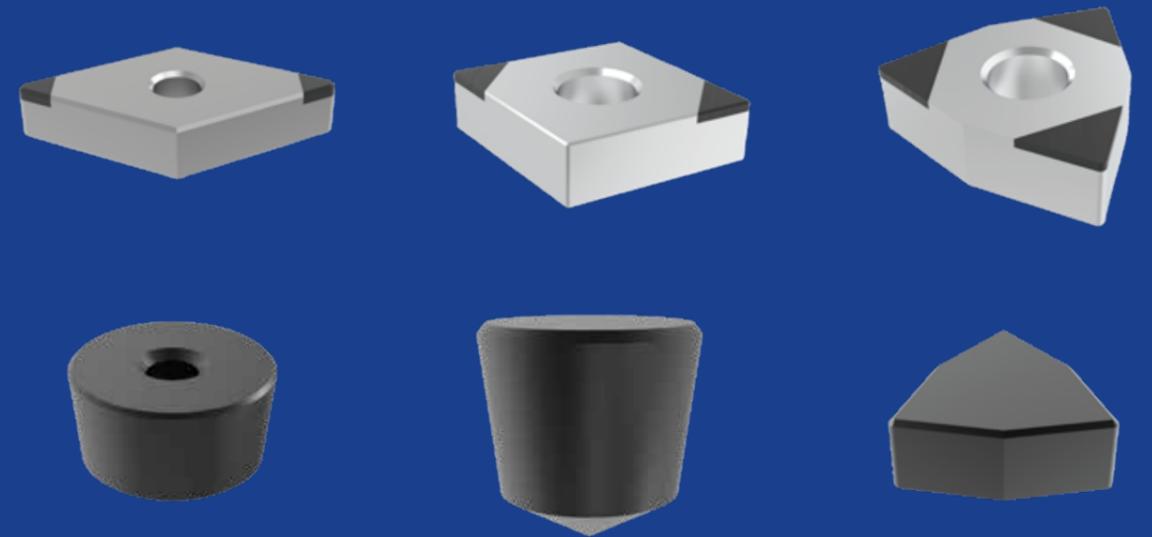


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# JOYJET

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SELFLESS ELEGANCE



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# CATALOGUE

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- COMPANY PROFILE
- COMPANY DEVELOPMENT HISTORY
- PRODUCT PRODUCTION CAPACITY DISPLAY
- INTRODUCTION TO JOYJET INSERTS
- CBN INSERTS
- CVD INSERTS
- PCD INSERTS
- CERAMIC INSERTS
- CUSTOMIZED CUTTING TOOLS
- RAW MATERIAL BLANKS
- AFTER-SALES SERVICE
- CLIENTS WE SERVE

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## COMPANY PROFILE

On the path to excellence, we continuously drive technological advancements and strive to bring innovation to the cutting tool industry.

We firmly believe that by providing high-quality cutting solutions, we can meet the needs of our customers and create a better future.

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### We are Joyjet,

A company that manufactures and sells super-hard materials worldwide.

Joyjet, in ancient times, was used as a tinder to ignite flames. We have bestowed this symbolic name upon our company to convey our pursuit of innovation and progress.

The hardness and wear resistance of joyjet perfectly mirror our unwavering commitment to excellence.

Our main products include PCD tools, CBN tools, CVD tools, and ceramic tools.

**JOYJET** We sincerely invite you to join Joyjet's journey and together create exceptional experiences.

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## COMPANY DEVELOPMENT HISTORY

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2018

- 2018, Joyjet established the JOYJET Technology Research and Development Center, focusing on super-hard materials and tools, with a particular emphasis on diamonds represented by PCD and PDC, as well as CBN.

2020

- 2020, our PCD and CBN inserts were launched.

2020

- 2020, we introduced our HPHT lab rough diamond, with a maximum size of up to 8 carats.

2022

- 2022, we mastered the DCCVD process and introduced thick-film diamonds with a maximum diameter of 100mm.

2024

- 2024, we deployed 150 MPCVD devices and established a single crystal diamond production line.

2023

- 2023, we launched super-hard grinding wheels, specializing in outer circle grinding and flat grinding with diamond and CBN wheels.

2025

- 2025, Joyjet collaborated with Indian factory for diamond processing.

2019

- 2013, we successfully manufactured our first Oil PDC cutter.

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## PRODUCT PRODUCTION CAPACITY DISPLAY

01

### PRODUCTION EQUIPMENT

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In modern manufacturing, PCD cutting tools have gained widespread application in high-efficiency and high-precision machining domains. We take immense pride in introducing our cutting-edge technology that combines a Hexahedron press, micro-powder production equipment, fully automatic CNC grinding centers, and 3D laser processing centers. Through this advanced and integrated approach, we are passionately committed to creating top-tier PCD cutting tools, enabling you to distinguish yourself in the competitive market.

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With our hexahedron pressing technique, we have the capability to evenly embed high-quality polycrystalline diamond particles onto the inserts body, guaranteeing the blade's outstanding strength and resilience.



With the implementation Powder Press Machine, we possess the capability to accurately control the size and shape of diamond micro-powder. This meticulous control results in a cutting-edge performance of the inserts, characterized by enhanced precision and stability during cutting operations.



With the implementation Powder Press Machine, we possess the capability to accurately control the size and shape of diamond micro-powder. This meticulous control results in a cutting-edge performance of the inserts, characterized by enhanced precision and stability during cutting operations.



Leveraging cutting-edge 3D laser processing technology, we achieve micron-level cutting and engraving on the blade surface, elevating wear resistance and ensuring long-lasting stability.



02

INSPECTION EQUIPMENT

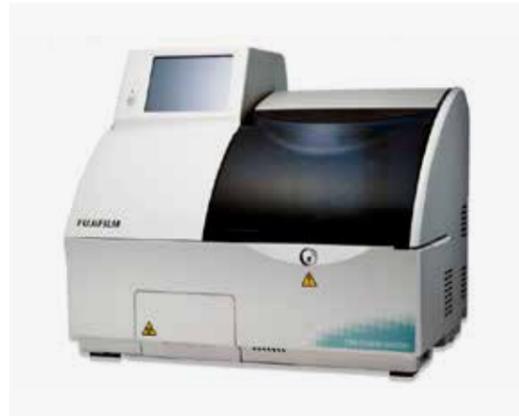
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We are committed to providing high-quality PCD cutting tools. To ensure that the performance and quality of the tools meet your requirements, we employ the following standardized testing methods:



COMPOSITION AND  
PURITY TESTING

We utilize advanced chemical analysis equipment to examine the composition and purity of diamond particles and matrix materials in the cutting tools, ensuring material quality and stability.



CRYSTALLOGRAPHY AND  
COLOR EXAMINATION

Through the use of microscopy and spectrometers, we inspect the surface crystallography and color of the cutting tools to ensure excellent crystal structure and consistent color.

PARTICLE SIZE ANALYSIS

We use a particle size analyzer to measure the size of diamond particles in the tools, guaranteeing uniformity and precision.

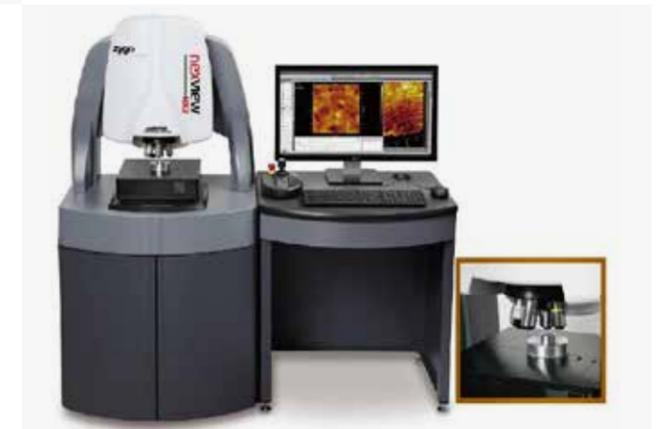


BULK DENSITY TESTING

The use of bulk density testers allows us to evaluate the bulk density of diamond particles in the tools, ensuring high density and strength.

SURFACE STRUCTURE  
INSPECTION

We employ microscopy and surface profilometers to assess the structure and quality of the cutting tool surfaces, ensuring smoothness and consistency.



IMPACT TOUGHNESS AND  
THERMAL SHOCK RESISTANCE  
EVALUATION

By employing impact testing machines and thermal shock test equipment, we assess the impact toughness and thermal shock resistance of the tools to ensure stability under high loads and temperatures.

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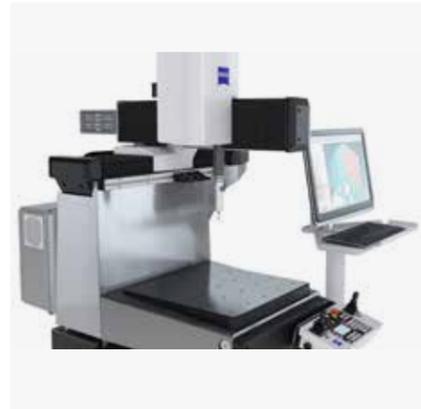


### General Cutting Tool Dimensions and Edge Inspection

Utilizing precision measuring instruments, we inspect the dimensions and cutting edge of the tools to ensure accuracy and consistency.

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### Non-Standard Cutting Tool Dimensions and Edge Inspection

For custom-made tools, we use coordinate measuring machines and other equipment to inspect non-standard dimensions and edges, meeting specific processing requirements.

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### Internal Structure Examination

We use transmission electron microscopes and other equipment to examine the internal structure and quality of the cutting tools, ensuring stability and reliability.



### Composite Material Toughness Testing

We employ composite material toughness testers to evaluate the toughness and strength of the cutting tools' composite materials, ensuring performance under complex conditions.

### Coating Thickness Inspection

The use of coating thickness gauges allows us to check the thickness of surface coatings on the cutting tools, ensuring uniformity and consistency.



### Hardness Testing

We use hardness testers to measure the hardness of the cutting tools, ensuring sufficient hardness and wear resistance.

### Coating Adhesion Strength Testing

We use adhesion testers to assess the binding strength between the surface coatings and the substrate of the cutting tools.



Through these rigorous testing and evaluation processes, we ensure that each PCD cutting tool exhibits outstanding performance and quality, providing exceptional support for your machining needs.

03

MANUFACTURING PROCESS

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SUPER HARD NANO  
POWDER PROCESS

The manufacturing process commences with the production of super hard nano powder. This phase involves the synthesis of diamond nanoparticles using cutting-edge techniques to achieve the desired level of purity and precise particle size.

MICRO POWDER +  
BINDER PROCESS

The nano powder is subsequently homogeneously mixed with a carefully selected binder material. This binder plays a crucial role in maintaining the cohesion of diamond particles during the subsequent stages of production.

HIGH-TEMPERATURE  
HIGH-PRESSURE  
SYNTHESIS

The blended powder and binder are subjected to high-temperature high-pressure (HTHP) conditions in a specialized press. This HTHP synthesis process facilitates the sintering of diamond particles and binder, leading to the formation of a compacted PCD blank.



PRECISION GRINDING  
AND MACHINING

The PCD blank undergoes meticulous precision grinding and machining using advanced CNC (Computer Numerical Control) machines. This step ensures that the PCD blank achieves the exact dimensions and geometric specifications required for the final cutting tool.

QUALITY  
INSPECTION

Rigorous quality inspection procedures are conducted on the machined PCD blanks. This comprehensive evaluation includes various tests such as composition analysis, dimensional checks, hardness testing, and other meticulous quality control measures. The goal is to ascertain that the PCD blanks meet the precise specifications and required standards.

Finished Super hard Cutting Tools: Once the PCD blanks successfully pass the stringent quality inspection, they are deemed as finished super hard cutting tools. These cutting tools are now ready for deployment in various cutting and machining applications.

04

MANAGEMENT REGULATION

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The company's production site adheres to the 6S management methodology



WHICH INCLUDES  
SORT (SEIRI)

SET IN ORDER  
(SEITON)

SHINE (SEISO)

STANDARDIZE  
(SEIKETSU)

SAFETY

SUSTAIN (SHITSUKE)



By implementing standardized management processes in each production stage, the method ensures product quality stability.

| Shape Code | Insert | Insert shape            | Angle | The Edges Are Even |  | The Edges Are Add |  | Insert With Smooth Edges |  | S |  |
|------------|--------|-------------------------|-------|--------------------|--|-------------------|--|--------------------------|--|---|--|
| S          | ■      | SQUARE                  | 90°   |                    |  |                   |  |                          |  |   |  |
| T          | ▲      | EQUILATERAL TRIANGLE    | 60°   |                    |  |                   |  |                          |  |   |  |
| C          | ▲      | EQUILATERAL TRIANGLE    | 80°   |                    |  |                   |  |                          |  |   |  |
| D          | ◆      | RHOMBUS (diamond shape) | 55°   |                    |  |                   |  |                          |  |   |  |
| E          | 75°    |                         |       |                    |  |                   |  |                          |  |   |  |
| M          | 86°    |                         |       |                    |  |                   |  |                          |  |   |  |
| V          | 35°    |                         |       |                    |  |                   |  |                          |  |   |  |
| W          | ▲      | CONVEX TRIANGLE         | 80°   |                    |  |                   |  |                          |  |   |  |
| H          | ⬡      | REGULAR HEXAGON         | 120°  |                    |  |                   |  |                          |  |   |  |
| O          | ⬢      | REGULAR OCTAGON         | 135°  |                    |  |                   |  |                          |  |   |  |
| P          | ⬠      | REGULAR PENTAGON        | 108°  |                    |  |                   |  |                          |  |   |  |
| L          | ▭      | RECTANGLE               | 90°   |                    |  |                   |  |                          |  |   |  |
| A          | ▭      | PARALLELOGRAM           | 85°   |                    |  |                   |  |                          |  |   |  |
| B          | 82°    |                         |       |                    |  |                   |  |                          |  |   |  |
| N/K        | 55°    |                         |       |                    |  |                   |  |                          |  |   |  |
| R          | ●      | CIRCLE                  | -     |                    |  |                   |  |                          |  |   |  |

| Inscribed circle (mm) | Cutting edge length |    |    |    |    |    |    | Code | Insert Tip Radius(mm)              |
|-----------------------|---------------------|----|----|----|----|----|----|------|------------------------------------|
|                       | C                   | D  | S  | T  | V  | W  | R  |      |                                    |
| 3.97                  |                     |    |    | 06 |    |    | 03 | 00   | Non-Rounded or Rectangular Inserts |
| 4.76                  |                     |    |    | 08 |    |    | 04 |      |                                    |
| 5.0                   |                     |    |    |    |    |    | 05 |      |                                    |
| 5.56                  |                     |    |    | 09 | 09 |    | 05 |      |                                    |
| 6.0                   |                     |    |    |    |    |    | 06 |      |                                    |
| 6.35                  |                     |    |    | 11 | 11 | 04 | 06 |      |                                    |
| 7.94                  |                     |    |    |    |    |    | 07 |      |                                    |
| 8.0                   | 06                  | 07 | 06 |    |    |    | 08 |      |                                    |
| 9.525                 | 08                  | 09 |    | 16 | 16 | 06 | 09 |      |                                    |
| 10.0                  |                     |    |    |    |    |    | 10 |      |                                    |
| 12.0                  | 09                  | 11 | 09 |    |    |    | 12 |      |                                    |
| 12.7                  |                     |    |    | 22 | 22 | 08 | 12 |      |                                    |
| 15.875                |                     |    |    | 27 |    |    | 15 |      |                                    |
| 16.0                  | 12                  | 15 | 12 |    |    |    | 16 |      |                                    |
| 19.05                 | 16                  |    | 15 | 33 |    |    | 19 |      |                                    |
| 20.0                  |                     | 19 |    |    |    |    | 20 |      |                                    |
| 25.0                  | 19                  |    | 19 |    |    |    | 25 |      |                                    |
| 25.4                  |                     |    |    |    |    |    | 25 |      |                                    |
| 31.75                 | 25                  | 25 |    |    |    |    | 31 |      |                                    |
| 32.0                  |                     |    | 25 |    |    |    | 32 |      |                                    |

| Code | Inserts Thickness (mm) | Product Identification Number | Inserts Thickness (mm) | Code | Insert Tip Radius |
|------|------------------------|-------------------------------|------------------------|------|-------------------|
| 01   | 1.59                   | 06                            | 6.35                   | 02   | 0.2               |
| T1   | 1.98                   | 07                            | 7.94                   | 04   | 0.4               |
| 02   | 2.38                   | 08                            | 8.0                    | 08   | 0.8               |
| T2   | 2.58                   | 09                            | 9.52                   | 12   | 1.2               |
| 03   | 3.18                   | 10                            | 10.0                   | 16   | 1.6               |
| T3   | 3.97                   | 11                            | 11.11                  | 20   | 2.0               |
| 04   | 4.76                   | 12                            | 12.0                   | 24   | 2.4               |
| 05   | 5.56                   | 12                            | 12.70                  | 32   | 3.2               |
|      |                        |                               |                        | X    | other             |

## INTRODUCTION TO JOYJET INSERTS 01 NAMING CONVENTION

| INSERT MATERIALS |   |  | EDGE DESIGNATION |             | INSERT RELIEF ANGLE |                    |
|------------------|---|--|------------------|-------------|---------------------|--------------------|
| SCZ              | IMPACT-RESISTANT SOLID INSERT CBN         |  | 1                | ONE EDGE    | CODE                | RELIEF ANGLE       |
| SCM              | DOUBLE LAYERS COMPOSITE BRAZED INSERT CBN |  | 2                | TWO EDGES   | N                   |                    |
| SCN              | SINGLE-LAYERS COMPOSITE BRAZED INSERT CBN |  | 3                | THREE EDGES | A                   |                    |
| SCG              | BRAZED SOLID TIP INSERT CBN               |  | 4                | FOUR EDGES  | B                   |                    |
| SCX              | SPECIAL CUSTOMIZATION                     |  | 6                | SIX EDGES   | C                   |                    |
| SP               | PCD ( POLYCRYSTALLINE DIAMOND)            |  |                  |             | P                   |                    |
| SM               | CVD DIAMOND                               |  |                  |             | D                   |                    |
| ST               | CERAMICS                                  |  |                  |             | E                   |                    |
|                  |   |  |                  |             | F                   |                    |
|                  |   |  |                  |             | G                   |                    |
|                  |   |  |                  |             | O                   | OTHER RELIEF ANGLE |



| CHIP BREAKER AND CLAMPING FORM  |                                       |                               |            |      |                                       |                                | SML Material code |     |
|---|---------------------------------------|-------------------------------|------------|------|---------------------------------------|--------------------------------|-------------------|-----|
| CODE  | WITH OR WITHOUT HOLE AND HOLE SHAPE   | CHIP BREAKER                  | SKETCH MAP | CODE | WITH OR WITHOUT HOLE AND HOLE SHAPE   | CHIP BREAKER                   | SKETCH MAP        |     |
| N   | Non                                   | Non chip breaker              |            | B    | Single side with 70°-90° counter bore | Non chip breaker               |                   | C01 |
| R   |                                       | Single side with chip breaker |            | H    |                                       | Single side with chip breaker  |                   | C02 |
| F   |                                       | Single side with chip breaker |            | C    |                                       | Non chip breaker               |                   | C03 |
| A   | Round and straight hole               | Non chip breaker              |            | J    | Double side with 70°-90° counter bore | Double sides with chip breaker |                   | C04 |
| M   |                                       | Single side with chip breaker |            | O    |                                       | Roundness                      |                   | P01 |
| G   |                                       | Single side with chip breaker |            |      | Fastening dimple                      | Square-shaped                  |                   | P02 |
| W   |                                       | Non chip breaker              |            | S    |                                       |                                |                   | P03 |
| T   | Single side with chip breaker         |                               | L          | P04  |                                       |                                |                   |     |
| Q   | Double side with 40°-60° counter bore | Non chip breaker              |            | X    | Long strip                            |                                | TN5               |     |
| U   |                                       | Single side with chip breaker |            |      |                                       |                                | TC4               |     |
| Other forms of fixing and chip breaker shall be illustrated by drawings |                                       |                               |            |      |                                       |                                | TT3               | TN2 |

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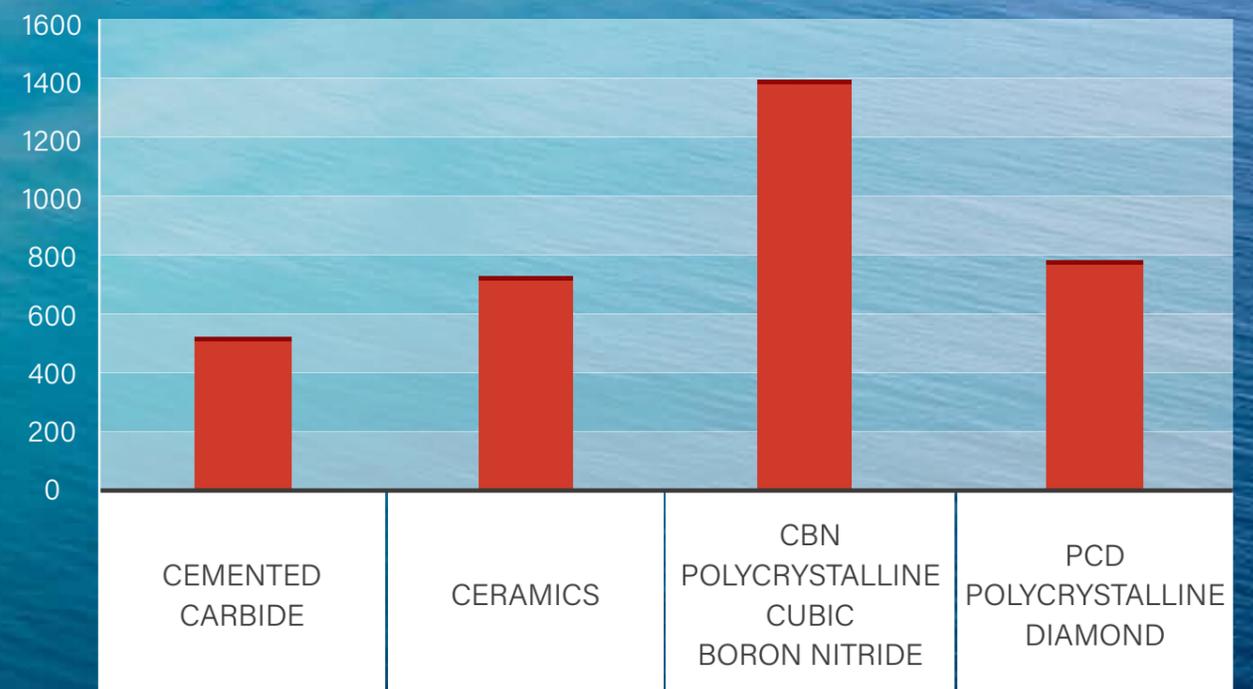
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HEAT RESISTANCE COMPARISON OF  
KEY INSERTS MATERIALS

CENTIGRADE°C



## 03

### JOYJET'S CBN SUPER HARD INSERTS APPLICATION CASE IN THE AUTOMOTIVE INDUSTRY

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Workpiece Name: Brake Disc  
Workpiece Material: HT250,  
Hardness: HB200  
Selected Insert: SCZ CNGN120712 C01  
Cutting Parameters:  $ap=2-3mm$   
 $f=0.6-0.8mm/r$



| Inserts Comparison<br>Japanese series<br>Cemented carbide | Cutting speed Vc<br>300m/min | Efficiency<br>5min/pcs | Product lifetime<br>100pcs/cutting edge |
|---|------------------------------|------------------------|---|
| CBN/Joyjet's CBN  | 800m/min                     | 1min/pcs               | 800pcs/cutting edge                     |

The efficiency of Joyjet's CBN inserts is 5 times that of XXX brand, and their lifespan is 5 times longer.

Workpiece Name: Brake Drum  
Workpiece Material: HT250,  
workpiece hardness: HB190-210  
Selected Insert: SCZ CNMN120716 C01  
Cutting Parameters:  $ap=2-3mm$   
 $f=0.45mm/r$



| Inserts Comparison<br>Japanese series<br>Cemented carbide | Cutting speed Vc<br>280m/min | Efficiency<br>12min/pcs | Product lifetime<br>10pcs/cutting edge |
|---|------------------------------|-------------------------|--|
| Joyjet's CBN  | 680m min                     | 3min pcs                | 80pcs cutting edge                     |

The efficiency of Joyjet's CBN inserts is 4 times that of XXX brand and their lifespan is 9 times longer.

## CBN INSERTS

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### ADVANTAGES OF CBN INSERTS:

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Joyjet's CBN inserts offer excellent cost-effectiveness, with a lifespan over 10 times longer than cemented carbide inserts at a price increase of 6-8 times. They provide 5-10 times higher processing efficiency, significantly boosting production capacity and reducing fixed investment. Achieving superior surface quality comparable to grinding, these inserts minimize equipment investment. Their exceptional versatility allows for both dry and wet cutting applications, while a single type can process multiple materials.

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02

### JOYJET'S INNOVATIVE CBN SUPER HARD INSERTS GRADES AND THEIR INDUSTRY APPLICATIONS

| SML Materials Code | Machining Method                                | Processed Materials  | Characteristics  | Suitable Industries  |
|--------------------|---|--|--|--|
| C01                | Rough Machining                                 | Excellent impact resistance and wear resistance are balanced.<br>High nickel-chromium high-hardness alloy cast iron<br>Gray cast iron<br>High manganese steel  | High impact resistance<br>Low wear resistance          | Rolls slurry pumps<br>brake discs<br>rolling sidewalls.              |
|                    | Rough Machining                                 | Excellent impact resistance and wear resistance are balanced.<br>High nickel-chromium high-hardness alloy cast iron<br>Gray cast iron<br>High manganese steel  | High impact resistance<br>Low wear resistance          | Rolls slurry pumps<br>brake discs<br>rolling sidewalls.              |
| C02                | Semi-precision machining<br>Precision machining | Exceptional comprehensive performance, exhibiting versatile applicability; suitable for machining gray cast iron, hard cast iron, and quenched and tempered steel with a hardness greater than 45HRC | Moderate impact resistance<br>Moderate wear resistance | Brake discs<br>brake drums<br>compressor parts<br>gears<br>bearings. |
| C03                | rough machining<br>Precision machining          | Excellent Wear Resistance<br>Gray Cast Iron  | High Impact Resistance<br>Low Wear Resistance          | Brake Disc<br>Brake Drum<br>Compressor Parts                         |
|                    | rough machining<br>Semi-precision machining     | Excellent impact resistance.<br>Quenched steel cast<br>high-speed steel<br>surface overlay welding materials   | High Impact Resistance<br>Low Wear Resistance          | Large gears<br>mining machinery<br>Rolls                             |
| C04                | Precision machining                             | Hardened steels with a hardness greater than 45 HRC  | Low Impact Resistance<br>High Wear Resistance          | Gears<br>bearings  |

## 03

### PECIFICATION CATALOG

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### CBN TURNING INSERTS

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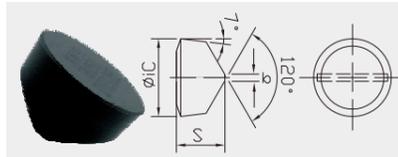
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| Model       | Size |        |       |   | Model       | Size |        |      |       |   |
|-------------|------|--------|-------|---|-------------|------|--------|------|-------|---|
|             | ISO  | L      | Φ i.c | s |             | r    | ISO    | L    | Φ i.c | s |
| RNMN 060400 | 6    | 6.35   | 4.76  | 0 | RNMN 090304 | 9    | 9.525  | 3.18 | 0.4   |   |
| RNMN 090300 | 9    | 9.525  | 3.18  | 0 | RNMN 090308 | 9    | 9.525  | 3.18 | 0.8   |   |
| RNMN 090400 | 9    | 9.525  | 4.76  | 0 | RNMN 090312 | 9    | 9.525  | 3.18 | 1.2   |   |
| RNMN 120400 | 12   | 12.7   | 4.76  | 0 | RNMN 090404 | 9    | 9.525  | 4.76 | 0.4   |   |
| RNMN 120600 | 12   | 12.7   | 6.35  | 0 | RNMN 090408 | 9    | 9.525  | 4.76 | 0.8   |   |
| RNMN 120700 | 12   | 12.7   | 7.94  | 0 | RNMN 090412 | 9    | 9.525  | 4.76 | 1.2   |   |
| RNMN 150700 | 15   | 15.875 | 7.94  | 0 | RNMN 120404 | 12   | 12.7   | 4.76 | 0.4   |   |
| RNMN 160700 | 16   | 16     | 7.94  | 0 | RNMN 120408 | 12   | 12.7   | 4.76 | 0.8   |   |
| RNMN 190700 | 19   | 19.05  | 7.94  | 0 | RNMN 120712 | 12   | 12.7   | 7.94 | 1.2   |   |
| RNMN 200700 | 20   | 20     | 7.94  | 0 | RNMN 150704 | 15   | 15.875 | 7.94 | 0.4   |   |
| RNMN 201000 | 20   | 20     | 10    | 0 | RNMN 150708 | 15   | 15.875 | 7.94 | 0.8   |   |
| RNMN 250600 | 25   | 25.4   | 6.35  | 0 | RNMN 201020 | 20   | 20     | 10   | 2.0   |   |
| RNMN 250700 | 25   | 25.4   | 7.94  | 0 | RNMN 201024 | 20   | 20     | 10   | 2.4   |   |
| RNMN 251000 | 25   | 25.4   | 10    | 0 |             |      |        |      |       |   |
| RNMN 251200 | 25   | 25.4   | 12    | 0 |             |      |        |      |       |   |

| Model          | Size |       |       |      |     |     |     | Model          | Size |       |      |      |       |     |     |   |   |   |
|----------------|------|-------|-------|------|-----|-----|-----|----------------|------|-------|------|------|-------|-----|-----|---|---|---|
|                | ISO  | L     | Φ i.c | s    | Φ d | r   | s   |                | b    | N     | ISO  | L    | Φ i.c | s   | Φ d | r | s | b |
| CCGW 09T304-2S | 9    | 9.525 | 3.97  | 4.4  | 0.4 | 2.5 | 3.3 | VCGW 110304    | 11   | 6.35  | 3.18 | 2.8  | 0.4   | 2.8 | 3.5 |   |   |   |
| CCGW 09T308-2S | 9    | 9.525 | 3.97  | 4.4  | 0.8 | 2.3 | 3.1 | VCGW 110308    | 11   | 6.35  | 3.18 | 2.8  | 0.8   | 2   | 2.7 |   |   |   |
| CCGW 09T312-2S | 9    | 9.525 | 3.97  | 4.4  | 1.2 | 2.2 | 3.0 | VCGW 110312    | 11   | 6.35  | 3.18 | 2.8  | 1.2   | 1.3 | 1.9 |   |   |   |
| CCGW 120404-2S | 12   | 12.7  | 4.76  | 5.5  | 0.4 | 2.5 | 3.3 | VCGW 160404-2S | 16   | 9.525 | 4.76 | 4.4  | 0.4   | 2.8 | 3.5 |   |   |   |
| CCGW 120408-2S | 12   | 12.7  | 4.76  | 5.5  | 0.8 | 2.3 | 3.1 | VCGW 160408-2S | 16   | 9.525 | 4.76 | 4.4  | 0.8   | 2   | 2.7 |   |   |   |
| CCGW 120412-2S | 12   | 12.7  | 4.76  | 5.5  | 1.2 | 2.2 | 3.0 | VCGW 160412-2S | 16   | 9.525 | 4.76 | 4.4  | 1.2   | 1.3 | 1.9 |   |   |   |
| WNGA 060404-3S | 6    | 9.525 | 4.76  | 3.81 | 0.4 | 2.5 | 3.3 | DNGA 110404-2S | 11   | 9.525 | 4.76 | 3.81 | 0.4   | 2.5 | 3.3 |   |   |   |
| WNGA 060408-3S | 6    | 9.525 | 4.76  | 3.81 | 0.8 | 2.3 | 3.2 | DNGA 110408-2S | 11   | 9.525 | 4.76 | 3.81 | 0.8   | 2.1 | 2.9 |   |   |   |
| WNGA 080404-3S | 8    | 12.7  | 4.76  | 5.16 | 0.4 | 2.5 | 3.3 | DNGA 150404-2S | 15   | 12.7  | 4.76 | 5.16 | 0.4   | 2.5 | 3.3 |   |   |   |
| WNGA 080408-3S | 8    | 12.7  | 4.76  | 5.16 | 0.8 | 2.3 | 3.1 | DNGA 150408-2S | 15   | 12.7  | 4.76 | 5.16 | 0.8   | 2.1 | 2.9 |   |   |   |
| WNGA 080412-3S | 8    | 12.7  | 4.76  | 5.16 | 1.2 | 2.2 | 3.0 | DNGA 150412-2S | 15   | 12.7  | 4.76 | 5.16 | 1.2   | 1.8 | 2.5 |   |   |   |
| VNGA 160404-2S | 16   | 9.525 | 4.76  | 3.81 | 0.4 | 2.8 | 3.5 | VCGW160404     | 16   | 9.525 | 4.76 | 4.4  | 0.4   |     |     |   |   |   |
| VNGA 160408-2S | 16   | 9.525 | 4.76  | 3.81 | 0.8 | 2   | 2.7 | VCGW160408     | 16   | 9.525 | 4.76 | 4.4  | 0.8   |     |     |   |   |   |
| VNGA 160412-2S | 16   | 9.525 | 4.76  | 3.81 | 1.2 | 1.3 | 1.9 | VCGW160412     | 16   | 9.525 | 4.76 | 4.4  | 1.2   |     |     |   |   |   |
| VBGW 110304    | 11   | 6.35  | 3.18  | 2.8  | 0.4 | 2.8 | 3.5 | CPGW 090304-2S | 9    | 9.525 | 3.18 | 4.4  | 0.4   | 2.5 | 3.3 |   |   |   |
| VBGW 110308    | 11   | 6.35  | 3.18  | 2.8  | 0.8 | 2   | 2.7 | CPGW 090308-2S | 9    | 9.525 | 3.18 | 4.4  | 0.8   | 2.3 | 3.0 |   |   |   |
| VBGW 110312    | 11   | 6.35  | 3.18  | 2.8  | 1.2 | 1.3 | 1.9 | CPGW 090312-2S | 9    | 9.525 | 3.18 | 4.4  | 1.2   | 2.2 | 3.0 |   |   |   |
| VBGW 160404-2S | 16   | 9.525 | 4.76  | 4.4  | 0.4 | 2.8 | 3.5 | CPGW 09T304-2S | 9    | 9.525 | 3.97 | 4.4  | 0.4   | 2.5 | 3.3 |   |   |   |
| VBGW 160408-2S | 16   | 9.525 | 4.76  | 4.4  | 0.8 | 2   | 2.7 | CPGW 09T308-2S | 9    | 9.525 | 3.97 | 4.4  | 0.8   | 2.3 | 3.1 |   |   |   |
| VBGW 160412-2S | 16   | 9.525 | 4.76  | 4.4  | 1.2 | 1.3 | 1.9 | CPGW 09T312-2S | 9    | 9.525 | 3.97 | 4.4  | 1.2   | 2.2 | 3.0 |   |   |   |

**KING SML GROUP**



| Model        | Size |        |      |     |
|--------------|------|--------|------|-----|
|              | L    | Φ i.c  | s    | r   |
| RCMX 060400V | 6    | 6.35   | 4.76 | 0.8 |
| RCMX 060600V | 6    | 6.35   | 6.35 | 0.8 |
| RCMX 090700V | 9    | 9.525  | 7.94 | 1   |
| RCMX 120700V | 12   | 12.7   | 7.94 | 2   |
| RCMX 151000V | 15   | 15.875 | 10.0 | 2   |
| RCMX 191000V | 19   | 19.05  | 10.0 | 2   |
| RCMX 201200V | 20   | 20.0   | 12.0 | 2   |
| RCMX 251200V | 25   | 25.4   | 12.0 | 2   |

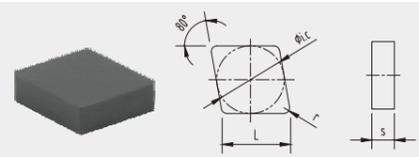
WARM  
INTEGRITY

**JOYJET**

SELFLESS  
ELEGANCE

MAKES  
YOU

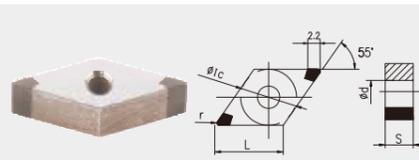
SPARKS  
FLY



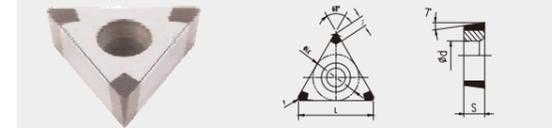
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|-------------|------|--------|------|-----|
|             | L    | Φ i.c  | s    | r   |
| CNMN 090404 | 9    | 9.525  | 4.76 | 0.4 |
| CNMN 090408 | 9    | 9.525  | 4.76 | 0.8 |
| CNMN 090412 | 9    | 9.525  | 4.76 | 1.2 |
| CNMN 120404 | 12   | 12.7   | 4.76 | 0.4 |
| CNMN 120408 | 12   | 12.7   | 4.76 | 0.8 |
| CNMN 120412 | 12   | 12.7   | 4.76 | 1.2 |
| CNMN 120704 | 12   | 12.7   | 7.94 | 0.4 |
| CNMN 120708 | 12   | 12.7   | 7.94 | 0.8 |
| CNMN 120712 | 12   | 12.7   | 7.94 | 1.2 |
| CNMN 160708 | 16   | 15.875 | 7.94 | 0.8 |
| CNMN 160712 | 16   | 15.875 | 7.94 | 1.2 |
| CNMN 160716 | 16   | 15.875 | 7.94 | 1.6 |



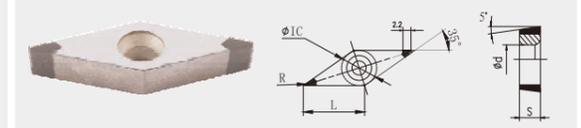
| Model       | Size |        |      |   |
|-------------|------|--------|------|---|
|             | L    | Φ i.c  | s    | r |
| RCMN 060400 | 6    | 6.35   | 4.76 | 0 |
| RCMN 090400 | 9    | 9.525  | 4.76 | 0 |
| RCMN 090600 | 9    | 9.525  | 6.35 | 0 |
| RCMN 120600 | 12   | 12.7   | 6.35 | 0 |
| RCMN 120700 | 12   | 12.7   | 7.94 | 0 |
| RCMN 150700 | 15   | 15.875 | 7.94 | 0 |
| RCMN 190700 | 19   | 19.05  | 7.94 | 0 |



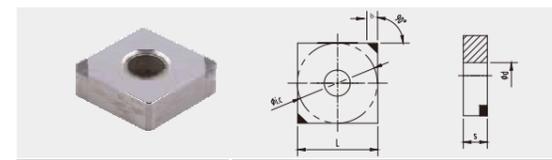
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|------------|------|-------|------|------|
|            | L    | Φ i.c | s    | Φ d  |
| DNGA110404 | 11   | 9.525 | 4.76 | 3.81 |
| DNGA110408 | 11   | 9.525 | 4.76 | 3.81 |
| DNGA110412 | 11   | 9.525 | 4.76 | 3.81 |
| DNGA150404 | 15   | 12.7  | 4.76 | 5.16 |
| DNGA150408 | 15   | 12.7  | 4.76 | 5.16 |
| DNGA150412 | 15   | 12.7  | 4.76 | 5.16 |



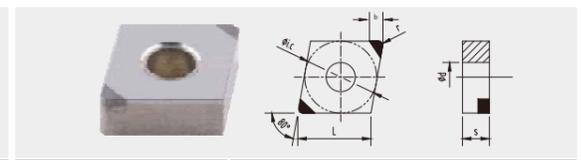
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|------------|------|-------|------|-----|-----|
|            | L    | Φ i.c | s    | Φ d | r   |
| TCGW110304 | 11   | 6.35  | 3.18 | 2.8 | 0.4 |
| TCGW110308 | 11   | 6.35  | 3.18 | 2.8 | 0.8 |
| TCGW110312 | 11   | 6.35  | 3.18 | 2.8 | 1.2 |



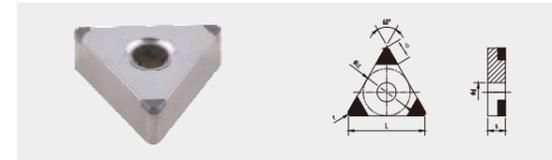
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|------------|------|-------|------|-----|-----|
|            | L    | Φ i.c | s    | Φ d | r   |
| VBGW160404 | 16   | 9.525 | 4.76 | 4.4 | 0.4 |
| VBGW160408 | 16   | 9.525 | 4.76 | 4.4 | 0.8 |
| VBGW160412 | 16   | 9.525 | 4.76 | 4.4 | 1.2 |



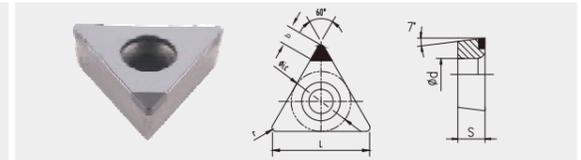
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|----------------|------|-------|------|------|-----|----------------|-----|
|                | L    | Φ i.c | s    | Φ d  | r   | s <sup>b</sup> | N   |
| SNGA 120404-2S | 12   | 12.7  | 4.76 | 5.16 | 0.4 | 2.5            | 3.3 |
| SNGA 120408-2S | 12   | 12.7  | 4.76 | 5.16 | 0.8 | 2.3            | 3.2 |
| SNGA 120412-2S | 12   | 12.7  | 4.76 | 5.16 | 1.2 | 2.2            | 3.1 |



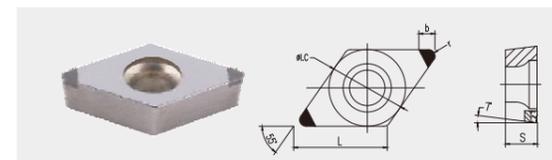
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|                | L    | Φ i.c | s    | Φ d  | r   | s <sup>b</sup> | N    |
| CNGA 120404-2S | 12   | 12.7  | 4.76 | 5.16 | 0.4 | 2.5            | 3T.3 |
| CNGA 120408-2S | 12   | 12.7  | 4.76 | 5.16 | 0.8 | 2.3            | 3.2  |
| CNGA 120412-2S | 12   | 12.7  | 4.76 | 5.16 | 1.2 | 2.2            | 3.1  |



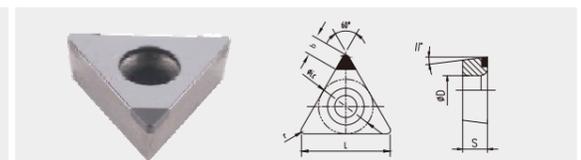
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|----------------|------|-------|------|------|-----|----------------|-----|
|                | L    | Φ i.c | s    | Φ d  | r   | s <sup>b</sup> | N   |
| TNGA 160404-3S | 16   | 9.525 | 4.76 | 3.81 | 0.4 | 2.3            | 3.3 |
| TNGA 160408-3S | 16   | 9.525 | 4.76 | 3.81 | 0.8 | 2              | 3.0 |
| TNGA 160412-3S | 16   | 9.525 | 4.76 | 3.81 | 1.2 | 1.7            | 2.7 |
| TNGA 160416-3S | 16   | 9.525 | 4.16 | 3.81 | 1.6 |                | 2.4 |



| Model       | Size |       |   |     |     |                |
|-------------|------|-------|---|-----|-----|----------------|
|             | L    | Φ i.c | s | Φ d | r   | s <sup>b</sup> |
| TCGW 110304 | 11   | 6.35  |   | 2.8 | 0.4 | 2.1            |
| TCGW 110308 | 11   | 6.35  |   | 2.8 | 0.8 | 1.8            |
| TCGW 16T304 | 16   | 9.525 |   | 4.4 | 0.4 | 2.3            |
| TCGW 16T308 | 16   | 9.525 |   | 4.4 | 0.8 | 2              |
| TCGW 16T312 | 16   | 9.525 |   | 4.4 | 1.2 | 1.7            |

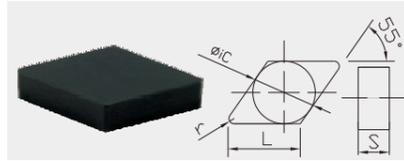


| Model          | Size |       |      |     |     |                |     |
|----------------|------|-------|------|-----|-----|----------------|-----|
|                | L    | Φ i.c | s    | Φ d | r   | s <sup>b</sup> | N   |
| DCGW 11T304-2S | 11   | 9.525 | 3.97 | 4.4 | 0.4 | 2.5            | 3.3 |
| DCGW 11T308-2S | 11   | 9.525 | 3.97 | 4.4 | 0.8 | 2.1            | 2.9 |

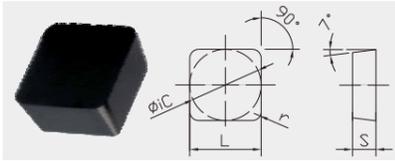


| Model       | Size |       |      |     |     |                |     |
|-------------|------|-------|------|-----|-----|----------------|-----|
|             | L    | Φ i.c | s    | Φ d | r   | s <sup>b</sup> | N   |
| TPGW 110394 | 11   | 6.35  | 3.18 | 3.3 | 0.4 | 2.1            |     |
| TPGW 110308 | 11   | 6.35  | 3.18 | 3.3 | 0.8 | 1.8            |     |
| TPGW 160304 | 16   | 9.525 | 3.18 | 4.4 | 0.4 | 2.3            | 3.3 |
| TPGW 160308 | 16   | 9.525 | 3.18 | 4.4 | 0.8 | 2              | 3.0 |
| TPGW 16T304 | 16   | 9.525 | 3.18 | 4.4 | 0.4 | 2.3            | 3.3 |
| TPGW 16T308 | 16   | 9.525 | 3.18 | 4.4 | 0.8 | 2              | 3.0 |
| TPGW 16T312 | 16   | 9.525 | 3.18 | 4.4 | 1.2 | 1.7            | 2.7 |
| TPGW 160404 | 16   | 9.525 | 3.18 | 4.4 | 0.4 | 2.3            | 3.3 |
| TPGW 160408 | 16   | 9.525 | 3.18 | 4.4 | 0.8 | 2              | 3.0 |

**KING  
SML  
GROUP**

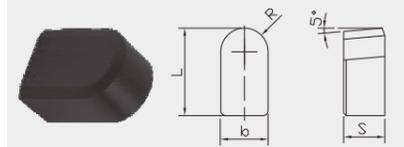


| Model       | Size |       |        |     |   |
|-------------|------|-------|--------|-----|---|
|             | ISO  | L     | Φ i.c. | s   | r |
| DNUN 110404 | 11   | 9.525 | 4.76   | 0.4 |   |
| DNUN 110408 | 11   | 9.525 | 4.76   | 0.8 |   |
| DNUN 110412 | 11   | 9.525 | 4.76   | 1.2 |   |
| DNUN 110604 | 11   | 9.525 | 6.35   | 0.4 |   |
| DNUN 110608 | 11   | 9.525 | 6.35   | 0.8 |   |
| DNUN 110612 | 11   | 9.525 | 6.35   | 1.2 |   |



| Model       | Size |       |        |     |   |
|-------------|------|-------|--------|-----|---|
|             | ISO  | L     | Φ i.c. | s   | r |
| SCGN 090304 | 9    | 9.525 | 3.18   | 0.4 |   |
| SCGN 090308 | 9    | 9.525 | 3.18   | 0.8 |   |
| SCGN 090312 | 9    | 9.525 | 3.18   | 1.2 |   |
| SCGN 090404 | 9    | 9.525 | 4.76   | 0.4 |   |
| SCGN 090408 | 9    | 9.525 | 4.76   | 0.8 |   |
| SCGN 090412 | 9    | 9.525 | 4.76   | 1.2 |   |

**WARM  
INTEGRITY**

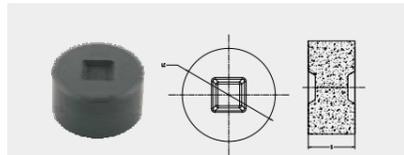


| Model    | Size |      |    |     |   |
|----------|------|------|----|-----|---|
|          | ISO  | r    | b  | L   | s |
| STB 10K1 | 4.6  | 9.2  | 17 | 8.0 |   |
| BL12K1-B | 5.55 | 11.1 | 17 | 8.0 |   |
| BL14K1-B | 6.5  | 13.0 | 17 | 8.0 |   |

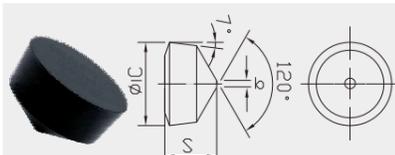


| Model       | Size |      |        |     |   |
|-------------|------|------|--------|-----|---|
|             | ISO  | L    | Φ i.c. | s   | r |
| CMNO 120704 | 12   | 12.7 | 7.94   | 0.4 |   |
| CMNO 120708 | 12   | 12.7 | 7.94   | 0.8 |   |
| CNMO 120712 | 12   | 12.7 | 7.94   | 1.2 |   |

**SELFLESS  
ELEGANCE**



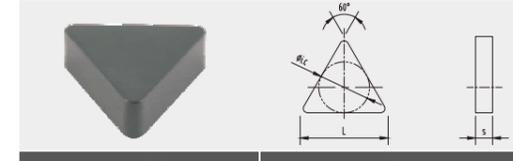
| Model       | Size |        |        |   |
|-------------|------|--------|--------|---|
|             | ISO  | L      | Φ i.c. | s |
| RNMS 090600 | 9    | 9.525  | 6.35   |   |
| RNMS 120700 | 12   | 12.7   | 7.94   |   |
| RNMS 150700 | 15   | 15.875 | 7.94   |   |
| RNMS 201000 | 20   | 20     | 10     |   |



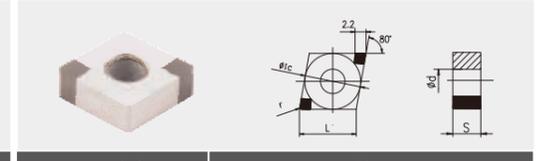
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|--------------|------|-------|--------|-----|---|
|              | ISO  | L     | Φ i.c. | s   | r |
| RCMX 060400Y | 6    | 6.35  | 4.76   | 0.6 |   |
| RCMX 060500Y | 6    | 6.35  | 5.0    | 0.6 |   |
| RCMX 060700Y | 6    | 6.35  | 7.94   | 0.6 |   |
| RCMX 090700Y | 9    | 9.525 | 7.94   | 1   |   |
| RCMX 120700Y | 12   | 12.7  | 7.94   | 1.2 |   |

**MAKES  
YOU**

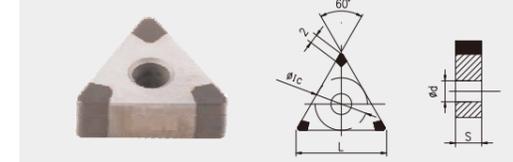
**SPARKS  
FLY**



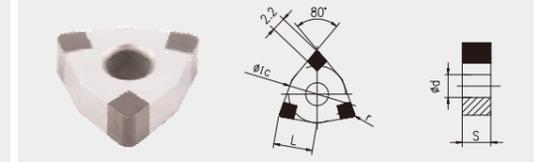
| Model       | Size |      |        |     |   |
|-------------|------|------|--------|-----|---|
|             | ISO  | L    | Φ i.c. | s   | r |
| TNGN 110304 | 11   | 6.35 | 3.18   | 0.4 |   |
| TNGN 110308 | 11   | 6.35 | 3.18   | 0.8 |   |
| TNGN 110312 | 11   | 6.35 | 3.18   | 1.2 |   |
| TNGN 160404 | 16   | 9.25 | 4.76   | 0.4 |   |
| TNGN 160408 | 16   | 9.25 | 4.76   | 0.8 |   |
| TNGN 160412 | 16   | 9.25 | 4.76   | 1.2 |   |



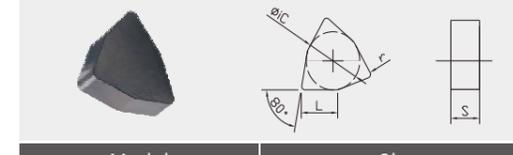
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|-------------|------|--------|--------|------|-----|---|
|             | ISO  | L      | Φ i.c. | s    | Φ d | r |
| CNGA 120404 | 12   | 12.7   | 4.76   | 5.16 | 0.4 |   |
| CNGA 120408 | 12   | 12.7   | 4.76   | 5.16 | 0.8 |   |
| CNGA 120412 | 12   | 12.7   | 4.76   | 5.16 | 1.2 |   |
| CNGA 160404 | 16   | 15.875 | 4.76   | 5.16 | 0.4 |   |
| CNGA 160408 | 16   | 15.875 | 4.76   | 5.16 | 0.8 |   |
| CNGA 160412 | 16   | 15.875 | 4.76   | 5.16 | 1.2 |   |



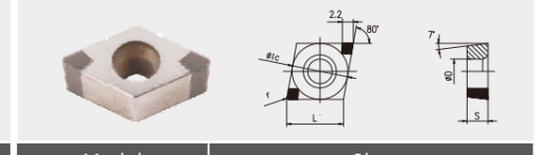
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|------------|------|-------|--------|------|-----|---|
|            | ISO  | L     | Φ i.c. | s    | Φ d | r |
| TNGA160404 | 16   | 9.525 | 4.76   | 3.81 | 0.4 |   |
| TNGA160408 | 16   | 9.525 | 4.76   | 3.81 | 0.8 |   |
| TNGA160412 | 16   | 9.525 | 4.76   | 3.81 | 1.2 |   |



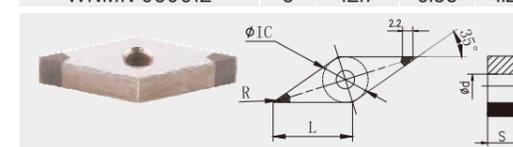
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|-------------|------|------|--------|------|-----|---|
|             | ISO  | L    | Φ i.c. | s    | Φ d | r |
| WNGA 080404 | 8    | 12.7 | 4.76   | 5.16 | 0.4 |   |
| WNGA 080408 | 8    | 12.7 | 4.76   | 5.16 | 0.8 |   |
| WNGA 080412 | 8    | 12.7 | 4.76   | 5.16 | 1.2 |   |



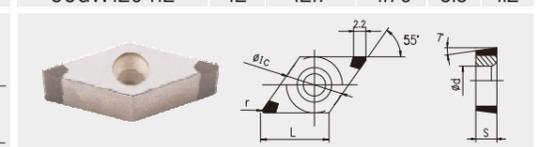
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|-------------|------|------|--------|-----|---|
|             | ISO  | L    | Φ i.c. | s   | r |
| WNMN 080404 | 8    | 12.7 | 4.76   | 0.4 |   |
| WNMN 080408 | 8    | 12.7 | 4.76   | 0.8 |   |
| WNMN 080412 | 8    | 12.7 | 4.76   | 1.2 |   |
| WNMN 080604 | 8    | 12.7 | 6.35   | 0.4 |   |
| WNMN 080608 | 8    | 12.7 | 6.35   | 0.8 |   |
| WNMN 080612 | 8    | 12.7 | 6.35   | 1.2 |   |



| Model      | Size |       |        |     |     |   |
|------------|------|-------|--------|-----|-----|---|
|            | ISO  | L     | Φ i.c. | s   | Φ d | r |
| CCGW9T304  | 9    | 9.525 | 3.97   | 4.4 | 0.4 |   |
| CCGW9T308  | 9    | 9.525 | 3.97   | 4.4 | 0.8 |   |
| CCGW9T312  | 9    | 9.525 | 3.97   | 4.4 | 1.2 |   |
| CCGW120404 | 12   | 12.7  | 4.76   | 5.5 | 0.4 |   |
| CCGW120408 | 12   | 12.7  | 4.76   | 5.5 | 0.8 |   |
| CCGW120412 | 12   | 12.7  | 4.76   | 5.5 | 1.2 |   |



| Model      | Size |       |        |      |     |   |
|------------|------|-------|--------|------|-----|---|
|            | ISO  | L     | Φ i.c. | s    | Φ d | r |
| VNGA160404 | 16   | 9.525 | 4.76   | 3.81 | 0.4 |   |
| VNGA160408 | 16   | 9.525 | 4.76   | 3.81 | 0.8 |   |
| VNGA160412 | 16   | 9.525 | 4.76   | 3.81 | 1.2 |   |



| Model      | Size |       |        |     |     |   |
|------------|------|-------|--------|-----|-----|---|
|            | ISO  | L     | Φ i.c. | s   | Φ d | r |
| DCGW11T304 | 11   | 9.525 | 3.97   | 4.4 | 0.4 |   |
| DCGW11T308 | 11   | 9.525 | 3.97   | 4.4 | 0.8 |   |
| DCGW11T312 | 11   | 9.525 | 3.97   | 4.4 | 1.2 |   |

## CVD INSERTS

KING  
SML  
GROUP

01

## ADVANTAGES OF CVD INSERTS

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INTEGRITY

JOYJET

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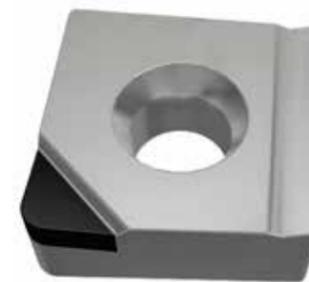
Chemical Vapor Deposition (CVD) diamond is an artificially synthesized diamond material produced using the CVD technique.

**Extremely high hardness**

CVD diamond possesses exceptional hardness, approaching that of natural diamond. It has a value of 10 on the Mohs hardness scale, making it one of the hardest known materials. This hardness allows CVD diamond to maintain excellent cutting performance in high-speed and high-load cutting applications.

**Excellent wear resistance**

CVD diamond exhibits outstanding wear resistance, maintaining sharpness and longevity of cutting edges under high-temperature and high-speed cutting conditions. It effectively resists tool wear and thermal shocks, extending the tool's lifespan.

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WARM INTELLIGENT

**High thermal stability**

CVD diamond demonstrates excellent thermal stability, maintaining stable cutting performance in high-temperature environments. It can withstand thermal shocks and thermal stresses generated at high temperatures without softening or melting, making it suitable for high-temperature cutting processes.

**Superior chemical stability**

CVD diamond exhibits good chemical stability, providing high corrosion resistance to various chemical substances. It can work in harsh cutting environments, such as cutting corrosive materials or cutting under conditions involving chemical reactions.

02

APPLICATION AREAS FOR CVD INSERT

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CVD tooling is well-suited for a wide range of industries, including automotive manufacturing, aerospace, general machinery, electronics, precision instruments, tool manufacturing, and shipbuilding. Its outstanding performance makes it ideal for processing high-temperature and high-strength materials, while also

excelling in efficient cutting and machining of stainless steel, alloy steel, and cast iron, among other materials. As a high-performance cutting tool, CVD tooling plays a crucial role in various material processing applications, enhancing machining precision and production efficiency.

WARM  
INTEGRITY

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03

THE DIFFERENCES BETWEEN CVD TOOL AND PCD TOOL

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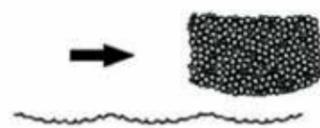
The condition under the metallographic microscope 100X:



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Different processing effects:



Surface of Components have small Grainy traces when using PCD Tools



Perfect of surface rough-ness when using Single Crystal Diamond Tools

PCD INSERTS

01

ADVANTAGES OF PCD INSERTS

PCD (Polycrystalline Diamond) cutting tools find widespread applications in the industry. Their exceptional hardness, wear resistance, and thermal stability make them highly effective in high-speed cutting, precision machining, and wear-resistant processing. PCD tools are well-suited for processing hard materials such as aluminum alloys, composites, graphite, ceramics, paper, plastics, and carbon fiber. They are extensively used in various industries, including automotive, aerospace, marine, electronics, plastics, and woodworking, for cutting, turning, drilling, milling, grinding, and more, improving productivity, extending tool life, and reducing production costs. PCD cutting tools have become indispensable assets in modern manufacturing.

It has high hardness and excellent wear resistance, making it suitable for high-speed cutting and high-temperature machining. Additionally, it exhibits good chemical resistance, which can improve machining precision, especially for hard materials, and ultimately reduce production costs.

## 02

### JOYJET'S PCD INSERTS GRADES AND THEIR INDUSTRY APPLICATIONS

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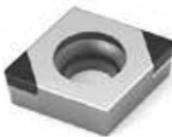
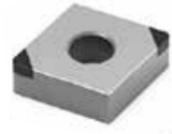
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| Grade | grain size | wear resistance    |
|-------|------------|--------------------|
| P01   | 2          | LOW                |
| P02   | 5          | MEDIUM             |
| P03   | 10<br>2    | HIGH               |
| P04   | 5+2        | RELATIVELY<br>HIGH |

| Resilience         | Features & Applications  |
|--------------------|--|
| RELATIVELY<br>HIGH | It possesses both high toughness and high wear resistance, excellent conductivity, and processing performance, enabling the production of sharp and high-precision cutting edges. Primarily used in high-speed, high-precision, and high-polishing machining fields for various non-ferrous metals, steel, iron alloys, liquid crystal displays, high-hardness brittle composite materials, electronic materials, plastics, and other materials.   |
| MEDIAN             | It exhibits excellent toughness and cutting edge sharpness, as well as outstanding conductivity and mechanical processing performance. It is applied in high-speed machining of electronic materials, precision processing of non-ferrous metals, low, medium, and high silicon content aluminum alloys, electronic circuit board materials, and other high-speed machining applications. It is recommended for the preparation of complex cutting tools.  |
| LOW                | It exhibits a strong diamond bonding, exceptional wear resistance, and toughness, with excellent performance in electrical discharge machining and mechanical processing. It is widely used in the processing of various materials, particularly suitable for non-ferrous metals, including aluminum, aluminum alloys, copper, copper alloys, fiber-reinforced composites, woodworking (solid wood, plywood, medium-density fiberboard, etc.), electronic materials, molds, as well as being the preferred tool for new and unexplored machining fields, including wood materials. |
| MEDIAN             | It possesses extremely high wear resistance, toughness, heat resistance, and thermal stability, along with excellent electrical discharge machining and mechanical processing performance. It is widely used in the processing of woodworking (solid wood, plywood, medium-density fiberboard, etc.), stone, non-ferrous metals, hardened rubber, graphite, cemented tungsten, ceramics, metal matrix composites, and high-strength carbon fiber composites.   |

03

PCD SPECIFICATION CATALOG

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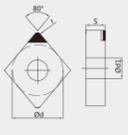
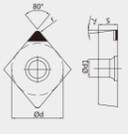
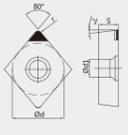
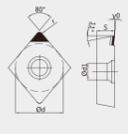
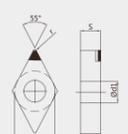
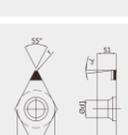
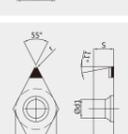
WARM  
INTEGRITY

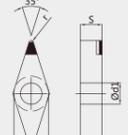
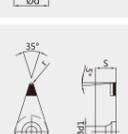
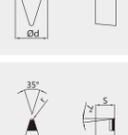
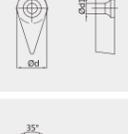
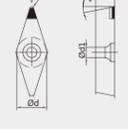
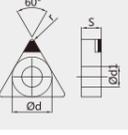
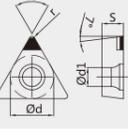
JOYJET

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ELEGANCE

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| Insert shape  | Type        | $\gamma_0$<br>Rake angle | $\phi d$<br>Inscribed circle | s<br>Thickness | $\phi d1$<br>Inner hole diameter | r<br>Radius | Inserts profile   |   |
|---|-------------|--------------------------|------------------------------|----------------|----------------------------------|-------------|---|---|
|   | CNGA 090302 |                          | 9.525                        | 3.18           | 3.18                             | 0.2         |    |   |
|   | CNGA 090304 |                          | 9.525                        | 3.18           | 3.18                             | 0.4         |   |   |
|   | CNGA 090306 |                          | 9.525                        | 3.18           | 3.18                             | 0.6         |   |   |
|   | CNGA 090308 |                          | 9.525                        | 3.18           | 3.18                             | 0.8         |   |   |
|   | CCGW 060202 |                          |                              | 6.35           | 2.38                             | 2.8         | 0.2   |    |
|   |             | CCGW 060204              |                              | 6.35           | 2.38                             | 2.8         | 0.4   |   |
|   |             | CCGW 060206              |                              | 6.35           | 2.38                             | 2.8         | 0.6   |   |
|   |             | CCGW 060208              |                              | 6.35           | 2.38                             | 2.8         | 0.8   |   |
|   | CCGW 09T308 |                          |                              | 9.525          | 3.97                             | 4.4         | 0.2   |  |
|   |             | CCGW 09T306              |                              | 9.525          | 3.97                             | 4.4         | 0.4   |   |
|   |             | CCGW 09T304              |                              | 9.525          | 3.97                             | 4.4         | 0.6   |   |
|   |             | CCGW 09T308              |                              | 9.525          | 3.97                             | 4.4         | 0.8   |   |
| CPGT 090302   |             | 5°-10°                   | 9.525                        | 3.18           | 4.4                              | 0.2         |  |   |
|   | CPGT 090304 | 5°-10°                   | 9.525                        | 3.18           | 4.4                              | 0.4         |   |   |
|   | CPGT 090306 | 5°-10°                   | 9.525                        | 3.18           | 4.4                              | 0.6         |   |   |
|   | CPGT 090308 | 5°-10°                   | 9.525                        | 3.18           | 4.4                              | 0.8         |   |   |
|  | DNMA 150402 |                          | 12.7                         | 4.76           | 5.16                             | 0.2         |  |   |
|   | DNMA 150404 |                          | 12.7                         | 4.76           | 5.16                             | 0.4         |   |   |
|   | DNMA 150408 |                          | 12.7                         | 4.76           | 5.16                             | 0.8         |   |   |
|   | DNMA 150410 |                          | 12.7                         | 4.76           | 5.16                             | 1.0         |   |   |
|   | DNMA 150412 |                          | 12.7                         | 4.76           | 5.16                             | 1.2         |   |   |
|   | DCGW 090202 |                          |                              | 7.94           | 2.38                             | 3.4         | 0.2   |  |
|   |             | DCGW 090204              |                              | 7.94           | 2.38                             | 3.4         | 0.4   |   |
|   |             | DCGW 090206              |                              | 7.94           | 2.38                             | 3.4         | 0.6   |   |
|   |             | DCGW 090208              |                              | 7.94           | 2.38                             | 3.4         | 0.8   |   |
|   | DPGW 070202 |                          |                              | 6.35           | 2.38                             | 2.8         | 0.2   |  |
|   |             | DPGW 070204              |                              | 6.35           | 2.38                             | 2.8         | 0.4   |   |
|   |             | DPGW 070206              |                              | 6.35           | 2.38                             | 2.8         | 0.6   |   |
| DPGW 070208   |             |                          | 6.35                         | 2.38           | 2.8                              | 0.8         |   |   |

| Insert shape  | Type        | $\gamma_0$<br>Rake angle | $\phi d$<br>Inscribed circle | s<br>Thickness | $\phi d1$<br>Inner hole diameter | r<br>Radius | Insert profile  |   |
|---|-------------|--------------------------|------------------------------|----------------|----------------------------------|-------------|---|---|
|   | VNMA 160402 |                          | 9.525                        | 4.76           | 3.8                              | 0.2         |    |   |
|   | VNMA 160404 |                          | 9.525                        | 4.76           | 3.8                              | 0.4         |   |   |
|   | VNMA 160408 |                          | 9.525                        | 4.76           | 3.8                              | 0.8         |   |   |
|   | VNMA 160410 |                          | 9.525                        | 4.76           | 3.8                              | 1.0         |   |   |
|   | VNMA 160412 |                          | 9.525                        | 4.76           | 3.8                              | 1.2         |   |   |
|   | VBMW 160404 |                          |                              | 9.525          | 4.76                             | 4.4         | 0.4   |    |
|   |             | VBMW 160406              |                              | 9.525          | 4.76                             | 4.4         | 0.6   |   |
|   |             | VBMW 160408              |                              | 9.525          | 4.76                             | 4.4         | 0.8   |   |
|   |             | VBMW 160410              |                              | 9.525          | 4.76                             | 4.4         | 1.0   |   |
|   | VBMW 160412 |                          | 9.525                        | 4.76           | 4.4                              | 1.2         |   |   |
|   | VCGW 160404 |                          |                              | 9.525          | 4.76                             | 4.4         | 0.4   |  |
|   |             | VCGW 160408              |                              | 9.525          | 4.76                             | 4.4         | 0.8   |   |
| VCGW 160410   |             |                          | 9.525                        | 4.76           | 4.4                              | 1.0         |   |   |
| VCGW 160412   |             |                          | 9.525                        | 4.76           | 4.4                              | 1.2         |   |   |
| VPGW 080202   |             |                          | 4.76                         | 2.38           | 2.3                              | 0.2         |  |   |
|   | VPGW 080204 |                          | 4.76                         | 2.38           | 2.3                              | 0.4         |   |   |
|   | VPGW 080208 |                          | 4.76                         | 2.38           | 2.3                              | 0.8         |   |   |
|  | TNGA 160404 |                          | 9.525                        | 4.76           | 3.8                              | 0.4         |  |   |
|   | TNGA 160408 |                          | 9.525                        | 4.76           | 3.8                              | 0.8         |   |   |
|   | TNGA 160412 |                          | 9.525                        | 4.76           | 3.8                              | 1.2         |   |   |
|   | TNGA 160416 |                          | 9.525                        | 4.76           | 3.8                              | 1.6         |   |   |
|   | TCGW 060202 |                          |                              | 3.97           | 2.38                             | 2.2         | 0.2   |  |
|   |             | TCGW 060204              |                              | 3.97           | 2.38                             | 2.2         | 0.4   |   |
|   | TPGW 080202 |                          |                              | 4.76           | 2.38                             | 2.4         | 0.2   |  |
|   |             | TPGW080204               |                              | 4.76           | 2.38                             | 2.4         | 0.4   |   |
|   |             | TPGW 080206              |                              | 4.76           | 2.38                             | 2.4         | 0.6   |   |
|   |             | TPGW 080208              |                              | 4.76           | 2.38                             | 2.4         | 0.8   |   |

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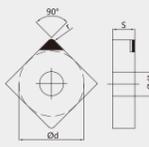
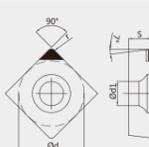
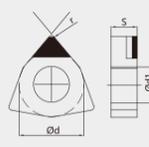
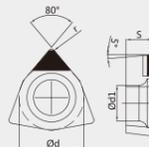
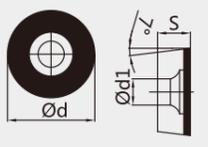
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| Insert shape  | Type  | $\gamma_0$<br>Rake angle | $\Phi d$<br>Inscribed circle | s<br>Thickness | $\Phi d1$<br>Inner hole diameter | r<br>Radius   | Insert profile  |   |
|---|---|--------------------------|------------------------------|----------------|----------------------------------|---|---|---|
|    | SNGA 090304   |                          | 9.525                        | 3.18           | 3.8                              | 0.4   |    |   |
|   | SNGA 090308   |                          | 9.525                        | 3.18           | 3.8                              | 0.8   |   |   |
|   | SNGA 090312   |                          | 9.525                        | 3.18           | 3.8                              | 1.2   |   |   |
|   |  | SCGW 060202              |                              | 6.35           | 2.38                             | 2.2   | 0.2   |  |
|   |   | SCGW 060204              |                              | 6.35           | 2.38                             | 2.2   | 0.4   |   |
|   |   | SCGW 060208              |                              | 6.35           | 2.38                             | 2.2   | 0.8   |   |
|   |   | SPGW 09T304              |                              | 9.525          | 3.97                             | 4.4   | 0.4   |   |
|   |   | SPGW 09T306              |                              | 9.525          | 3.97                             | 4.4   | 0.6   |   |
|   |   | SPGW 09T308              |                              | 9.525          | 3.97                             | 4.4   | 0.8   |   |
|  | WNGA 080404   |                          | 12.7                         | 4.76           | 5.16                             | 0.4   |  |   |
|   | WNGA 080408   |                          | 12.7                         | 4.76           | 5.16                             | 0.8   |   |   |
|   | WNGA 080412   |                          | 12.7                         | 4.76           | 5.16                             | 1.2   |   |   |
|  | WBGW080202  |                          | 4.76                         | 2.38           | 2.4                              | 0.2   |  |   |
|   | WBGW 080204   |                          | 4.76                         | 2.38           | 2.4                              | 0.4   |   |   |
|   | WCGT06T302  | 5°-10°                   | 9.525                        | 3.97           | 4.4                              | 0.2   |   |   |
|   | WCGT06T304  | 5°-10°                   | 9.525                        | 3.97           | 4.4                              | 0.4   |   |   |
|   | WCGT06T308  | 5°-10°                   | 9.525                        | 3.97           | 4.4                              | 0.8   |   |   |
| Insert shape  | Type  | $\gamma_0$<br>Rake angle | $\Phi d$<br>Inscribed circle | s<br>Thickness | $\Phi d1$<br>Inner hole diameter | Insert profile  |   |   |
|  | RCGW 060200   |                          | 6                            | 2.38           | 2.8                              |  |   |   |
|   | RCGW 080300   |                          | 8                            | 3.18           | 3.4                              |   |   |   |
|   | RCGW 100300   |                          | 10                           | 3.18           | 3.6                              |   |   |   |
|   | RCGW 120400   |                          | 12                           | 4.76           | 4.2                              |   |   |   |
|   | RCGW 160600   |                          | 16                           | 6.35           | 5.2                              |   |   |   |

## CERAMIC INSERTS

01

### ADVANTAGES OF CERAMIC INSERTS

The tool exhibits high hardness and wear resistance, making it suitable for cutting high-hardness materials. It is lightweight and efficient, without generating metal ions that may affect product quality.

It performs well in high-temperature environments and is non-conductive, reducing static accumulation and fire risk. With a long lifespan, it minimizes replacement frequency and costs. The tool's strong corrosion resistance makes it suitable for humid or corrosive environments. Additionally, it is easy to clean and disinfect, meeting hygiene requirements.

02

JOYJET'S CERAMIC  
INSERTS  
GRADES AND  
THEIR INDUSTRY  
APPLICATIONS

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| SML Grade | Ceramic composite systems (materials) | Ceramic Grade | Density |
|-----------|---------------------------------------|---------------|---------|
| TN5       | Al2O3+TiCN                            | AN5           | 4.40    |
| TC4       | Al2O3+(W,Ti)C                         | AC4           | 6.20    |
| TT3       | Al2O3+(TiC+Metal)                     | AT53          | 4.80    |
| TN2       | Si3N4+TiCN                            | SN2           | 3.40    |

| Hardness | Fracture Toughness | Wear Coefficient | Application characteristics   |
|----------|--------------------|------------------|---|
| 20.00    | >5.5               | >16              | It is highly suited for cutting various steels and iron materials, including high manganese steel and high-strength steel. It is also suitable for cutting various high-hardness steel and iron materials. It can be used for precision, rough cutting, and general interrupted cutting (milling) operations.   |
| 20.50    | >5.6               | >16              | It is highly suitable for cutting various high-hardness steel and iron materials, especially for materials with hardness HRC>55-68, such as various quenched and hardened steels and high-chromium wear-resistant cast iron. It can be used for precision, rough cutting, and general interrupted cutting (milling) operations. It is best for high-speed rough machining of various steel and iron materials, particularly for rough machining of high-hardness steel and iron materials. It is also suitable for turning tools and milling cutters. |
| 19.00    | >6.0               | >16              | It is highly suitable for precision cutting and rough machining of various high-hardness alloy steels and alloy cast irons, with outstanding performance in cutting nodular cast iron and boron-containing cast iron. Additionally, it excels in interrupted cutting (milling) operations, demonstrating remarkable effectiveness.  |
| 17.00    | >6.5               | >16              | It is highly optimized for high-speed machining of various conventional cast irons, particularly effective in cutting nickel-based heat-resistant alloys. It demonstrates exceptional performance in general precision cutting, rough machining, and interrupted cutting (milling) operations.  |

## 03

### CERAMIC INSERTS SPECIFICATION CATALOG

KING  
SML  
GROUP

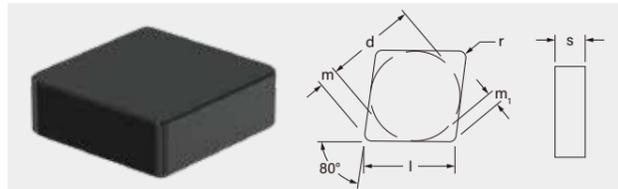
WARM  
INTEGRITY

JOYJET

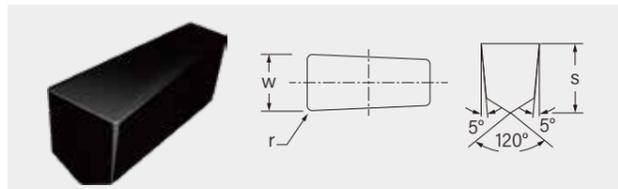
SELFLESS  
ELEGANCE

MAKES  
YOU

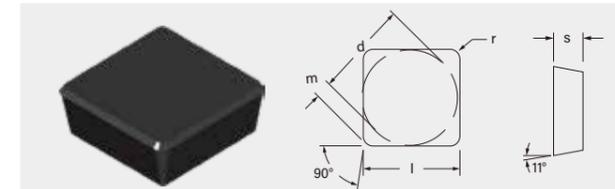
SPARKS  
FLY



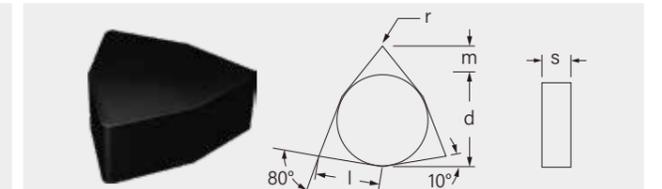
| Model        | Size  |       |      |      |      |      |   |
|--------------|-------|-------|------|------|------|------|---|
| ISO          | d     | l     | s    | r    | m    | m1   | Θ |
| CNGN 090404  | 9.53  | 9.57  | 4.76 | 0.40 | 2.42 | 1.33 |   |
| CNGN 090408  | 9.53  | 9.57  | 4.76 | 0.80 | 2.20 | 1.21 |   |
| CNGN 120404  | 12.70 | 12.90 | 4.76 | 0.40 | 3.31 | 1.82 |   |
| CNGN 120408  | 12.70 | 12.90 | 4.76 | 0.80 | 3.08 | 1.70 |   |
| CNGN 120608  | 12.70 | 12.90 | 6.35 | 0.80 | 3.08 | 1.70 |   |
| CNGN 120612  | 12.70 | 12.90 | 6.35 | 1.20 | 2.86 | 1.57 |   |
| CNGN 120704  | 12.70 | 12.90 | 7.94 | 0.40 | 3.31 | 1.82 |   |
| CNGN 120708  | 12.70 | 12.90 | 7.94 | 0.80 | 3.08 | 1.70 |   |
| CNGN 120712  | 12.70 | 12.90 | 7.94 | 1.20 | 2.86 | 1.57 |   |
| CNGN 120716  | 12.70 | 12.90 | 7.94 | 1.60 | 2.64 | 1.45 |   |
| CNGN 160612  | 15.88 | 16.70 | 6.35 | 1.20 | 3.74 | 2.06 |   |
| CNGN 160616  | 15.88 | 16.70 | 6.35 | 1.60 | 3.52 | 1.94 |   |
| CNGN 160708  | 15.88 | 16.70 | 7.94 | 0.80 | 3.97 | 2.18 |   |
| CNGN 160712  | 15.88 | 16.70 | 7.94 | 1.20 | 3.74 | 2.06 |   |
| CNGN 160716  | 15.88 | 16.70 | 7.94 | 1.60 | 3.52 | 1.94 |   |
| CNGN 160720  | 15.88 | 16.70 | 7.94 | 2.00 | 3.30 | 1.81 |   |
| CNGN 190612  | 19.05 | 19.40 | 6.35 | 1.20 | 4.63 | 2.54 |   |
| CNGN 190616  | 19.05 | 19.40 | 6.35 | 1.60 | 4.40 | 2.42 |   |
| CNGGN 190632 | 19.05 | 19.40 | 6.35 | 3.20 | 3.51 | 1.93 |   |
| CNGN 190716  | 19.05 | 19.40 | 7.94 | 1.60 | 4.40 | 2.42 |   |
| CNGN 190720  | 19.05 | 19.40 | 7.94 | 2.00 | 4.18 | 2.30 |   |
| CNGN 190724  | 19.05 | 19.40 | 7.94 | 2.40 | 3.96 | 2.18 |   |
| CNGN 250724  | 25.40 | 25.78 | 7.94 | 2.40 | 5.72 | 3.15 |   |
| CNGN 250924  | 25.40 | 25.78 | 9.35 | 2.40 | 5.72 | 2.15 |   |



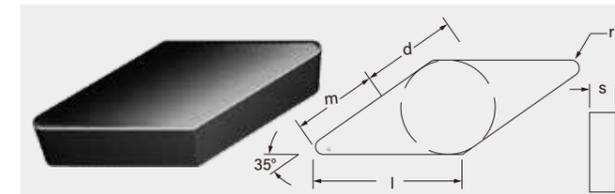
| Model    | Size  |       |      |      |   |    |   |
|----------|-------|-------|------|------|---|----|---|
| ISO      | d     | l     | s    | r    | m | m1 | Θ |
| SGF 4012 | 12.00 | 4.00  | 5.00 | 0.50 |   |    |   |
| SGF 5012 | 12.00 | 5.00  | 5.00 | 0.80 |   |    |   |
| SGF 6015 | 15.00 | 6.00  | 7.50 | 0.80 |   |    |   |
| SGF 7015 | 15.00 | 7.00  | 7.50 | 0.80 |   |    |   |
| SGF 8015 | 15.00 | 8.00  | 7.50 | 0.80 |   |    |   |
| SGF 1015 | 15.00 | 10.00 | 7.50 | 0.80 |   |    |   |



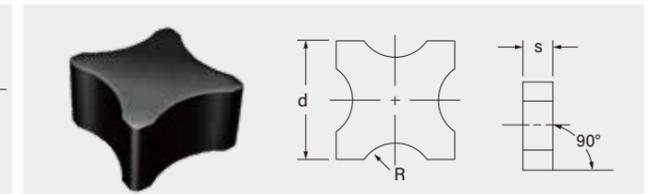
| Model       | Size  |       |      |      |      |    |   |
|-------------|-------|-------|------|------|------|----|---|
| ISO         | d     | l     | s    | r    | m    | m1 | Θ |
| SPGN 09T308 | 9.53  | 9.53  | 3.97 | 0.80 | 1.64 |    |   |
| SPGN 090412 | 9.53  | 9.53  | 4.76 | 1.20 | 1.48 |    |   |
| SPGN 120408 | 12.70 | 12.70 | 4.76 | 0.80 | 2.30 |    |   |
| SPGN 120612 | 12.70 | 12.70 | 6.35 | 1.20 | 2.14 |    |   |
| SPGN 120704 | 12.70 | 12.70 | 7.94 | 0.40 | 2.47 |    |   |
| SPGN 150708 | 15.88 | 15.88 | 7.94 | 0.80 | 2.96 |    |   |
| SPGN 150712 | 15.88 | 15.88 | 7.94 | 1.20 | 2.80 |    |   |
| SPGN 150716 | 15.88 | 15.88 | 7.94 | 1.60 | 2.63 |    |   |



| Model       | Size |      |      |      |      |    |   |
|-------------|------|------|------|------|------|----|---|
| ISO         | d    | l    | s    | r    | m    | m1 | Θ |
| WNGN 060404 | 9.53 | 6.52 | 4.76 | 0.40 | 2.43 |    |   |
| WNGN 060408 | 9.53 | 6.52 | 4.76 | 0.80 | 2.21 |    |   |
| WNGN 060412 | 9.53 | 6.52 | 4.76 | 1.20 | 2.98 |    |   |
| WNGN 080704 | 12.7 | 8.69 | 7.94 | 0.40 | 3.30 |    |   |
| WNGN 080708 | 12.7 | 8.69 | 7.94 | 0.80 | 3.09 |    |   |
| WNGN 080712 | 12.7 | 8.69 | 7.94 | 1.20 | 2.87 |    |   |

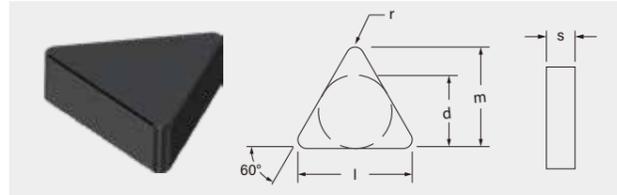


| Model       | Size |       |      |      |       |    |   |
|-------------|------|-------|------|------|-------|----|---|
| ISO         | d    | l     | s    | r    | m     | m1 | Θ |
| VNGN 160412 | 9.53 | 16.61 | 4.76 | 0.80 | 8.31  |    |   |
| VNGN 160604 | 9.53 | 16.61 | 4.76 | 1.20 | 10.14 |    |   |
| VNGN 160608 | 9.53 | 16.61 | 6.35 | 0.40 | 9.22  |    |   |
| VNGN 160612 | 9.53 | 16.61 | 6.35 | 0.80 | 8.31  |    |   |
| VNGN 160704 | 9.53 | 16.61 | 7.94 | 0.40 | 10.14 |    |   |
| VNGN 160708 | 9.53 | 16.61 | 7.94 | 0.80 | 9.22  |    |   |
| VNGN 160712 | 9.53 | 16.61 | 7.94 | 1.20 | 8.31  |    |   |
| VNGN 160716 | 9.53 | 16.61 | 7.94 | 1.60 | 7.94  |    |   |



| Model        | Size  |   |       |       |   |    |   |
|--------------|-------|---|-------|-------|---|----|---|
| ISO          | d     | l | s     | r     | m | m1 | Θ |
| SNMX 1207R9  | 12.70 |   | 7.94  | 9.00  |   |    |   |
| SNMX 1207R12 | 12.70 |   | 7.94  | 12.0  |   |    |   |
| SNMX 1207R15 | 12.70 |   | 7.94  | 15.0  |   |    |   |
| SNMX 1207R18 | 12.70 |   | 7.94  | 18.0  |   |    |   |
| SNMX 1207R20 | 12.70 |   | 7.94  | 20.0  |   |    |   |
| SNMX 1207R25 | 12.70 |   | 7.94  | 25.0  |   |    |   |
| SNMX 1207R30 | 12.70 |   | 7.94  | 30.0  |   |    |   |
| SNMX 1207R40 | 12.70 |   | 7.94  | 40.0  |   |    |   |
| SNMX 1207R50 | 12.70 |   | 7.94  | 50.0  |   |    |   |
| SNMX 1507R3  | 15.88 |   | 7.94  | 3.00  |   |    |   |
| SNMX 1507R4  | 15.88 |   | 7.94  | 4.00  |   |    |   |
| SNMX 1507R5  | 15.88 |   | 7.94  | 5.00  |   |    |   |
| SNMX 1507R6  | 15.88 |   | 7.94  | 6.00  |   |    |   |
| SNMX 1507R7  | 15.88 |   | 7.94  | 7.00  |   |    |   |
| SNMX 1910R7  | 19.05 |   | 10.00 | 8.00  |   |    |   |
| SNMX 1910R8  | 19.05 |   | 10.00 | 8.00  |   |    |   |
| SNMX 1910R9  | 19.05 |   | 10.00 | 9.00  |   |    |   |
| SNMX 1910R10 | 19.05 |   | 10.00 | 10.00 |   |    |   |
| SNMX 1910R12 | 19.05 |   | 10.00 | 12.00 |   |    |   |
| SNMX 1910R14 | 19.05 |   | 10.00 | 14.00 |   |    |   |
| SNMX 1910R16 | 19.05 |   | 10.00 | 16.00 |   |    |   |
| SNMX 1910R18 | 19.05 |   | 10.00 | 18.00 |   |    |   |

**KING  
SML  
GROUP**



| Model       | Size  |       |      |      |   |    |   |
|-------------|-------|-------|------|------|---|----|---|
| ISO         | d     | l     | s    | r    | m | m1 | ⊖ |
| TNGN 110304 | 6.35  | 11.00 | 3.18 | 0.40 |   |    |   |
| TNGN 110308 | 6.35  | 11.00 | 3.18 | 0.80 |   |    |   |
| TNGN 160404 | 9.525 | 4.76  | 4.76 | 0.40 |   |    |   |
| TNGN 160408 | 9.525 | 4.76  | 4.76 | 0.80 |   |    |   |
| TNGN 160412 | 9.525 | 4.76  | 4.76 | 1.20 |   |    |   |
| TNGN 160612 | 9.525 | 6.35  | 6.35 | 1.20 |   |    |   |
| TNGN 160616 | 9.525 | 7.94  | 7.94 | 1.60 |   |    |   |
| TNGN 220716 | 12.70 | 7.94  | 7.94 | 1.60 |   |    |   |

WARM  
INTEGRITY

**JOYJET**

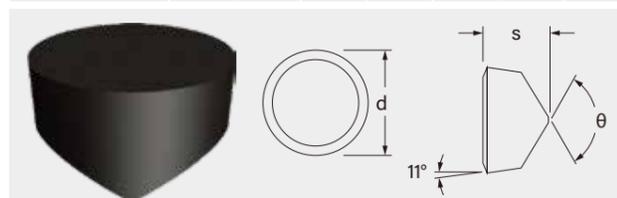
SELFLESS  
ELEGANCE



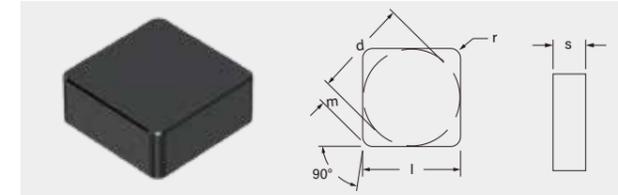
| Model       | Size  |   |      |   |   |    |   |
|-------------|-------|---|------|---|---|----|---|
| ISO         | d     | l | s    | r | m | m1 | ⊖ |
| RCGX 060600 | 6.35  |   | 6.35 |   |   |    |   |
| RCGX 090700 | 9.53  |   | 7.94 |   |   |    |   |
| RCGX 1007M0 | 10.00 |   | 7.94 |   |   |    |   |
| RCGX 1207M0 | 12.00 |   | 7.94 |   |   |    |   |
| RCGX 120700 | 12.70 |   | 7.94 |   |   |    |   |
| RCGX 150900 | 15.88 |   | 9.53 |   |   |    |   |
| RCGX 1609M0 | 16.00 |   | 9.53 |   |   |    |   |
| RCGX 191000 | 19.05 |   | 1.00 |   |   |    |   |

MAKES  
YOU

SPARKS  
FLY



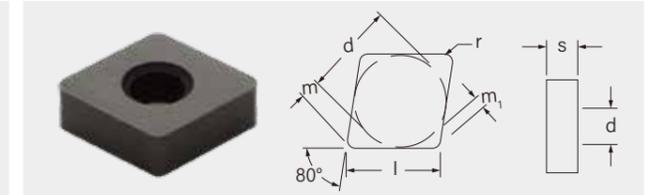
| Model       | Size  |   |       |   |   |    |   |
|-------------|-------|---|-------|---|---|----|---|
| ISO         | d     | l | s     | r | m | m1 | ⊖ |
| RPGV 060600 | 6.35  |   | 6.35  |   |   |    |   |
| RPGV 090700 | 9.53  |   | 7.94  |   |   |    |   |
| RPGV 120700 | 12.70 |   | 7.94  |   |   |    |   |
| RPGV 151000 | 15.88 |   | 10.00 |   |   |    |   |
| RPGV 191000 | 19.05 |   | 10.00 |   |   |    |   |



| Model       | Size   |        |       |      |      |    |   |
|-------------|--------|--------|-------|------|------|----|---|
| ISO         | d      | l      | s     | r    | m    | m1 | ⊖ |
| SNGN 090304 | 9.525  | 9.525  | 3.18  | 0.40 | 1.80 |    |   |
| SNGN 090308 | 9.525  | 9.525  | 3.18  | 0.80 | 1.64 |    |   |
| SNGN 090312 | 9.525  | 9.525  | 3.18  | 1.20 | 1.48 |    |   |
| SNGN 090408 | 9.525  | 9.525  | 4.76  | 0.80 | 1.64 |    |   |
| SNGN 090420 | 9.525  | 9.525  | 4.76  | 2.00 | 1.13 |    |   |
| SNGN 120308 | 12.7   | 12.7   | 3.18  | 0.80 | 2.30 |    |   |
| SNGN 120404 | 12.7   | 12.7   | 4.76  | 0.40 | 2.47 |    |   |
| SNGN 120408 | 12.7   | 12.7   | 4.76  | 0.80 | 2.30 |    |   |
| SNGN 120412 | 12.7   | 12.7   | 4.76  | 1.20 | 2.14 |    |   |
| SNGN 120416 | 12.7   | 12.7   | 4.76  | 1.60 | 1.96 |    |   |
| SNGN 120420 | 12.7   | 12.7   | 4.76  | 2.00 | 1.80 |    |   |
| SNGN 120708 | 12.7   | 12.7   | 7.94  | 0.80 | 2.30 |    |   |
| SNGN 120712 | 12.7   | 12.7   | 7.94  | 1.20 | 2.14 |    |   |
| SNGN 120716 | 12.7   | 12.7   | 7.94  | 1.60 | 1.96 |    |   |
| SNGN 120720 | 12.7   | 12.7   | 7.94  | 2.00 | 1.80 |    |   |
| SNGN 150708 | 15.875 | 15.875 | 7.94  | 0.80 | 2.96 |    |   |
| SNGN 150712 | 15.875 | 15.875 | 7.94  | 1.20 | 2.80 |    |   |
| SNGN 150716 | 15.875 | 15.875 | 7.94  | 1.60 | 2.63 |    |   |
| SNGN 190708 | 19.05  | 19.05  | 7.94  | 0.80 | 3.61 |    |   |
| SNGN 190712 | 19.05  | 19.05  | 7.94  | 1.20 | 3.45 |    |   |
| SNGN 190716 | 19.05  | 19.05  | 7.94  | 1.60 | 3.29 |    |   |
| SNGN 190720 | 19.05  | 19.05  | 7.94  | 2.00 | 3.11 |    |   |
| SNGN 250720 | 25.04  | 25.04  | 7.94  | 2.00 | 4.44 |    |   |
| SNGN 251012 | 25.04  | 25.04  | 10.00 | 1.20 | 4.76 |    |   |

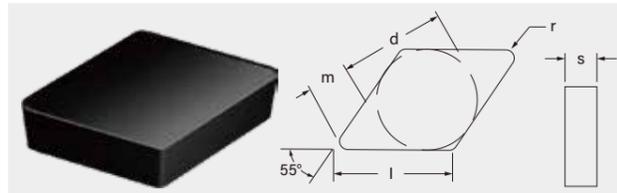


| Model       | Size  |   |       |   |   |    |   |
|-------------|-------|---|-------|---|---|----|---|
| ISO         | d     | l | s     | r | m | m1 | ⊖ |
| RPGN 120400 | 12.70 |   | 4.76  |   |   |    |   |
| RPGN 120600 | 12.70 |   | 6.35  |   |   |    |   |
| RPGN 120700 | 12.70 |   | 7.94  |   |   |    |   |
| RPGN 150700 | 15.88 |   | 7.94  |   |   |    |   |
| RPGN 150900 | 15.88 |   | 9.53  |   |   |    |   |
| RPGN 190900 | 19.05 |   | 9.53  |   |   |    |   |
| RPGN 251200 | 25.40 |   | 12.00 |   |   |    |   |



| Model       | Size  |       |      |      |      |      |      |
|-------------|-------|-------|------|------|------|------|------|
| ISO         | d     | l     | s    | r    | m    | m1   | ⊖    |
| CNGA 120404 | 12.70 | 12.90 | 4.76 | 0.40 | 3.30 | 1.83 | 5.16 |
| CNGA 120408 | 12.70 | 12.90 | 4.76 | 0.80 | 3.10 | 1.70 | 5.16 |
| DNGA 120412 | 12.70 | 12.90 | 4.76 | 1.20 | 2.87 | 1.58 | 5.16 |
| CNGA 120416 | 12.70 | 12.90 | 4.76 | 1.60 | 2.64 | 1.45 | 5.16 |
| CNGA 120704 | 12.70 | 12.90 | 7.94 | 0.40 | 3.30 | 1.83 | 5.16 |
| CNGA 120708 | 12.70 | 12.90 | 7.94 | 0.80 | 3.10 | 1.70 | 5.16 |
| CNGA 120712 | 12.70 | 12.90 | 7.94 | 1.20 | 2.87 | 1.58 | 5.16 |
| CNGA 120716 | 12.70 | 12.90 | 7.94 | 1.60 | 2.64 | 1.45 | 5.16 |
| CNGA 160608 | 15.88 | 16.10 | 6.35 | 0.80 | 3.96 | 2.18 | 6.35 |
| CNGA 160612 | 15.88 | 16.10 | 6.35 | 1.20 | 2.76 | 2.06 | 6.35 |
| CNGA 160616 | 15.88 | 16.10 | 6.35 | 1.60 | 3.53 | 1.93 | 6.35 |
| CNGA 160708 | 15.88 | 16.10 | 7.94 | 0.80 | 3.96 | 2.18 | 6.35 |
| CNGA 160712 | 15.88 | 16.10 | 7.94 | 1.20 | 3.76 | 2.06 | 6.35 |
| CNGA 160716 | 15.88 | 16.10 | 7.94 | 1.60 | 3.53 | 1.93 | 6.35 |
| CNGA 190608 | 19.05 | 19.40 | 6.35 | 0.80 | 4.85 | 2.67 | 7.93 |
| CNGA 190612 | 19.05 | 19.40 | 6.35 | 1.20 | 4.62 | 2.54 | 7.93 |
| CNGA 190616 | 19.05 | 19.40 | 6.35 | 1.60 | 4.42 | 2.41 | 7.93 |
| CNGA 190708 | 19.05 | 19.40 | 7.94 | 0.80 | 4.85 | 2.67 | 7.93 |
| CNGA 190712 | 19.05 | 19.40 | 7.94 | 1.20 | 4.62 | 2.54 | 7.93 |
| CNGA 190716 | 19.05 | 19.40 | 7.94 | 1.60 | 4.62 | 2.41 | 7.93 |

KING  
SML  
GROUP

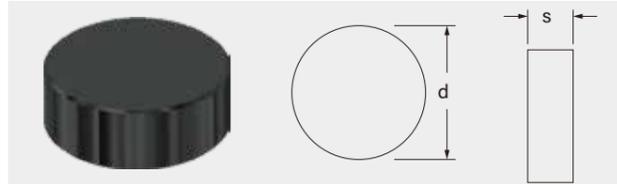


| Model       | Size  |       |      |      |       |    |   |
|-------------|-------|-------|------|------|-------|----|---|
| ISO         | d     | l     | s    | r    | m     | ml | θ |
| DNGN 10408  | 12.70 | 10.00 | 4.76 | 0.80 | 4.90  |    |   |
| DNGN 120612 | 12.70 | 10.00 | 6.35 | 1.20 | 4.42  |    |   |
| DNGN 150412 | 12.70 | 15.50 | 4.76 | 1.20 | 6.01  |    |   |
| DNGN 150604 | 12.70 | 15.50 | 6.35 | 0.40 | 6.934 |    |   |
| DNGN 150608 | 12.70 | 15.50 | 6.35 | 0.80 | 6.477 |    |   |
| DNGN 150612 | 12.70 | 15.50 | 6.35 | 1.20 | 6.01  |    |   |
| DNGN 150704 | 12.70 | 15.50 | 7.94 | 0.40 | 6.934 |    |   |
| DNGN 150708 | 12.70 | 15.50 | 7.94 | 0.80 | 6.477 |    |   |
| DNGN 150712 | 12.70 | 15.50 | 7.94 | 1.20 | 5.944 |    |   |
| DNGN 150716 | 12.70 | 15.50 | 7.94 | 1.60 | 5.537 |    |   |

WARM  
IHTEGRITY

JOYJET

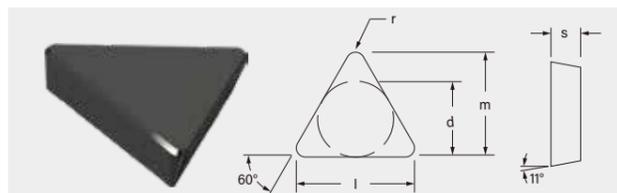
SELFLESS  
ELEGANCE



| Model       | Size  |   |       |   |   |    |   |
|-------------|-------|---|-------|---|---|----|---|
| ISO         | d     | l | s     | r | m | ml | θ |
| RNGN 090400 | 9.53  |   | 4.76  |   |   |    |   |
| RNGN 120400 | 12.70 |   | 4.76  |   |   |    |   |
| RNGN 120600 | 12.70 |   | 6.53  |   |   |    |   |
| RNGN 120700 | 12.70 |   | 7.94  |   |   |    |   |
| RNGN 150700 | 15.88 |   | 7.94  |   |   |    |   |
| RNGN 190700 | 19.05 |   | 7.94  |   |   |    |   |
| RNGN 2010M0 | 20.00 |   | 10.00 |   |   |    |   |
| RNGN 25070  | 25.40 |   | 7.94  |   |   |    |   |

MAKES  
YOU

SPARKS  
FLY



| Model       | Size  |       |      |      |       |    |   |
|-------------|-------|-------|------|------|-------|----|---|
| ISO         | d     | l     | s    | r    | m     | ml | θ |
| TPGN 110304 | 6.35  | 11.00 | 3.18 | 0.40 | 9.12  |    |   |
| TPGN 110308 | 6.35  | 11.00 | 3.18 | 0.80 | 8.74  |    |   |
| TPGN 160404 | 9.525 | 16.50 | 4.76 | 0.40 | 13.89 |    |   |
| TPGN 160708 | 9.525 | 16.50 | 7.94 | 0.80 | 13.49 |    |   |



# JOYJET

MAKES •  
YOU •  
SPARKS •  
FLY •

## CUSTOMIZED CUTTING TOOLS

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### CHARACTERISTICS AND ADVANTAGES OF CUSTOMIZED CUTTING TOOLS



Customized cutting tools are specially designed tools tailored to specific machining requirements. They offer several advantages, including optimized performance, increased efficiency, enhanced accuracy, and cost-effectiveness. In industries like aerospace, automotive, medical, energy, and manufacturing, custom cutting tools are used to meet unique machining challenges and achieve precise results. These tools are crafted to suit different materials, geometries, and applications, ensuring optimal performance and productivity in specialized tasks.

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**High Customization:** Customized cutting tools are designed to meet specific machining requirements, catering to individualized needs regarding dimensions, shapes, materials, etc.

**Enhanced Machining Efficiency:** Tailored cutting tools optimize cutting conditions, leading to improved machining efficiency and reduced production cycles.

**Maximizing Material Potential:** Customized tools are designed based on specific material characteristics, enabling the full realization of material potential and achieving superior cutting performance.

**Enhanced Machining Precision:** Tailor-made cutting tools result in higher machining precision and surface quality, making them suitable for tasks demanding high precision.

**Reduced Production Costs:** Customized cutting tools can be optimized for specific processes and materials, thereby lowering production costs.

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PRODUCTS SHOWCASE

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Customized Milling Cutter: Tailored to specific milling tasks, customized milling cutters with different shapes, cutting edges, and rake angles can enhance machining efficiency and precision for various workpieces.



Customized Turning Tool: By customizing the tool holder and insert shape based on specific turning tasks, stability and machining quality can be improved for different workpiece shapes and materials.



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# RAW MATERIAL BLANKS

# PCD COMPOSITE INSERT GRADE CHART

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## PRODUCTS SHOWCASE

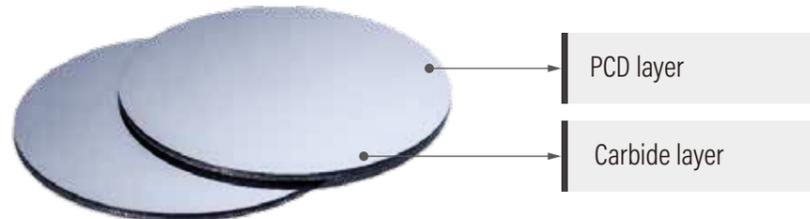
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PCD/PCBN Disk Structure

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PCD Ultrahigh pressure sintered body (PCD)

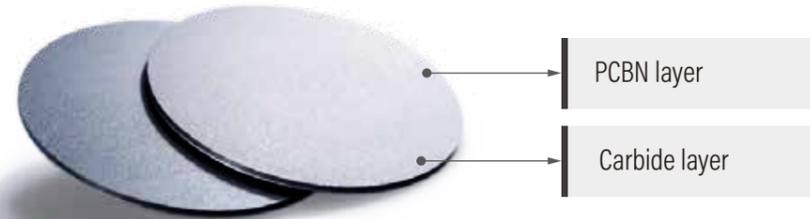
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(PCBN)Ultrahigh pressure sintered body(PCBN)

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| Grade | Grain Size | Wear Resistance | Toughness       | Features & Applications  |
|-------|------------|-----------------|-----------------|--|
| P01   | 2          | Low             | Relatively high | It possesses both high toughness and high wear resistance, excellent conductivity, and processing performance, enabling the production of sharp and high-precision cutting edges. Primarily used in high-speed, high-precision, and high-polishing machining fields for various non-ferrous metals, steel, iron alloys, liquid crystal displays, high-hardness brittle composite materials, electronic materials, plastics, and other materials.   |
| P02   | 5          | Medium          | Medium          | It exhibits excellent toughness and cutting edge sharpness, as well as outstanding conductivity and mechanical processing performance. It is applied in high-speed machining of electronic materials, precision processing of non-ferrous metals, low, medium, and high silicon content aluminum alloys, electronic circuit board materials, and other high-speed machining applications. It is recommended for the preparation of complex cutting tools.  |
| P03   | 10         | High            | Low             | It exhibits a strong diamond bonding, exceptional wear resistance, and toughness, with excellent performance in electrical discharge machining and mechanical processing. It is widely used in the processing of various materials, particularly suitable for non-ferrous metals, including aluminum, aluminum alloys, copper, copper alloys, fiber-reinforced composites, woodworking (solid wood, plywood, medium-density fiberboard, etc.), electronic materials, molds, as well as being the preferred tool for new and unexplored machining fields, including wood materials. |
| P04   | 25+2       | Relatively high | Medium          | It possesses extremely high wear resistance, toughness, heat resistance, and thermal stability, along with excellent electrical discharge machining and mechanical processing performance. It is widely used in the processing of woodworking (solid wood, plywood, medium-density fiberboard, etc.), stone, non-ferrous metals, hardened rubber, graphite, cemented tungsten, ceramics, metal matrix composites, and high-strength carbon fiber composites.   |

PCBN COMPOSITE INSERT GRADE CHART

| KING<br>SML<br>GROUP              | SML<br>Materials<br>Code | Machining<br>Method                             | Processed Materials   |
|-----------------------------------|--------------------------|---|---|
| WARM<br>INTEGRITY<br><br>JOYJET   | C01                      | Rough Machining                                 | Excellent impact resistance and wear resistance are balanced.<br>1.High nickel-chromium high-hardness alloy cast iron<br>2.Gray cast iron<br>3.High manganese steel                                   |
|                                   |                          | Rough Machining                                 | Excellent impact resistance and wear resistance are balanced.<br>1.High nickel-chromium high-hardness alloy cast iron<br>2.Gray cast iron<br>3.High manganese steel                                   |
| SELFLESS<br>ELEGANCE              | C02                      | Semi-precision machining.                       | Exceptional comprehensive performance, exhibiting versatile applicability; suitable for machining gray cast iron, hard cast iron, and quenched and tempered steel with a hardness greater than 45HRC. |
| MAKES<br>YOU<br><br>SPARKS<br>FLY |                          | Precision machining                             |   |
|                                   | C03                      | rough machining<br>Precision machining          | Excellent Wear Resistance<br>Gray Cast Iron   |
|                                   |                          | rough machining<br><br>Semi-precision machining | Excellent impact resistance:<br>Quenched steel ,<br>cast high-speed steel ,<br>surface overlay welding materials  |
|                                   | C04                      | Precision machining                             | Hardened Steel $\geq$ 45HRC   |

| Characteristics  | Suitable Industries  |
|--|--|
| High impact resistance<br>low wear resistance          | Rolls, slurry pumps, brake discs, rolling sidewalls.         |
| High impact resistance<br>low wear resistance          | Rolls, slurry pumps, brake discs, rolling sidewalls.         |
| Moderate impact resistance<br>Moderate wear resistance | Brake discs, brake drums, compressor parts, gears, bearings. |
| High Impact Resistance<br>Low Wear Resistance          | Brake Disc , Brake Drum , Compressor Parts                   |
| High Impact Resistance<br>Low Wear Resistance          | Large gears<br>mining machinery<br>Rolls                     |
| Low Impact Resistance<br>High Wear Resistance          | Gears, bearings  |

## AFTER-SALES SERVICE

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### SAMPLE TESTING SERVICES

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Thank you for choosing our sample testing service! We understand the crucial importance of sample quality for your production. Therefore, we commit to providing free reissue of samples and continuous testing until we achieve the desired results, in case there are any usage issues with the samples provided.

To better understand the performance of the samples, we sincerely invite you to fill out our "Trial Cutting Report Template." This simple template will help you provide feedback on the usage results. Your valuable feedback is essential to us, as it will enable us to further improve and optimize our products to meet your specific needs.

During the process of filling out the trial cutting report, please feel free to reach out to our customer service team for any assistance or inquiries. We are available to provide support and answer any questions you may have.

We genuinely look forward to receiving your trial cutting report and are eager to work together to provide you with even better products and services!

Thank you once again for your trust and support!

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PRECAUTIONS FOR USING INSERTS

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Workpiece  
Name  
Materials, Hardness  
Dimensional Accuracy  
  
Surface Quality  
Requirements

Tool Holder  
Tool Holder Rigidity  
Tool Pad Material  
Accurate Positioning  
Reliable Clamping

Clamping  
No Deformation  
Clamping Reliability, Rigidity  
Geometric Accuracy  
Motion Precision

pcbn, pcd  
Grade, Mode, Specifications  
  
Geometric Angle Edge  
Conditioning

Cutting Speed Vc  
Feed Rate F  
Cutting Depth ap

Inserts Lifespan  
Cutting Forces  
Surface Integrity  
Cutting Shape



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### FORMULAS FOR CUTTING PARAMETERS

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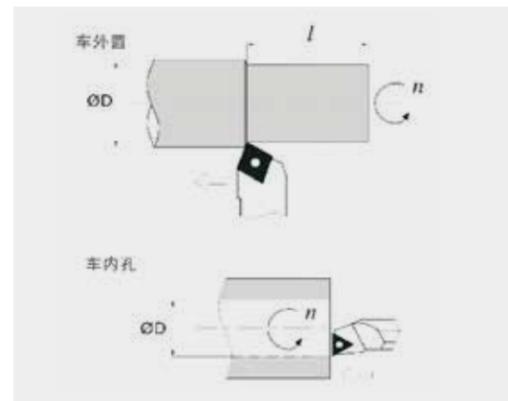
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#### Turning

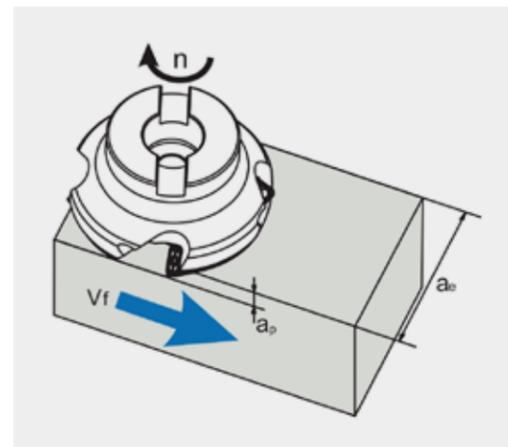


$$V_c = \frac{\pi * D * n}{1000} \text{ (m/min)}$$

$$f = \frac{V_f}{n} \text{ (mm/rev)}$$

|                |                              |
|----------------|------------------------------|
| V <sub>c</sub> | Cutting Speed (m/min)        |
| n              | Spindle Speed (rev/min)      |
| D              | Workpiece Diameter (mm)      |
| V <sub>f</sub> | Feed Speed (mm/min)          |
| f              | Feed per Revolution (mm/rev) |

#### Milling



$$V_c = \frac{\pi * D_c * n}{1000} \text{ (m/min)}$$

$$f_z = \frac{V_f}{n * z} \text{ (mm/z)}$$

|                |                               |
|----------------|-------------------------------|
| V <sub>c</sub> | Cutting Speed (m/min)         |
| n              | Spindle Speed (rev/min)       |
| D              | Workpiece Diameter (mm)       |
| V <sub>f</sub> | Feed Speed (mm/min)           |
| Z              | Number of Teeth on the Cutter |
| f              | Feed per Revolution (mm/rev)  |



## 03

### INSERT INSTALLATION GUIDELINES

- Clean the cutting inserts and insert slots.
- Check the condition and wear of the tool pad.
- Ensure reliable fastening of the tool pad.
- Inspect the flatness of the pressure plate contact surface.
- Ensure a tight fit between the cutting insert and the positioning slot.
- Regularly replace the tool pad, pressure plate, and all locking screws.
- Avoid using cutting bodies with worn-out insert slots.
- Maintain the minimum tool overhang.
- Avoid abrupt stops during the machining process when the cutting edge is not completely disengaged.

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| <br>诺基亚<br>NOKIA  | <br>多普达        | <br>天语   | <br>金鹏         | <br>金鹏            | <br>佳通手机      |
| <br>MOTOROLA      | <br>飞利浦        | <br>海尔   | <br>海尔         | <br>中电手机          | <br>TCL       |
| <br>三星            | <br>三星 Anycall | <br>Acer | <br>联想<br>只要你想 | <br>桑达            | <br>Panasonic |
| <br>Sony Ericsson | <br>西门子        | <br>韩国唯开 | <br>松下         | <br>阿尔卡特          | <br>步步高       |
| <br>中兴            | <br>迪比特        | <br>夏新   | <br>夏新         | <br>NEC手机<br>知心你我 | <br>ALCATEL   |
| <br>华为技术          | <br>海信         | <br>首信   | <br>西门子        | <br>天时达           | <br>中电手机      |
| <br>神达            | <br>DEPU       | <br>大唐通信 | <br>LG         | <br>波导            | <br>奥盛        |
| <br>科健            | <br>金立         | <br>南方高科 | <br>东信         | <br>康佳            | <br>熊猫手机      |

|          |            |           |           |          |          |
|----------|------------|-----------|-----------|----------|----------|
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| <br>奥迪   | <br>阿尔法罗密欧 | <br>阿斯顿马丁 | <br>本田    | <br>标致   | <br>MINI |
| <br>大众   | <br>道奇     | <br>法拉利   | <br>宝马    | <br>保时捷  | <br>奔驰   |
| <br>凯迪拉克 | <br>路特斯    | <br>菲亚特   | <br>丰田    | <br>福特   | <br>悍马   |
| <br>路虎   | <br>柯尼赛格   | <br>克莱斯勒  | <br>兰博基尼  | <br>劳斯莱斯 | <br>雷克萨斯 |
| <br>马自达  | <br>玛莎拉蒂   | <br>迈巴赫   | <br>西雅特   | <br>讴歌   | <br>欧宝   |
| <br>萨博   | <br>三菱     | <br>世爵    | <br>双龙    | <br>斯巴鲁  | <br>斯柯达  |
| <br>卡尔森  | <br>布加迪    | <br>GMC   | <br>捷豹    | <br>特斯拉  | <br>林肯   |
| <br>雪佛兰  | <br>雪铁龙    | <br>英菲尼迪  | <br>Smart | <br>铃木   | <br>光冈汽车 |
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