| 4                | 0.12                        | 0.13 | 0.15 | 0.14 | 0.16 | 0.17 | 0.17 | 0.20 | 0.19 | 0.22 | 0.24 |
| 5                | 0.08                        | 0.11 | 0.13 | 0.13 | 0.15 | 0.16 | 0.16 | 0.19 | 0.19 | 0.21 | 0.24 |
| 6                |                             | 0.08 | 0.08 | 0.12 | 0.14 | 0.15 | 0.16 | 0.18 | 0.18 | 0.20 | 0.23 |
| 7                |                             |      |      | 0.11 | 0.12 | 0.14 | 0.15 | 0.17 | 0.18 | 0.20 | 0.22 |
| 8                |                             |      |      | 0.08 | 0.08 | 0.13 | 0.14 | 0.16 | 0.17 | 0.19 | 0.21 |
| 9                |                             |      |      |      |      | 0.12 | 0.14 | 0.15 | 0.16 | 0.18 | 0.20 |
| 10               |                             |      |      |      |      | 0.08 | 0.12 | 0.14 | 0.15 | 0.17 | 0.19 |
| 11               |                             |      |      |      |      |      | 0.11 | 0.12 | 0.14 | 0.16 | 0.18 |
| 12               |                             |      |      |      |      |      | 0.08 | 0.08 | 0.13 | 0.15 | 0.16 |
| 13               |                             |      |      |      |      |      |      |      | 0.12 | 0.14 | 0.15 |
| 14               |                             |      |      |      |      |      |      |      | 0.08 | 0.10 | 0.10 |

## ► UN / External

| Pitch (TPI)      | 24                          | 20   | 18   | 16   | 14   | 12   | 10   | 8    |
|------------------|-----------------------------|------|------|------|------|------|------|------|
| Total infeed(mm) | 0.70                        | 0.84 | 0.92 | 1.04 | 1.17 | 1.35 | 1.62 | 2.02 |
| Total passes     | 5                           | 6    | 6    | 7    | 8    | 8    | 10   | 12   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |      |      |      |      |
| 1                | 0.18                        | 0.18 | 0.20 | 0.19 | 0.18 | 0.22 | 0.21 | 0.22 |
| 2                | 0.16                        | 0.17 | 0.18 | 0.18 | 0.18 | 0.21 | 0.20 | 0.21 |
| 3                | 0.15                        | 0.15 | 0.17 | 0.17 | 0.17 | 0.20 | 0.19 | 0.20 |
| 4                | 0.13                        | 0.14 | 0.15 | 0.16 | 0.16 | 0.19 | 0.18 | 0.20 |
| 5                | 0.08                        | 0.12 | 0.13 | 0.14 | 0.15 | 0.17 | 0.17 | 0.19 |
| 6                |                             | 0.08 | 0.08 | 0.12 | 0.14 | 0.15 | 0.16 | 0.18 |
| 7                |                             |      |      | 0.08 | 0.12 | 0.13 | 0.15 | 0.17 |
| 8                |                             |      |      |      | 0.08 | 0.08 | 0.14 | 0.16 |
| 9                |                             |      |      |      |      |      | 0.12 | 0.15 |
| 10               |                             |      |      |      |      |      | 0.08 | 0.14 |
| 11               |                             |      |      |      |      |      |      | 0.12 |
| 12               |                             |      |      |      |      |      |      | 0.08 |

## ► UN / Internal

| Pitch (TPI)      | 24                          | 20   | 18   | 16   | 14   | 12   | 10   | 8    |
|------------------|-----------------------------|------|------|------|------|------|------|------|
| Total infeed(mm) | 0.66                        | 0.78 | 0.86 | 0.96 | 1.07 | 1.25 | 1.48 | 2.03 |
| Total passes     | 5                           | 6    | 6    | 7    | 8    | 8    | 10   | 12   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |      |      |      |      |
| 1                | 0.16                        | 0.16 | 0.18 | 0.17 | 0.16 | 0.20 | 0.19 | 0.22 |
| 2                | 0.15                        | 0.16 | 0.17 | 0.16 | 0.16 | 0.19 | 0.18 | 0.21 |
| 3                | 0.14                        | 0.14 | 0.16 | 0.15 | 0.15 | 0.18 | 0.17 | 0.20 |
| 4                | 0.12                        | 0.13 | 0.14 | 0.14 | 0.14 | 0.17 | 0.17 | 0.20 |
| 5                | 0.08                        | 0.12 | 0.13 | 0.13 | 0.14 | 0.16 | 0.16 | 0.19 |
| 6                |                             | 0.08 | 0.08 | 0.12 | 0.13 | 0.14 | 0.15 | 0.18 |
| 7                |                             |      |      | 0.08 | 0.11 | 0.13 | 0.14 | 0.17 |
| 8                |                             |      |      |      | 0.08 | 0.08 | 0.13 | 0.16 |
| 9                |                             |      |      |      |      |      | 0.12 | 0.15 |
| 10               |                             |      |      |      |      |      | 0.08 | 0.14 |
| 11               |                             |      |      |      |      |      |      | 0.12 |
| 12               |                             |      |      |      |      |      |      | 0.08 |

## ► Whitworth / External &amp; Internal

| Pitch (TPI)      | 19                          | 14   | 11   |
|------------------|-----------------------------|------|------|
| Total infeed(mm) | 0.90                        | 1.20 | 1.51 |
| Total passes     | 6                           | 8    | 9    |
| No. of infeed    | Radial infeed per pass (mm) |      |      |
| 1                | 0.19                        | 0.19 | 0.22 |
| 2                | 0.18                        | 0.18 | 0.21 |
| 3                | 0.17                        | 0.17 | 0.20 |
| 4                | 0.15                        | 0.16 | 0.19 |
| 5                | 0.13                        | 0.15 | 0.18 |
| 6                | 0.08                        | 0.14 | 0.16 |
| 7                |                             | 0.12 | 0.15 |
| 8                |                             | 0.08 | 0.13 |
| 9                |                             |      | 0.08 |

## ► BSPT / External &amp; Internal

| Pitch (TPI)      | 28                          | 19   | 14   | 11   |
|------------------|-----------------------------|------|------|------|
| Total infeed(mm) | 0.62                        | 0.90 | 1.20 | 1.51 |
| Total passes     | 5                           | 6    | 8    | 9    |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |
| 1                | 0.15                        | 0.19 | 0.19 | 0.22 |
| 2                | 0.14                        | 0.18 | 0.18 | 0.21 |
| 3                | 0.13                        | 0.17 | 0.17 | 0.20 |
| 4                | 0.12                        | 0.15 | 0.16 | 0.19 |
| 5                | 0.08                        | 0.13 | 0.15 | 0.18 |
| 6                |                             | 0.08 | 0.14 | 0.16 |
| 7                |                             |      | 0.12 | 0.15 |
| 8                |                             |      | 0.08 | 0.13 |
| 9                |                             |      |      | 0.08 |

## ► NPT /External&amp; Internal

| Pitch (TPI)      | 27                          | 18   | 14   | 11.5 | 8    |
|------------------|-----------------------------|------|------|------|------|
| Total infeed(mm) | 0.76                        | 1.11 | 1.42 | 1.73 | 2.48 |
| Total passes     | 6                           | 8    | 10   | 12   | 15   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |      |
| 1                | 0.15                        | 0.17 | 0.18 | 0.18 | 0.21 |
| 2                | 0.15                        | 0.17 | 0.17 | 0.17 | 0.21 |
| 3                | 0.14                        | 0.16 | 0.16 | 0.17 | 0.20 |
| 4                | 0.13                        | 0.15 | 0.16 | 0.16 | 0.20 |
| 5                | 0.11                        | 0.14 | 0.15 | 0.16 | 0.19 |
| 6                | 0.08                        | 0.13 | 0.14 | 0.15 | 0.18 |
| 7                |                             | 0.11 | 0.14 | 0.15 | 0.18 |
| 8                |                             | 0.08 | 0.13 | 0.14 | 0.17 |
| 9                |                             |      | 0.11 | 0.13 | 0.17 |
| 10               |                             |      | 0.08 | 0.12 | 0.16 |
| 11               |                             |      |      | 0.11 | 0.15 |
| 12               |                             |      |      | 0.08 | 0.14 |
| 13               |                             |      |      |      | 0.13 |
| 14               |                             |      |      |      | 0.11 |
| 15               |                             |      |      |      | 0.08 |

## ► Round / External

| Pitch (TPI)      | 10                          | 8    | 6    | 4    |
|------------------|-----------------------------|------|------|------|
| Total infeed(mm) | 1.30                        | 1.63 | 2.17 | 2.95 |
| Total passes     | 8                           | 10   | 12   | 14   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |
| 1                | 0.21                        | 0.21 | 0.24 | 0.30 |
| 2                | 0.20                        | 0.20 | 0.23 | 0.29 |
| 3                | 0.19                        | 0.19 | 0.22 | 0.28 |
| 4                | 0.18                        | 0.19 | 0.21 | 0.27 |
| 5                | 0.16                        | 0.18 | 0.20 | 0.26 |
| 6                | 0.15                        | 0.17 | 0.19 | 0.25 |
| 7                | 0.13                        | 0.15 | 0.18 | 0.24 |
| 8                | 0.08                        | 0.14 | 0.17 | 0.23 |
| 9                |                             | 0.12 | 0.16 | 0.22 |
| 10               |                             | 0.08 | 0.15 | 0.21 |
| 11               |                             |      | 0.13 | 0.19 |
| 12               |                             |      | 0.08 | 0.18 |
| 13               |                             |      |      | 0.15 |
| 14               |                             |      |      | 0.10 |

## ► Round / Internal

| Pitch (TPI)      | 10                          | 8    | 6    | 4    |
|------------------|-----------------------------|------|------|------|
| Total infeed(mm) | 1.34                        | 1.64 | 2.18 | 2.98 |
| Total passes     | 8                           | 10   | 12   | 14   |
| No. of infeed    | Radial infeed per pass (mm) |      |      |      |
| 1                | 0.22                        | 0.21 | 0.24 | 0.30 |
| 2                | 0.21                        | 0.20 | 0.23 | 0.29 |
| 3                | 0.20                        | 0.20 | 0.22 | 0.29 |
| 4                | 0.18                        | 0.19 | 0.21 | 0.28 |
| 5                | 0.17                        | 0.18 | 0.21 | 0.27 |
| 6                | 0.15                        | 0.17 | 0.20 | 0.26 |
| 7                | 0.13                        | 0.16 | 0.19 | 0.25 |
| 8                | 0.08                        | 0.14 | 0.17 | 0.24 |
| 9                |                             | 0.12 | 0.16 | 0.23 |
| 10               |                             | 0.08 | 0.15 | 0.21 |
| 11               |                             |      | 0.13 | 0.20 |
| 12               |                             |      | 0.08 | 0.18 |
| 13               |                             |      |      | 0.16 |
| 14               |                             |      |      | 0.10 |

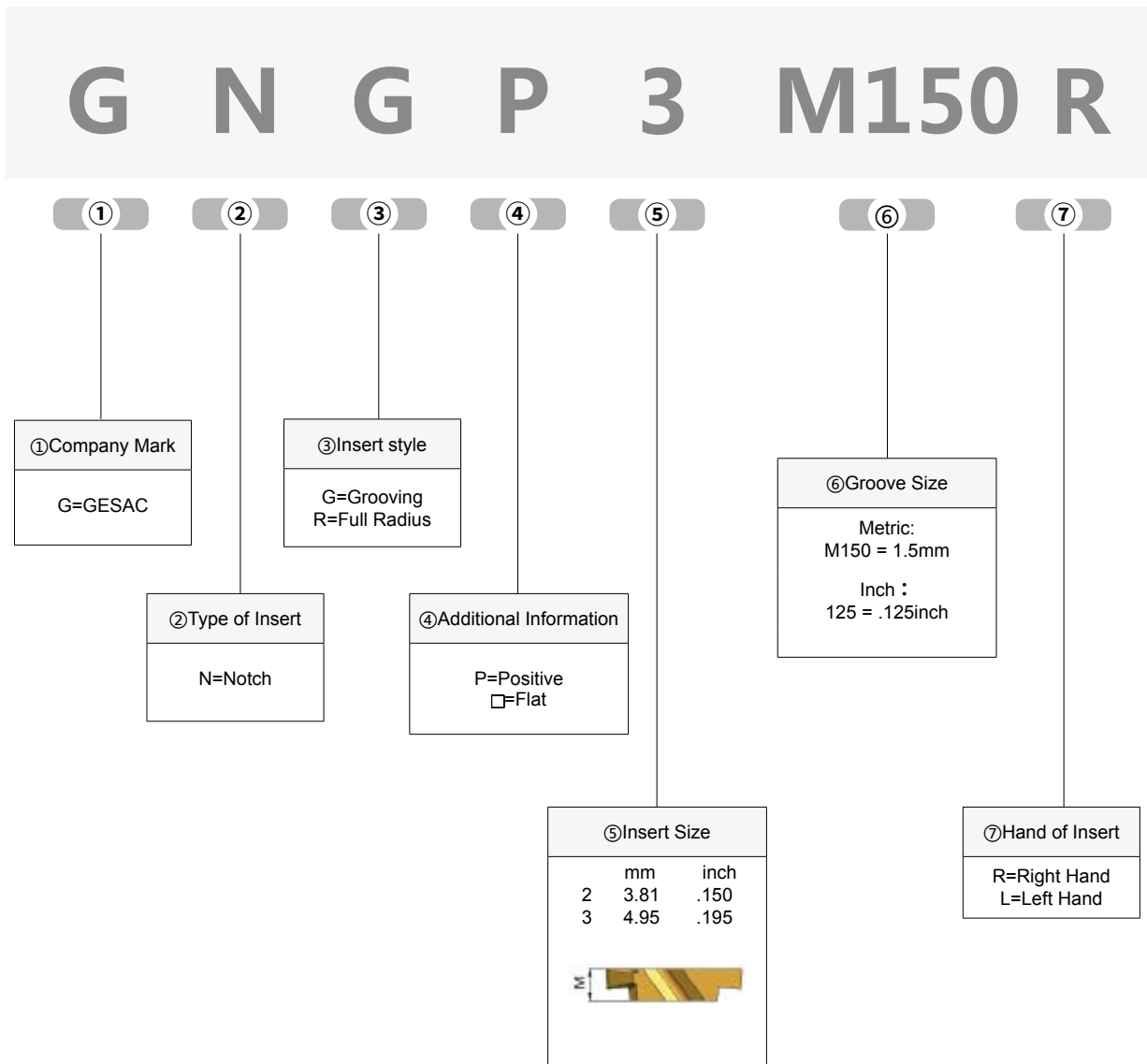
Attention: Generally, the radial feed shall not be less than 0.05mm. When machining austenitic stainless steel, the radial feed shall not be less than 0.08mm.

# G-NOTCH SERIES TOOLS

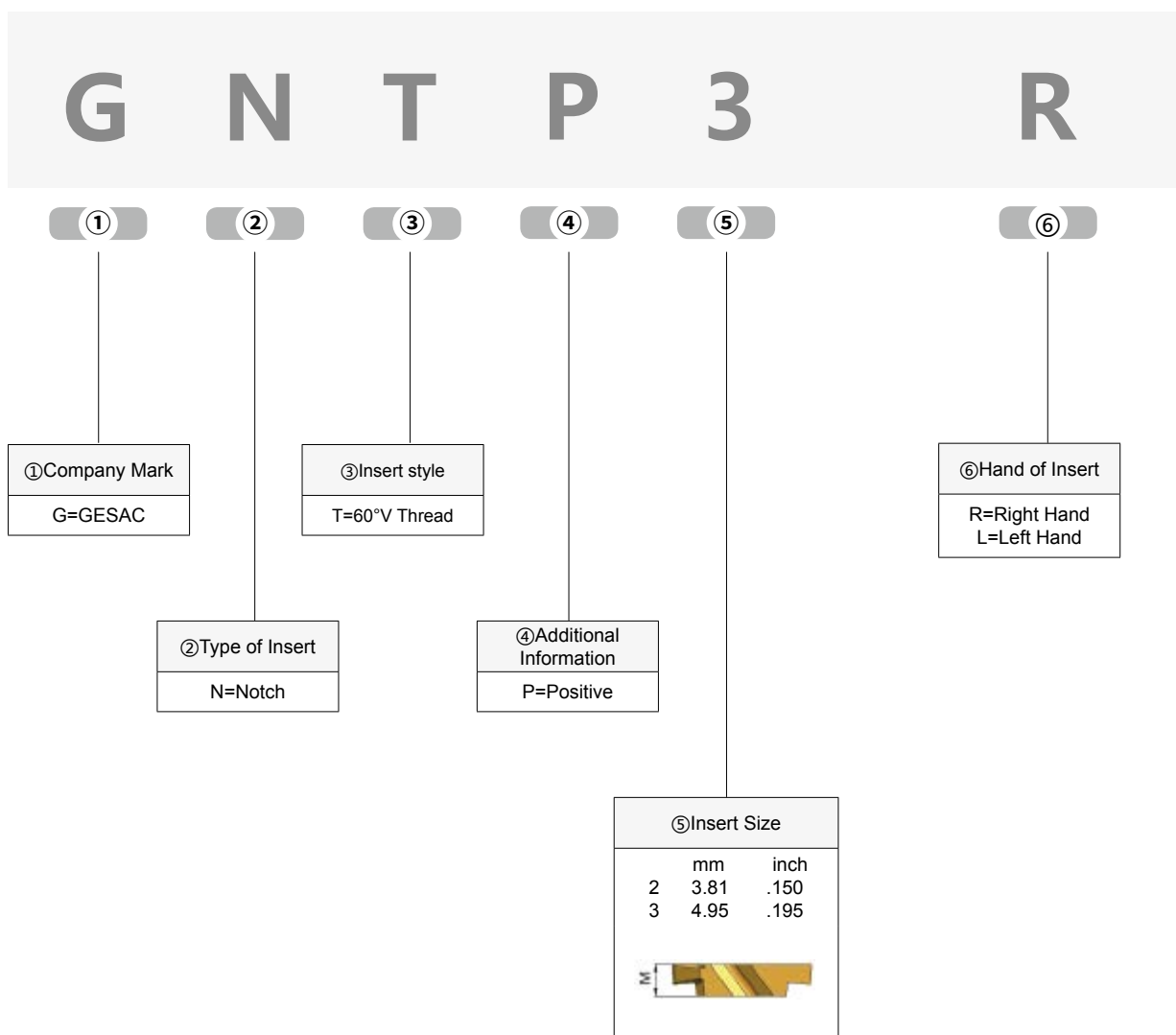




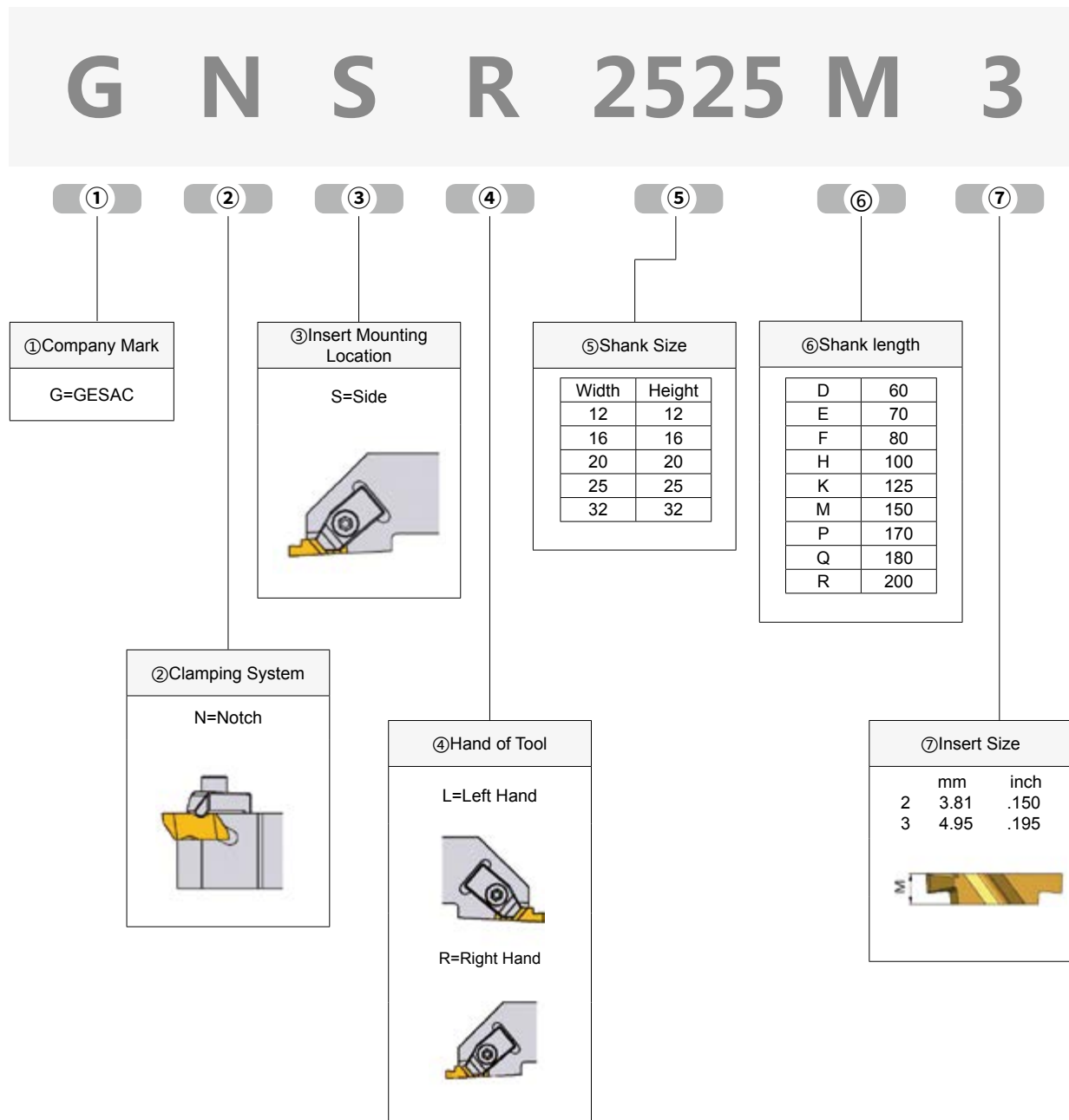
## G-Notch Series Grooving Inserts Identification System



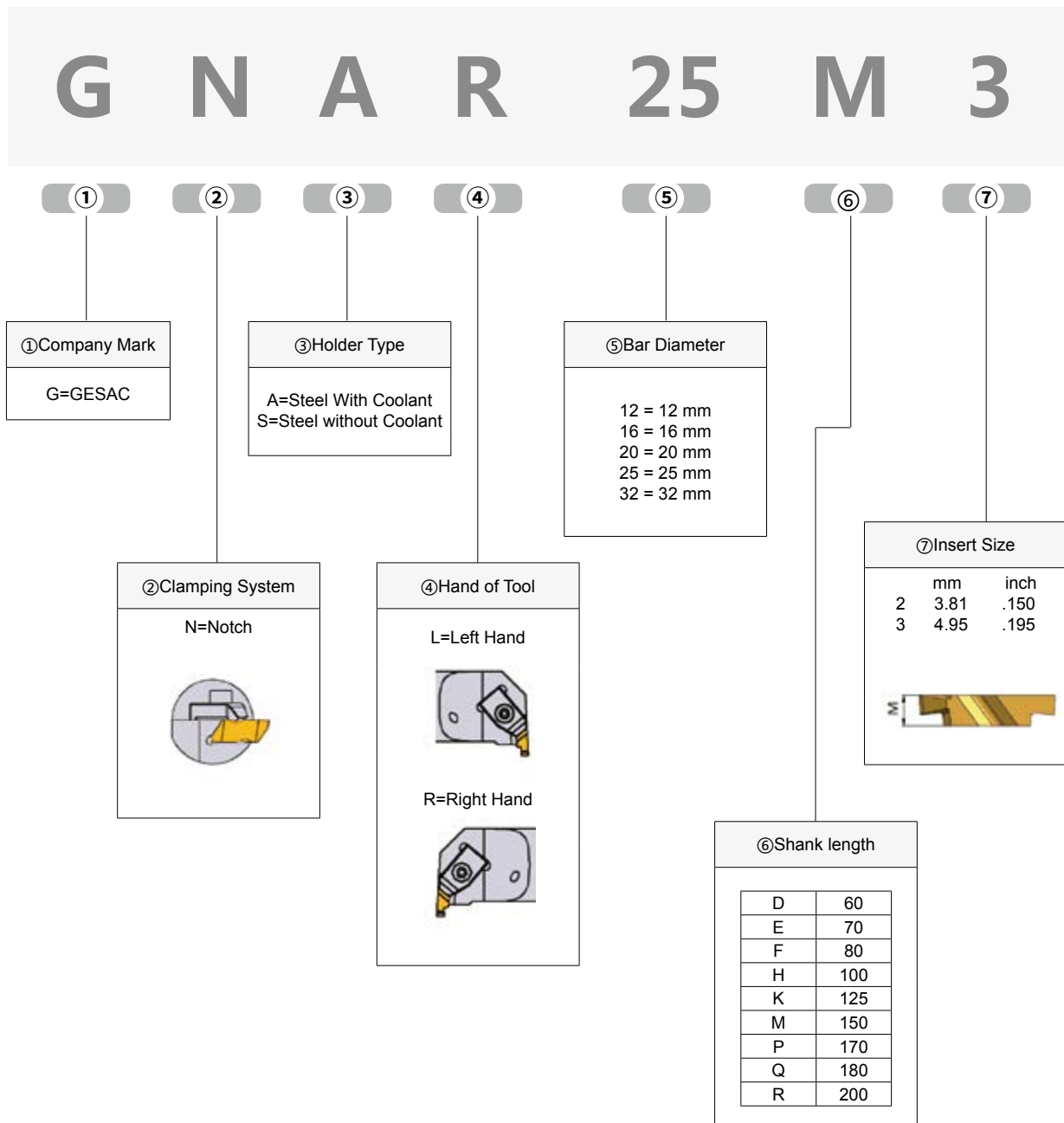
## G-Notch Series Threading Inserts Identification System



## G-Notch External Holder Identification System



## G-Notch Internal Bar Identification System



Note: Left hand bars use right hand inserts, Right hand bars use left hand inserts.

## Overview of G-Notch Series Tools

| Application                      | Style | Shape                                                                             | Width/Pitch                | Page                 |
|----------------------------------|-------|-----------------------------------------------------------------------------------|----------------------------|----------------------|
| Precision grooving               | GNGP  |  | 1.00-3.50 (mm)             | <a href="#">P150</a> |
| Precision grooving and profiling | GNR   |  | 2.00-3.18 (mm)             | <a href="#">P152</a> |
| Threading                        | GNTD  |  | 0.70-5.00(mm)<br>36-5(TPI) | <a href="#">P152</a> |

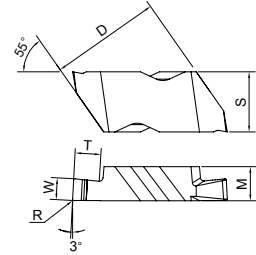
## Application Summary of Grades

| Workpiece Material |     | <div>P</div> <div>Steel</div> |    |    |    |    |    | <div>M</div> <div>Stainless Steel</div> |    |    |    |    | <div>K</div> <div>Cast Iron</div> |    |    |    |    | <div>S</div> <div>HRSA / Titanium</div> |    |    |    |    |  |
|--------------------|-----|-------------------------------|----|----|----|----|----|-----------------------------------------|----|----|----|----|-----------------------------------|----|----|----|----|-----------------------------------------|----|----|----|----|--|
|                    |     | ISO                           | 01 | 10 | 20 | 30 | 40 | 50                                      | 01 | 10 | 20 | 30 | 40                                | 01 | 10 | 20 | 30 | 40                                      | 10 | 20 | 30 | 40 |  |
| Coated             | PVD | GM3125                        |    |    |    |    |    | GM3125                                  |    |    |    |    | GM3125                            |    |    |    |    |                                         |    |    |    |    |  |
|                    |     | GA4230                        |    |    |    |    |    | GA4230                                  |    |    |    |    | GA4230                            |    |    |    |    | GS3115                                  |    |    |    |    |  |
|                    |     |                               |    |    |    |    |    | GS3115                                  |    |    |    |    |                                   |    |    |    |    |                                         |    |    |    |    |  |

## Grooving Inserts

## NGNP

## Grooving Positive Rake Inserts



| Ordering Code                                                                       |            | Dimensions(mm) |      |      |      |      |      | Insert Size | Stock  |        |        |
|-------------------------------------------------------------------------------------|------------|----------------|------|------|------|------|------|-------------|--------|--------|--------|
|                                                                                     |            | W              | R    | T    | S    | M    | D    |             | GM3125 | GA4230 | GS3115 |
|  | GNGP2M100L | 1.00           | 0.09 | 1.27 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M100R | 1.00           | 0.09 | 1.27 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2047L  | 1.19           | 0.09 | 1.27 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2047R  | 1.19           | 0.09 | 1.27 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2M150L | 1.50           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M150R | 1.50           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2062L  | 1.57           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2062R  | 1.57           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2M170L | 1.70           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M170R | 1.70           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2070L  | 1.78           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ○      |        |        |
|                                                                                     | GNGP2078L  | 1.98           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ○      |        |        |
|                                                                                     | GNGP2078R  | 1.98           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ○      |        |        |
|                                                                                     | GNGP2M200L | 2.00           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M200R | 2.00           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M220L | 2.20           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      |        |
|                                                                                     | GNGP2M220R | 2.20           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      |        |
|                                                                                     | GNGP2094L  | 2.38           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2094R  | 2.38           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      | ○      | ○      |
|                                                                                     | GNGP2M250L | 2.50           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2M250R | 2.50           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           |        | ○      | ○      |
|                                                                                     | GNGP2125L  | 3.18           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP2125R  | 3.18           | 0.19 | 2.79 | 5.56 | 3.81 | 8.74 | 2           | ●      |        |        |
|                                                                                     | GNGP3031L  | 0.79           | 0.09 | 1.27 | 8.74 | 4.95 | 16.1 | 3           | ○      |        |        |
|                                                                                     | GNGP3031R  | 0.79           | 0.09 | 1.27 | 8.74 | 4.95 | 16.1 | 3           | ○      |        |        |
|                                                                                     | GNGP3M100L | 1.00           | 0.19 | 1.91 | 8.74 | 4.95 | 16.1 | 3           | ●      | ○      |        |
|                                                                                     | GNGP3M100R | 1.00           | 0.19 | 1.91 | 8.74 | 4.95 | 16.1 | 3           | ●      | ○      |        |
|                                                                                     | GNGP3047L  | 1.19           | 0.19 | 1.91 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3047R  | 1.19           | 0.19 | 1.91 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |

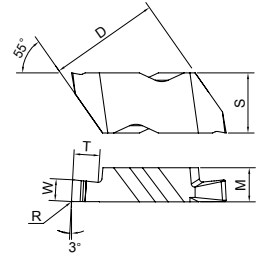
Continue&gt;&gt;

● Stock ○ Available upon Order

## Grooving Inserts

**GNGP**

Grooving Positive Rake Inserts



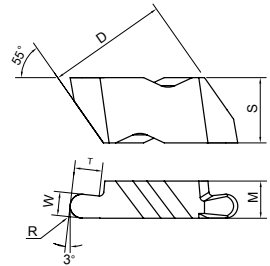
| Ordering Code                                                                       |            | Dimensions(mm) |      |      |      |      |      | Insert Size | Stock  |        |        |
|-------------------------------------------------------------------------------------|------------|----------------|------|------|------|------|------|-------------|--------|--------|--------|
|                                                                                     |            | W              | R    | T    | S    | M    | D    |             | GM3125 | GA4230 | GS3115 |
|  | GNGP3M150L | 1.50           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           |        | ○      |        |
|                                                                                     | GNGP3M150R | 1.50           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ●      | ○      | ○      |
|                                                                                     | GNGP3062L  | 1.58           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3062R  | 1.58           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3070L  | 1.78           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ○      |        |        |
|                                                                                     | GNGP3078L  | 1.98           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ○      |        |        |
|                                                                                     | GNGP3078R  | 1.98           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ○      |        |        |
|                                                                                     | GNGP3M200L | 2.00           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3M200R | 2.00           | 0.19 | 2.39 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3094L  | 2.39           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3094R  | 2.39           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      | ○      | ○      |
|                                                                                     | GNGP3M250L | 2.50           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3M250R | 2.50           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3M300L | 3.00           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3M300R | 3.00           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3125L  | 3.18           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3125R  | 3.18           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      | ○      | ○      |
|                                                                                     | GNGP3M350L | 3.50           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |
|                                                                                     | GNGP3M350R | 3.50           | 0.19 | 3.81 | 8.74 | 4.95 | 16.1 | 3           | ●      |        |        |

● Stock ○ Available upon Order

## Grooving Inserts and Threading Inserts

## GNR

Full Radius Inserts



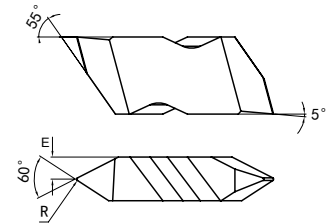
| Full Radius Inserts                                                                |           | Dimensions(mm) |      |      |      |      |       | Insert Size | Stock  |        |        |
|------------------------------------------------------------------------------------|-----------|----------------|------|------|------|------|-------|-------------|--------|--------|--------|
|                                                                                    |           | W              | R    | T    | S    | M    | D     |             | GM3125 | GA4230 | GS3115 |
|  | GNR3M100L | 2.00           | 1.00 | 2.39 | 8.74 | 4.95 | 16.10 | 3           |        | ○      |        |
|                                                                                    | GNR3M100R | 2.00           | 1.00 | 2.39 | 8.74 | 4.95 | 16.10 | 3           | ●      | ○      |        |
|                                                                                    | GNR3M150L | 3.00           | 1.50 | 3.81 | 8.74 | 4.95 | 16.10 | 3           |        | ○      |        |
|                                                                                    | GNR3M150R | 3.00           | 1.50 | 3.81 | 8.74 | 4.95 | 16.10 | 3           | ●      | ○      |        |
|                                                                                    | GNR3062L  | 3.18           | 1.59 | 3.81 | 8.74 | 4.95 | 16.10 | 3           |        | ○      |        |
|                                                                                    | GNR3062R  | 3.18           | 1.59 | 3.81 | 8.74 | 4.95 | 16.10 | 3           | ●      | ○      |        |

● Stock ○ Available upon Order

## GNTP

60° Partial Profile Threading

Inserts With Positive Top Rake



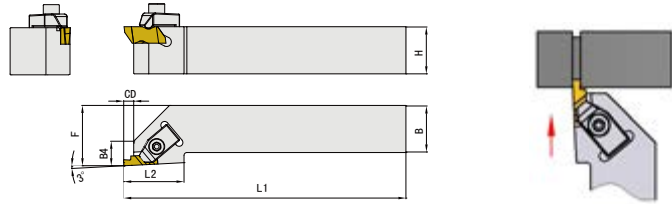
| Ordering Code                                                                       |           | Dimensions(mm) |      |               |               |              |              | Insert Size | Stock  |        |        |
|-------------------------------------------------------------------------------------|-----------|----------------|------|---------------|---------------|--------------|--------------|-------------|--------|--------|--------|
|                                                                                     |           | R              | E    | Pitch         |               |              |              |             | GM3125 | GA4230 | GS3115 |
|                                                                                     |           |                |      | External (mm) | Internal (mm) | External TPI | Internal TPI |             |        |        |        |
|  | GNTP2L    | 0.10           | 1.91 | 0.70-3.00     | 1.25-3.50     | 8-36         | 7-20         | 2           | ●      | ○      |        |
|                                                                                     | GNTP2R    | 0.10           | 1.91 | 0.70-3.00     | 1.25-3.50     | 8-36         | 7-20         | 2           | ●      | ○      |        |
|                                                                                     | GNTP3L    | 0.17           | 2.49 | 1.25-4.00     | 2.00-5.00     | 4-20         | 5-12         | 3           | ●      | ○      |        |
|                                                                                     | GNTP3R    | 0.17           | 2.49 | 1.25-4.00     | 2.00-5.00     | 4-20         | 5-12         | 3           | ●      | ○      |        |
|                                                                                     | GNTP3004L | 0.10           | 2.49 | 1.25-4.00     | 2.00-5.00     | 5-36         | 5-12         | 3           |        | ○      |        |
|                                                                                     | GNTP3004R | 0.10           | 2.49 | 1.25-4.00     | 2.00-5.00     | 5-36         | 5-12         | 3           |        | ○      |        |

● Stock ○ Available upon Order



## G-Notch series

## External Holders

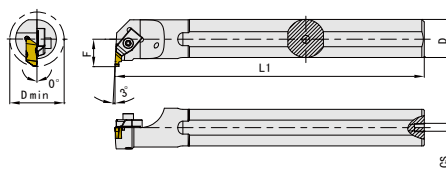


| Ordering Code | Dimensions(mm) |    |    |     |    |    |     | Insert | Spare Parts  |              |              | Stock |
|---------------|----------------|----|----|-----|----|----|-----|--------|--------------|--------------|--------------|-------|
|               | H              | B  | F  | L1  | L2 | B4 | CD  |        | Clamp        | Screw        | Wrench       |       |
| GNSR1616H2    | 16             | 16 | 20 | 100 | 19 | 9  | 3.5 | GN.2R  | 720500762978 | 730109003291 | 720309000813 | ●     |
| GNSR2020K2    | 20             | 20 | 25 | 125 | 19 | 9  | 3.5 | GN.2R  | 720500762978 | 730109003291 | 720309000813 | ●     |
| GNSR2525M2    | 25             | 25 | 32 | 150 | 19 | 9  | 3.5 | GN.2R  | 720500762978 | 730109003291 | 720309000813 | ●     |
| GNSR2020K3    | 20             | 20 | 25 | 125 | 32 | 13 | 5.3 | GN.3R  | 720500762980 | 730109003295 | 720309000814 | ●     |
| GNSR2525M3    | 25             | 25 | 32 | 150 | 32 | 13 | 5.3 | GN.3R  | 720500762980 | 730109003295 | 720309000814 | ●     |
| GNSL1616H2    | 16             | 16 | 20 | 100 | 19 | 9  | 3.5 | GN.2L  | 720500762979 | 730109003291 | 720309000813 | ●     |
| GNSL2020K2    | 20             | 20 | 25 | 125 | 19 | 9  | 3.5 | GN.2L  | 720500762979 | 730109003291 | 720309000813 | ●     |
| GNSL2525M2    | 25             | 25 | 32 | 150 | 19 | 9  | 3.5 | GN.2L  | 720500762979 | 730109003291 | 720309000813 | ●     |
| GNSL2020K3    | 25             | 20 | 25 | 125 | 32 | 13 | 5.3 | GN.3L  | 720500762981 | 730109003295 | 720309000814 | ●     |
| GNSL2525M3    | 25             | 25 | 32 | 150 | 32 | 13 | 5.3 | GN.3L  | 720500762981 | 730109003295 | 720309000814 | ●     |

● Stock ○ Available upon Order

## G-Notch series

## Internal Bars



| Ordering Code | Dimensions(mm) |       |     |    |            | Insert | Spare Parts  |              |              | Stock |
|---------------|----------------|-------|-----|----|------------|--------|--------------|--------------|--------------|-------|
|               | D              | D min | L1  | F  | CS         |        | Clamp        | Screw        | Wrench       |       |
| GNAR20Q2      | 20             | 26    | 180 | 13 | 1/8-27 NPT | GN.2L  | 720500762979 | 730109003290 | 720309000813 | ●     |
| GNAR25R2      | 25             | 34    | 200 | 17 | 1/4-18 NPT |        | 720500762979 | 730109003290 | 720309000813 | ●     |
| GNAR25R3      | 25             | 34    | 200 | 17 | 1/4-18 NPT | GN.3L  | 720500762981 | 730109003294 | 720309000814 | ●     |
| GNAL20Q2      | 20             | 26    | 180 | 13 | 1/8-27 NPT | GN.2R  | 720500762978 | 730109003290 | 720309000813 | ●     |
| GNAL25R2      | 25             | 34    | 200 | 17 | 1/4-18 NPT |        | 720500762978 | 730109003290 | 720309000813 | ●     |
| GNAL25R3      | 25             | 34    | 200 | 17 | 1/4-18 NPT | GN.3R  | 720500762980 | 730109003294 | 720309000814 | ●     |

Note: Left hand bars use right hand inserts, Right hand bars use left hand inserts.

● Stock ○ Available upon Order

## Recommended Cutting Speed

| Workpiece Material |                          | Hardness ( HB ) | Speed Vc ( m/min ) |                 |                  |
|--------------------|--------------------------|-----------------|--------------------|-----------------|------------------|
|                    |                          |                 | GM3125             | GA4230          | GS3115           |
| <b>P</b>           | Low Carbon Steel         | 80 – 170        | 105<br>(60-170)    | 110<br>(70-180) |                  |
|                    | Low Alloy Steel          | 170 –250        | 105<br>(60-160)    | 110<br>(70-160) |                  |
|                    | Low Alloy Steel          | 140– 260        | 105<br>(50-160)    | 110<br>(60-160) |                  |
|                    | High Alloy Steel         | 180– 300        | 105<br>(50-160)    | 110<br>(60-160) |                  |
| <b>M</b>           | Ferritic/<br>Martensitic | 150– 270        | 90<br>(40-140)     | 100<br>(40-180) | 90<br>( 50-150 ) |
|                    | Austenitic               | 150– 270        | 90<br>(40-140)     | 100<br>(40-180) | 90<br>( 50-150 ) |
| <b>K</b>           | Malleable Cast Iron      | 150– 230        | 160<br>(60-300)    | 180<br>(70-300) |                  |
|                    | Gray Cast Iron           | 150– 230        | 160<br>(60-300)    | 180<br>(70-300) |                  |
|                    | Nodular Cast Iron        | 160– 260        | 140<br>(50-250)    | 160<br>(60-300) |                  |
| <b>S</b>           | Heat-resistant Alloy     | 130– 400        |                    |                 | 35<br>( 15-60 )  |
|                    | Titanium Alloy           | 130– 400        |                    |                 | 35<br>( 15-60 )  |

## Recommended Feed

| Width of Inserts(mm) | Feed(mm/r)       |
|----------------------|------------------|
| 0.79-1.50            | 0.08 (0.03-0.12) |
| 1.50-2.50            | 0.10 (0.04-0.16) |
| 2.50-3.50            | 0.12 (0.05-0.20) |
| 3.50-4.50            | 0.14 (0.05-0.25) |

## MEMO





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