

# CBN

## CUTTING TOOLS

Turning, milling and grooving inserts

Solid CBN Brazed PCBN PCBN Coated PCBN



MZT / MTH / MFH GRADE SERIES

# Contents

Grade selection, machining guidance and reference product specifications.

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# Solid CBN Grades

Huamin grade applications supplied for this catalog.

## MZT SERIES

For roughing, semi-finishing and finishing of cast irons and hard steels.



### MZT10

**Roughing**

Chilled cast iron, high-Ni-Cr cast iron and high-hardness alloy cast iron

**TYPICAL APPLICATION**

Alloy cast iron, slurry pumps and wear-resistant castings

### MZT20

**Roughing**

High-speed steel

**TYPICAL APPLICATION**

HSS rolls

### MZT30

**Roughing / Semi-Finishing**

Hardened steel, heat- and abrasion-resistant steel, and high-manganese steel

**TYPICAL APPLICATION**

HSS rolls, ball screws and wind-power bearings

### MZT40

**Finishing**

Hardened steel

**TYPICAL APPLICATION**

Wind-power bearings

### MZT50

**Roughing / Finishing**

Gray cast iron

**TYPICAL APPLICATION**

Brake discs, cast-iron engines, gearboxes and cylinder liners

# Brazed PCBN Grades

Huamin grade applications supplied for this catalog.

## MTH SERIES

For semi-finishing and finishing of hardened steels, cast irons and iron-based alloys.



### MTH100

**Semi-Finishing / Finishing**

Hardened steel

**TYPICAL APPLICATION**

Bearings, gears, gear shafts and hardened molds

### MTH200

**Semi-Finishing / Finishing**

Hardened steel and other difficult-to-machine materials

**TYPICAL APPLICATION**

Hardened-steel gears and molds

### MTH300

**Semi-Finishing / Finishing**

Gray cast iron

**TYPICAL APPLICATION**

Brake discs, cast-iron engines and gearboxes

### MTH400

**Semi-Finishing / Finishing**

Gray cast iron and iron-based alloys

**TYPICAL APPLICATION**

Brake discs, brake drums, cast-iron engines and gearboxes

# PCBN Finishing Grades

Huamin grade applications supplied for this catalog.

## MFH SERIES

Finishing grades for hard steels, high-strength cast iron and powder-metallurgy materials.



### MFH101

Finishing

Hardened steel

#### TYPICAL APPLICATION

Gears, gear shafts and bearings

### MFH201

Finishing

Hardened steel and high-strength cast iron

#### TYPICAL APPLICATION

Bearings, gears, gear shafts and high-hardness components

### MFH301

Finishing

Hardened steel

#### TYPICAL APPLICATION

Bearings, gears, gear shafts and molds

### MFH401

Finishing

Powder-metallurgy materials

#### TYPICAL APPLICATION

Powder-metallurgy valve seats

### MFH502

Finishing

Gray cast iron and powder-metallurgy materials

#### TYPICAL APPLICATION

Valve-seat rings, engine cylinder bores and powder-metallurgy parts

# Coated PCBN Grades

Huamin grade applications supplied for this catalog.

## C02 SERIES

Coated finishing grades for hardened steel. The C02 suffix follows the supplied Huamin grade names.



### MFH101 C02

**Finishing**

Hardened steel

**TYPICAL APPLICATION**

Bearings, gears, gear shafts and molds

### MFH201 C02

**Finishing**

Hardened steel

**TYPICAL APPLICATION**

Bearings, gears, gear shafts and high-hardness components

### MFH301 C02

**Finishing**

Hardened steel

**TYPICAL APPLICATION**

Bearings, gears, gear shafts and molds

# Workpiece Selection

Select the workpiece and machining stage before confirming geometry and edge preparation.

| Workpiece                                            | Huamin Grades                        | Machining Stage            |
|------------------------------------------------------|--------------------------------------|----------------------------|
| Chilled / High-Ni-Cr / High-Hardness Alloy Cast Iron | MZT10                                | Roughing                   |
| High-Speed Steel                                     | MZT20                                | Roughing                   |
| Hard Steels / High-Manganese Steels                  | MZT30                                | Roughing / Semi-Finishing  |
| Hardened Steel                                       | MZT40                                | Finishing                  |
| Gray Cast Iron                                       | MZT50                                | Roughing / Finishing       |
| Hardened Steel                                       | MTH100 / MTH200                      | Semi-Finishing / Finishing |
| Gray Cast Iron / Iron-Based Alloys                   | MTH300 / MTH400                      | Semi-Finishing / Finishing |
| Hardened Steel                                       | MFH101 / MFH201 / MFH301             | Finishing                  |
| High-Strength Cast Iron                              | MFH201                               | Finishing                  |
| Powder-Metallurgy Materials                          | MFH401 / MFH502                      | Finishing                  |
| Gray Cast Iron                                       | MFH502                               | Finishing                  |
| Hardened Steel - Coated Options                      | MFH101 C02 / MFH201 C02 / MFH301 C02 | Finishing                  |

Confirm hardness, interruption, stock allowance and required surface finish when selecting the grade.

# CBN Properties

| Grade  | Binder   | CBN (%) | Grain (um) | Hardness (HV) |
|--------|----------|---------|------------|---------------|
| MZT10  | TiC      | 90      | 8-12       | 3000-3250     |
| MZT20  | Al, TiN  | 80      | 4-10       | 3100-3300     |
| MZT30  | TiN      | 76      | 4-6        | 2900-3100     |
| MZT40  | TiN      | 60      | 2-4        | 2800-3000     |
| MZT50  | Al, TiC  | 97      | 4-6        | 3400-3600     |
| MTH100 | TiN      | 70      | 2-4        | 2800-3000     |
| MTH200 | TiC      | 80      | 2-4        | 3100-3300     |
| MTH300 | TiC      | 95      | 2-4        | 3400-3600     |
| MTH400 | Si, TiC  | 97      | 2-4        | 3400-3600     |
| MFH101 | TiN      | 45      | <=1        | 2700-2800     |
| MFH201 | TiN      | 50      | <=1        | 2700-2800     |
| MFH301 | Al, TiNC | 60      | 1-2        | 2600-2800     |
| MFH401 | Co       | 85      | <=2        | 3300-3500     |
| MFH502 | Ti, Co   | 95      | <=2        | 3300-3500     |

# Cutting Interruption Guide

Depth and interruption ranges below are retained as mapped source references.

| Grade      | ap Reference (mm) | Cutting Condition             |
|------------|-------------------|-------------------------------|
| MZT10      | 1-10              | Continuous / Interrupted      |
| MZT50      | <=2               | Continuous                    |
| MTH400     | <=1.5             | Continuous                    |
| MFH401     | <=0.5             | Continuous                    |
| MFH502     | <=0.5             | Continuous                    |
| MZT30      | 1-10              | Continuous / Interrupted      |
| MTH200     | <=1               | Semi-Interrupted              |
| MZT40      | <=1               | Continuous                    |
| MTH100     | <=1               | Continuous                    |
| MFH101     | <=0.2             | Continuous                    |
| MFH201     | <=0.5             | Continuous / Semi-Interrupted |
| MFH301     | <=0.5             | Semi- To Heavily Interrupted  |
| MFH101 C02 | <=0.2             | Continuous                    |
| MFH201 C02 | <=0.5             | Continuous / Semi-Interrupted |
| MFH301 C02 | <=0.5             | Semi- To Heavily Interrupted  |

Use rigid workholding and verify the actual workpiece hardness. A depth range is a source reference rather than a guaranteed operating limit.

# Reference Cutting Windows

Initial source ranges for process planning. Trial conditions must match the actual Huamin grade.

| Workpiece                           | Stage     | vc (m/min) | ap (mm) | f (mm/rev) | Mapped Grades                                      |
|-------------------------------------|-----------|------------|---------|------------|----------------------------------------------------|
| High-hardness cast iron (HRC 35-68) | Roughing  | 35-120     | 1-10    | 0.15-1.0   | MZT10                                              |
| High-hardness cast iron (HRC 35-68) | Finishing | 60-200     | <=1     | 0.05-0.35  | MFH502 / MFH201                                    |
| Hardened steel (>=HRC 45)           | Roughing  | 50-150     | 1-10    | 0.1-0.5    | MZT20 / MZT30                                      |
| Hardened steel (>=HRC 45)           | Finishing | 90-250     | <=1     | 0.05-0.35  | MFH101 / MFH201 / MFH301 / MTH100 / MTH200 / MZT40 |
| Gray cast iron                      | Roughing  | 400-1200   | 1-10    | 0.2-1.0    | MZT50                                              |
| Gray cast iron                      | Finishing | 600-2000   | <=1     | 0.05-0.3   | MTH300 / MTH400 / MFH502                           |

The high-speed-steel and hardened-steel ranges originate from the source catalog. Huamin workpiece selection remains governed by the grade descriptions in this edition.

**vc = cutting speed   ap = depth of cut   f = feed per revolution**

# Cutting Calculations

Metric formulas for turning and milling.

## Turning Speed

$$vc = \pi \times d \times n / 1000$$

vc: m/min; d: workpiece diameter in mm; n: rpm

## Feed Per Revolution

$$f = vf / n$$

f: mm/rev; vf: axial feed speed in mm/min

## Turning Time

$$t = L / vf$$

t: min; L: cutting length in mm

## Theoretical Roughness

$$Ra = f^2 / (8 \times r) \times 1000$$

Ra:  $\mu\text{m}$ ; f: mm/rev; r: nose radius in mm

## Milling Table Feed

$$vf = fz \times z \times n$$

vf: mm/min; fz: mm/tooth; z: number of cutting teeth

## Milling Speed And Time

$$vc = \pi \times D \times n / 1000; t = L / vf$$

D: cutter diameter in mm; L: table travel in mm

# Insert Designation

Example: CNGA 120408 T02020-2S

|          |           |           |          |           |           |           |               |           |
|----------|-----------|-----------|----------|-----------|-----------|-----------|---------------|-----------|
| <b>C</b> | <b>N</b>  | <b>G</b>  | <b>A</b> | <b>12</b> | <b>04</b> | <b>08</b> | <b>T02020</b> | <b>2S</b> |
| Shape    | Clearance | Tolerance | Section  | Size      | Thickness | Radius    | Edge          | Edges     |

## Shape Codes

| Code | Shape / Included Angle |
|------|------------------------|
| S    | Square / 90 deg        |
| T    | Triangle / 60 deg      |
| C    | Rhombic / 80 deg       |
| D    | Rhombic / 55 deg       |
| E    | Rhombic / 75 deg       |
| M    | Rhombic / 86 deg       |
| V    | Rhombic / 35 deg       |
| W    | Trigon / 80 deg        |
| H    | Hexagon / 120 deg      |
| O    | Octagon / 135 deg      |
| P    | Pentagon / 100 deg     |
| R    | Round                  |

## Clearance And Section

| Code | Clearance |
|------|-----------|
| N    | 0 deg     |
| A    | 3 deg     |
| B    | 5 deg     |
| C    | 7 deg     |
| P    | 11 deg    |
| D    | 15 deg    |

The fourth letter identifies hole, countersink and chipbreaker form. N: no hole and no chipbreaker. A: round straight hole, no chipbreaker. M/G: straight hole with one-/two-sided chipbreakers. W/T: single-sided 40-60 deg countersink. Q/U: double-sided 40-60 deg countersink.

# Tolerance And Section Codes

Reference dimensional tolerances from the supplied source; all values in mm.

| Code | Nose Dimension +/- | I.C. +/-  | Thickness +/- |
|------|--------------------|-----------|---------------|
| A    | 0.005              | 0.025     | 0.025         |
| F    | 0.005              | 0.013     | 0.025         |
| C    | 0.013              | 0.025     | 0.025         |
| H    | 0.013              | 0.013     | 0.025         |
| E    | 0.025              | 0.025     | 0.025         |
| G    | 0.025              | 0.025     | 0.013         |
| J    | 0.005              | 0.05-0.13 | 0.025         |
| K    | 0.013              | 0.05-0.13 | 0.025         |
| L    | 0.025              | 0.05-0.13 | 0.025         |
| M    | 0.08-0.18          | 0.05-0.13 | 0.13          |
| N    | 0.08-0.18          | 0.05-0.13 | 0.025         |
| U    | 0.08-0.18          | 0.05-0.13 | 0.13          |

## Additional Section Forms

B/H: single-sided 70-90 deg countersink, without/with a chipbreaker. J/O: double-sided 70-90 deg countersink, without/with chipbreakers. O/S/L are also used in the source for concave round, square and rectangular forms. X: other fixing or chipbreaker arrangement; use the specific drawing.

# Size, Thickness And Radius

The size code is interpreted together with the insert shape.

| I.C. (mm) | C  | D  | S  | T  | V  | W  |
|-----------|----|----|----|----|----|----|
| 3.97      | -  | -  | -  | 06 | -  | -  |
| 5.00      | -  | -  | -  | -  | -  | -  |
| 5.56      | -  | -  | -  | 09 | -  | -  |
| 6.35      | 06 | 07 | -  | 11 | 11 | -  |
| 9.525     | 09 | 11 | 09 | 16 | 16 | 06 |
| 12.70     | 12 | 15 | 12 | 22 | 22 | 08 |
| 15.875    | 16 | -  | 15 | 27 | -  | -  |
| 16.00     | -  | 19 | -  | -  | -  | -  |
| 19.05     | 19 | -  | 19 | 33 | -  | -  |
| 25.00     | 25 | 25 | 25 | -  | -  | -  |
| 25.40     | -  | -  | 25 | -  | -  | -  |

## Thickness

| Code | S (mm) |
|------|--------|
| 01   | 1.59   |
| T1   | 1.98   |
| 02   | 2.38   |
| T2   | 2.58   |
| 03   | 3.18   |
| T3   | 3.97   |
| 04   | 4.76   |
| 05   | 5.56   |

## Nose Radius

| Code         | r (mm)               |
|--------------|----------------------|
| 00           | Sharp / round insert |
| 02           | 0.2                  |
| 04           | 0.4                  |
| 08           | 0.8                  |
| 12           | 1.2                  |
| 16           | 1.6                  |
| 20 / 24 / 32 | 2.0 / 2.4 / 3.2      |
| X            | Other                |

# Supplementary Size Codes

Thickness and less common shapes from the source naming guide.

| Code | Thickness S (mm) |
|------|------------------|
| 06   | 6.35             |
| 07   | 7.94             |
| 08   | 8.00             |
| 09   | 9.525            |
| 10   | 10.00            |
| 11   | 11.11            |
| 12   | 12.00            |
| 12   | 12.70            |

The source assigns thickness code 12 to both 12.00 and 12.70 mm. Confirm the actual thickness using the product table and drawing rather than the designation alone.

## Less Common Shapes

| Code  | Shape / Angle          |
|-------|------------------------|
| L     | Rectangle / 90 deg     |
| A     | Parallelogram / 85 deg |
| B     | Parallelogram / 82 deg |
| N / K | Parallelogram / 55 deg |

## Cutting-Edge Quantity

| Suffix | Cutting Edges |
|--------|---------------|
| 1S     | 1             |
| 2S     | 2             |
| 3S     | 3             |
| 4S     | 4             |
| 6S     | 6             |
| 8S     | 8             |

# Edge Preparation

Edge form, chamfer width and angle are part of the order specification.

| Code | Edge Form                     |
|------|-------------------------------|
| F    | Sharp cutting edge            |
| E    | Honed / rounded cutting edge  |
| T    | Negative land / chamfer       |
| S    | Negative land plus honed edge |

## Chamfer Width

| Code | Width (mm) |
|------|------------|
| 010  | 0.10       |
| 015  | 0.15       |
| 020  | 0.20       |
| 025  | 0.25       |
| 030  | 0.30       |
| 050  | 0.50       |
| 100  | 1.00       |
| 200  | 2.00       |

## Chamfer Angle

| Code | Angle  |
|------|--------|
| 05   | 5 deg  |
| 10   | 10 deg |
| 15   | 15 deg |
| 20   | 20 deg |
| 25   | 25 deg |
| 30   | 30 deg |

T02020: negative land, 0.20 mm wide, 20 deg angle. -2S identifies two cutting edges in the source model convention.

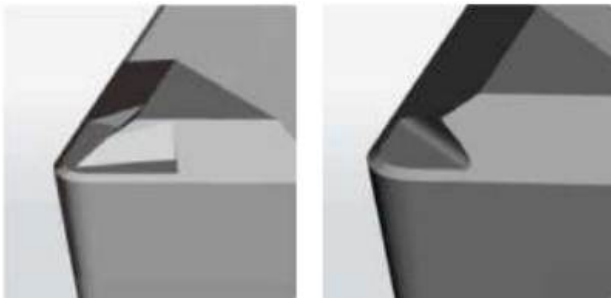
# Special Bottoms And Edges

Follow the insert drawing and confirm the actual seat geometry.

## V: Pyramid Bottom Y: Cone Bottom

The source example RCMX120700V135 / RCMX120700Y135 uses 135 to identify the bottom angle. An omitted angle in an example is interpreted as 120 deg by the source; confirm the angle explicitly when ordering.

## Chipbreaker



Chipbreaker geometry helps control chip flow and reduces long chips winding around the workpiece or tool. Confirm the specific geometry for the operation.

## Wiper



A wiper combines nose geometry with an extended finishing edge. It can support a higher feed at the same theoretical roughness, or a finer finish at the same feed, provided the machine and workholding are sufficiently rigid.

## Coated C02 Grades

MFH101 C02, MFH201 C02 and MFH301 C02 are the supplied coated grade names. Actual coating chemistry and thickness are to be confirmed by Huamin.

# Tool-Holder Designation

Example: C S K P R 25 25 M 12

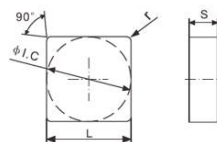
| Position | Meaning                         | Example                                              |
|----------|---------------------------------|------------------------------------------------------|
| 1        | Clamping system                 | C: clamp; M: combined; P: lever; S: screw            |
| 2        | Insert shape                    | S: square; C: 80 deg rhombic; D/K: 55 deg; V: 35 deg |
| 3        | Holder style / approach angle   | K in this example; use the holder drawing            |
| 4        | Insert clearance angle          | N 0 / A 3 / B 5 / C 7 / D 15 / P 11 deg              |
| 5        | Cutting hand                    | R: right; L: left; N: neutral                        |
| 6        | Shank height                    | 25 mm                                                |
| 7        | Shank width                     | 25 mm                                                |
| 8        | Holder length code              | M: 150 mm                                            |
| 9        | Insert cutting-edge length code | 12                                                   |

Source length codes: A 32, B 40, C 50, D 60, E 70, F 80, G 90, H 100, J 110, K 125, L 140, M 150, N 160, P 170, Q 180, R 200, S 250, T 300, U 350, V 400, W 450 and Y 500 mm. X identifies a special length.

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNMN



| Model      | L      | I.C.   | S    | r   |
|------------|--------|--------|------|-----|
| SNMN090304 | 9.525  | 9.525  | 3.18 | 0.4 |
| SNMN090308 | 9.525  | 9.525  | 3.18 | 0.8 |
| SNMN090312 | 9.525  | 9.525  | 3.18 | 1.2 |
| SNMN090404 | 9.525  | 9.525  | 4.76 | 0.4 |
| SNMN090408 | 9.525  | 9.525  | 4.76 | 0.8 |
| SNMN090412 | 9.525  | 9.525  | 4.76 | 1.2 |
| SNMN120404 | 12.7   | 12.7   | 4.76 | 0.4 |
| SNMN120408 | 12.7   | 12.7   | 4.76 | 0.8 |
| SNMN120412 | 12.7   | 12.7   | 4.76 | 1.2 |
| SNMN120712 | 12.7   | 12.7   | 7.94 | 1.2 |
| SNMN120716 | 12.7   | 12.7   | 7.94 | 1.6 |
| SNMN150716 | 15.875 | 15.875 | 7.94 | 1.6 |
| SNMN201020 | 20     | 20     | 10   | 2   |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT50 / MTH400

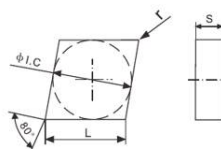
Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S05020 / S10020

Reference match: CSDNN / CSSNR/L / CSKNR/L / CSRNR/L / CSXNR/L

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CNMN



| Model      | L    | I.C.  | S    | r   |
|------------|------|-------|------|-----|
| CNMN090404 | 9.7  | 9.525 | 4.76 | 0.4 |
| CNMN090408 | 9.7  | 9.525 | 4.76 | 0.8 |
| CNMN090412 | 9.7  | 9.525 | 4.76 | 1.2 |
| CNMN120404 | 12.9 | 12.7  | 4.76 | 0.4 |
| CNMN120408 | 12.9 | 12.7  | 4.76 | 0.8 |
| CNMN120412 | 12.9 | 12.7  | 4.76 | 1.2 |
| CNMN120416 | 12.9 | 12.7  | 4.76 | 1.6 |
| CNMN120704 | 12.9 | 12.7  | 7.94 | 0.4 |
| CNMN120708 | 12.9 | 12.7  | 7.94 | 0.8 |
| CNMN120712 | 12.9 | 12.7  | 7.94 | 1.2 |
| CNMN120716 | 12.9 | 12.7  | 7.94 | 1.6 |

Reference grade options: MZT10 / MZT30 / MZT40 / MZT50 / MTH400

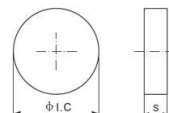
Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S05020 / S10020

Reference match: CCLNR/L

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RNMN



| Model      | L | I.C.   | S    | r |
|------------|---|--------|------|---|
| RNMN060400 | - | 6.35   | 4.76 | - |
| RNMN090300 | - | 9.525  | 3.18 | - |
| RNMN090400 | - | 9.525  | 4.76 | - |
| RNMN090700 | - | 9.525  | 7.94 | - |
| RNMN120400 | - | 12.7   | 4.76 | - |
| RNMN120600 | - | 12.7   | 6.35 | - |
| RNMN120700 | - | 12.7   | 7.94 | - |
| RNMN150700 | - | 15.875 | 7.94 | - |
| RNMN200800 | - | 20     | 8    | - |
| RNMN201000 | - | 20     | 10   | - |
| RNMN251000 | - | 25.4   | 10   | - |
| RNMN251200 | - | 25.4   | 12   | - |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT40 / MZT50

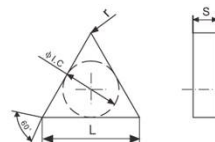
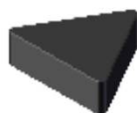
Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S05020 / S10020

Reference match: CRGNR/L / CRDNN

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TNMN



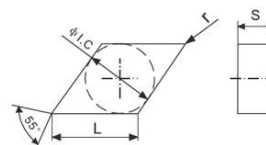
| Model      | L    | I.C.  | S    | r   |
|------------|------|-------|------|-----|
| TNMN110304 | 11   | 6.35  | 3.18 | 0.4 |
| TNMN110308 | 11   | 6.35  | 3.18 | 0.8 |
| TNMN110312 | 11   | 6.35  | 3.18 | 1.2 |
| TNMN160404 | 16.5 | 9.525 | 4.76 | 0.4 |
| TNMN160408 | 16.5 | 9.525 | 4.76 | 0.8 |
| TNMN160412 | 16.5 | 9.525 | 4.76 | 1.2 |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT40 / MZT50

Reference edge preparation: S01020 / S02020

Reference match: Reference holder drawing

## DNMN



| Model      | L    | I.C.  | S    | r   |
|------------|------|-------|------|-----|
| DNMN110404 | 11.6 | 9.525 | 4.76 | 0.4 |
| DNMN110408 | 11.6 | 9.525 | 4.76 | 0.8 |
| DNMN110412 | 11.6 | 9.525 | 4.76 | 1.2 |

Reference grade options: MZT10 / MZT30 / MZT40 / MZT50 / MTH400

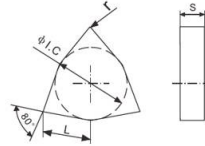
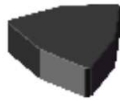
Reference edge preparation: S01015 / S01020 / S02020 / S02025

Reference match: CDLNR/L

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## WNMN



| Model      | L   | I.C. | S    | r   |
|------------|-----|------|------|-----|
| WNMN080404 | 8.7 | 12.7 | 4.76 | 0.4 |
| WNMN080408 | 8.7 | 12.7 | 4.76 | 0.8 |
| WNMN080412 | 8.7 | 12.7 | 4.76 | 1.2 |
| WNMN080604 | 8.7 | 12.7 | 6.35 | 0.4 |
| WNMN080608 | 8.7 | 12.7 | 6.35 | 0.8 |
| WNMN080612 | 8.7 | 12.7 | 6.35 | 1.2 |

Reference grade options: MZT20 / MZT30 / MZT40 / MZT50 / MTH400

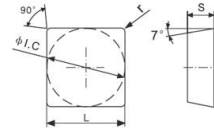
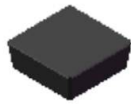
Reference edge preparation: S01015 / S01020 / S02020 / S02025

Reference match: CWLNR/L

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SCGN



| Model      | L     | I.C.  | S    | r   |
|------------|-------|-------|------|-----|
| SCGN090304 | 9.525 | 9.525 | 3.18 | 0.4 |
| SCGN090308 | 9.525 | 9.525 | 3.18 | 0.8 |
| SCGN090312 | 9.525 | 9.525 | 3.18 | 1.2 |
| SCGN090404 | 9.525 | 9.525 | 4.76 | 0.4 |
| SCGN090408 | 9.525 | 9.525 | 4.76 | 0.8 |
| SCGN090412 | 9.525 | 9.525 | 4.76 | 1.2 |

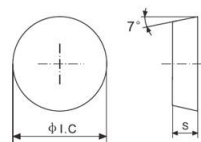
Reference grade options: MZT10 / MZT20 / MZT30 / MZT50 / MTH400

Reference edge preparation: S01020 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RCMN



| Model      | L | I.C.   | S    | r |
|------------|---|--------|------|---|
| RCMN060400 | - | 6.35   | 4.76 | - |
| RCMN090400 | - | 9.525  | 4.76 | - |
| RCMN090700 | - | 9.525  | 7.94 | - |
| RCMN120700 | - | 12.7   | 7.94 | - |
| RCMN150700 | - | 15.875 | 7.94 | - |
| RCMN190700 | - | 19.05  | 7.94 | - |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT40 / MZT50

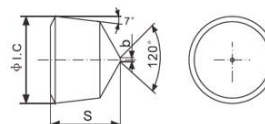
Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S05020 / S10020

Reference match: CRDCN

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RCMX - Cone Bottom



| Model       | L | I.C.   | S    | r |
|-------------|---|--------|------|---|
| RCMX060400Y | - | 6.35   | 4.76 | - |
| RCMX060500Y | - | 6.35   | 5.56 | - |
| RCMX060600Y | - | 6.35   | 6.35 | - |
| RCMX060700Y | - | 6.35   | 7.94 | - |
| RCMX090700Y | - | 9.525  | 7.94 | - |
| RCMX120700Y | - | 12.7   | 7.94 | - |
| RCMX151000Y | - | 15.875 | 10   | - |
| RCMX191000Y | - | 19.05  | 10   | - |
| RCMX201200Y | - | 20     | 12   | - |
| RCMX251200Y | - | 25.4   | 12   | - |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT40 / MZT50

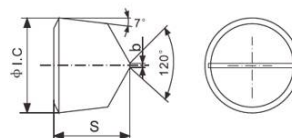
Reference edge preparation: S01020 / S02020 / S03020 / S05020 / S10020 / S20020

Reference match: CRDCN

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RCMX - Pyramid Bottom



| Model       | L | I.C.   | S    | r   |
|-------------|---|--------|------|-----|
| RCMX060400V | - | 6.35   | 4.76 | 0.8 |
| RCMX060500V | - | 6.35   | 5.56 | 0.8 |
| RCMX060600V | - | 6.35   | 6.35 | 0.8 |
| RCMX090700V | - | 9.525  | 7.94 | 1   |
| RCMX120700V | - | 12.7   | 7.94 | 2   |
| RCMX151000V | - | 15.875 | 10   | 2   |
| RCMX191000V | - | 19.05  | 10   | 2   |
| RCMX201200V | - | 20     | 12   | 2   |
| RCMX251200V | - | 25.4   | 12   | 2   |

Reference grade options: MZT10 / MZT20 / MZT30 / MZT40 / MZT50

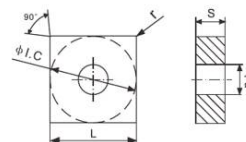
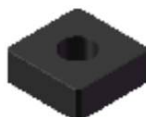
Reference edge preparation: S01020 / S02020 / S03020 / S05020 / S10020 / S20020

Reference match: CRDCN

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNGA

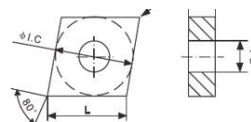


| Model      | L    | I.C. | d    | S    | r   |
|------------|------|------|------|------|-----|
| SNGA120404 | 12.7 | 12.7 | 5.16 | 4.76 | 0.4 |
| SNGA120408 | 12.7 | 12.7 | 5.16 | 4.76 | 0.8 |
| SNGA120412 | 12.7 | 12.7 | 5.16 | 4.76 | 1.2 |

Reference grade options: MZT30 / MZT40 / MZT50 / MTH400

Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S02530 / S03020

## CNGA



| Model      | L    | I.C. | d    | S    | r   |
|------------|------|------|------|------|-----|
| CNGA120404 | 12.9 | 12.7 | 5.16 | 4.76 | 0.4 |
| CNGA120408 | 12.9 | 12.7 | 5.16 | 4.76 | 0.8 |
| CNGA120412 | 12.9 | 12.7 | 5.16 | 4.76 | 1.2 |
| CNGA120416 | 12.9 | 12.7 | 5.16 | 4.76 | 1.6 |

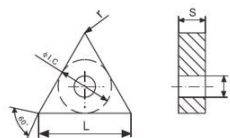
Reference grade options: MZT30 / MZT40 / MZT50 / MTH400

Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S02530 / S03020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TNGA

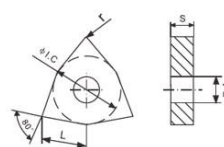
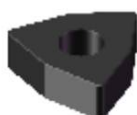


| Model      | L    | I.C.  | d   | S    | r   |
|------------|------|-------|-----|------|-----|
| TNGA110304 | 11   | 6.35  | 2.3 | 3.18 | 0.4 |
| TNGA110308 | 11   | 6.35  | 2.3 | 3.18 | 0.8 |
| TNGA160404 | 16.5 | 9.525 | 3.8 | 4.76 | 0.4 |
| TNGA160408 | 16.5 | 9.525 | 3.8 | 4.76 | 0.8 |

Reference grade options: MZT30 / MZT40 / MZT50 / MTH400

Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S02530 / S03020

## WNGA



| Model      | L   | I.C. | d    | S    | r   |
|------------|-----|------|------|------|-----|
| WNGA080404 | 8.7 | 12.7 | 5.16 | 4.76 | 0.4 |
| WNGA080408 | 8.7 | 12.7 | 5.16 | 4.76 | 0.8 |
| WNGA080412 | 8.7 | 12.7 | 5.16 | 4.76 | 1.2 |

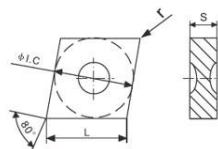
Reference grade options: MZT30 / MZT40 / MZT50 / MTH400

Reference edge preparation: S01020 / S01025 / S02020 / S02030 / S02530 / S03020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CNMO

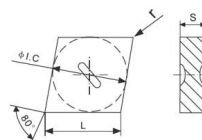


| Model      | L    | I.C. | S    | r   |
|------------|------|------|------|-----|
| CNMO120704 | 12.9 | 12.7 | 7.94 | 0.4 |
| CNMO120708 | 12.9 | 12.7 | 7.94 | 0.8 |
| CNMO120712 | 12.9 | 12.7 | 7.94 | 1.2 |

Reference grade options: MZT50

Reference edge preparation: S02020

## CNML



| Model      | L    | I.C. | S    | r   |
|------------|------|------|------|-----|
| CNML120708 | 12.9 | 12.7 | 7.94 | 0.8 |
| CNML120712 | 12.9 | 12.7 | 7.94 | 1.2 |
| CNML120716 | 12.9 | 12.7 | 7.94 | 1.6 |

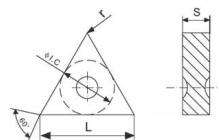
Reference grade options: MZT10 / MZT30 / MZT40 / MZT50

Reference edge preparation: S01020 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TNMO

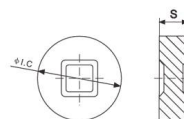


| Model      | L    | I.C.  | S    | r   |
|------------|------|-------|------|-----|
| TNMO160604 | 16.5 | 9.525 | 6.35 | 0.4 |
| TNMO160608 | 16.5 | 9.525 | 6.35 | 0.8 |
| TNMO160612 | 16.5 | 9.525 | 6.35 | 1.2 |

Reference grade options: MZT10 / MZT30 / MZT50

Reference edge preparation: S01020 / S02020

## RNMS



| Model      | L | I.C.   | S    | r |
|------------|---|--------|------|---|
| RNMS090600 | - | 9.525  | 6.35 | - |
| RNMS120700 | - | 12.7   | 7.94 | - |
| RNMS150700 | - | 15.875 | 7.94 | - |
| RNMS201000 | - | 20     | 10   | - |

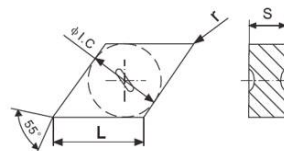
Reference grade options: MZT10

Reference edge preparation: S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## DNML

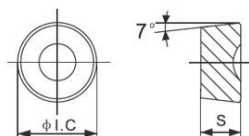


| Model      | L    | I.C.  | S    | r   |
|------------|------|-------|------|-----|
| DNML110604 | 11.6 | 9.525 | 6.35 | 0.4 |
| DNML110608 | 11.6 | 9.525 | 6.35 | 0.8 |
| DNML110612 | 11.6 | 9.525 | 6.35 | 1.2 |

Reference grade options: MZT10 / MZT30 / MZT40 / MZT50

Reference edge preparation: S01020 / S02020

## RCMO



| Model      | L | I.C.   | S    | r |
|------------|---|--------|------|---|
| RCMO090600 | - | 9.525  | 6.35 | - |
| RCMO120700 | - | 12.7   | 7.94 | - |
| RCMO150700 | - | 15.875 | 7.94 | - |
| RCMO201000 | - | 20     | 10   | - |

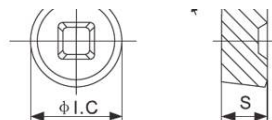
Reference grade options: MZT10 / MZT30 / MZT40 / MZT50

Reference edge preparation: S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RCMS



| Model      | L | I.C.   | S    | r |
|------------|---|--------|------|---|
| RCMS090600 | - | 9.525  | 6.35 | - |
| RCMS120700 | - | 12.7   | 7.94 | - |
| RCMS150700 | - | 15.875 | 7.94 | - |
| RCMS201000 | - | 20     | 10   | - |

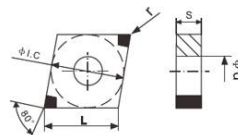
Reference grade options: MZT10 / MZT30 / MZT40 / MZT50

Reference edge preparation: S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CNGA - 4 Edges



| Model         | L    | I.C.   | S    | d    | r   |
|---------------|------|--------|------|------|-----|
| CNGA120404-4S | 12.9 | 12.7   | 4.76 | 5.16 | 0.4 |
| CNGA120408-4S | 12.9 | 12.7   | 4.76 | 5.16 | 0.8 |
| CNGA120412-4S | 12.9 | 12.7   | 4.76 | 5.16 | 1.2 |
| CNGA120416-4S | 12.9 | 12.7   | 4.76 | 5.16 | 1.6 |
| CNGA160404-4S | 16.1 | 15.875 | 4.76 | 6.35 | 0.4 |
| CNGA160408-4S | 16.1 | 15.875 | 4.76 | 6.35 | 0.8 |
| CNGA160412-4S | 16.1 | 15.875 | 4.76 | 6.35 | 1.2 |

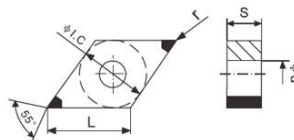
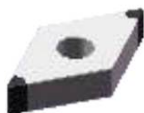
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## DNGA - 4 Edges



| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| DNGA150404-4S | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 |
| DNGA150408-4S | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 |
| DNGA150412-4S | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 |
| DNGA150604-4S | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 |
| DNGA150608-4S | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 |
| DNGA150612-4S | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 |

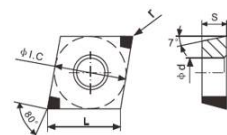
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CCGW - 2 Edges

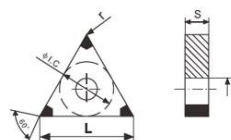


| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| CCGW09T304-2S | 9.7  | 9.525 | 3.97 | 4.4 | 0.4 |
| CCGW09T308-2S | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 |
| CCGW09T312-2S | 9.7  | 9.525 | 3.97 | 4.4 | 1.2 |
| CCGW120404-2S | 12.9 | 12.7  | 4.76 | 5.5 | 0.4 |
| CCGW120408-2S | 12.9 | 12.7  | 4.76 | 5.5 | 0.8 |
| CCGW120412-2S | 12.9 | 12.7  | 4.76 | 5.5 | 1.2 |

Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## TNGA-6S



| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| TNGA160404-6S | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 |
| TNGA160408-6S | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 |
| TNGA160412-6S | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 |

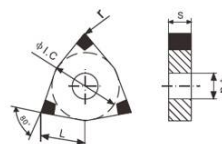
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## WNGA-6S

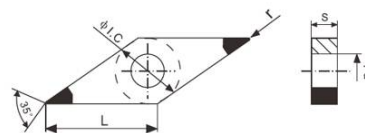


| Model         | L   | I.C. | S    | d    | r   |
|---------------|-----|------|------|------|-----|
| WNGA080404-6S | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| WNGA080408-6S | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| WNGA080412-6S | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 |

Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## VNGA-4S



| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| VNGA160404-4S | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 |
| VNGA160408-4S | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 |
| VNGA160412-4S | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 |

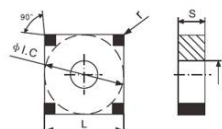
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNGA-8S

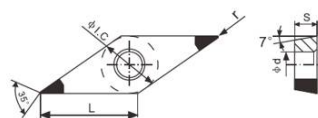


| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| SNGA120404-8S | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| SNGA120408-8S | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| SNGA120412-8S | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 |

Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## VCGW - 2 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| VCGW160404-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.4 |
| VCGW160408-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.8 |
| VCGW160412-2S | 16.6 | 9.525 | 4.76 | 4.4 | 1.2 |

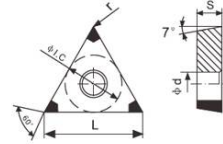
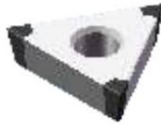
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TCGW - 3 Edges



| Model         | L  | I.C. | S    | d   | r   |
|---------------|----|------|------|-----|-----|
| TCGW110304-3S | 11 | 6.35 | 3.18 | 2.8 | 0.4 |
| TCGW110308-3S | 11 | 6.35 | 3.18 | 2.8 | 0.8 |
| TCGW110312-3S | 11 | 6.35 | 3.18 | 2.8 | 1.2 |

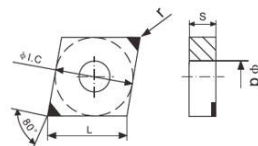
Reference grade options: MTH100 / MTH200 / MTH300 / MTH400

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CNGA - 2 Edges

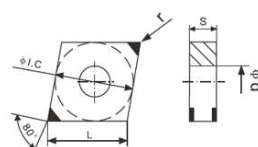


| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| CNGA120404-2S | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 |
| CNGA120408-2S | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 |
| CNGA120412-2S | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 |
| CNGA120416-2S | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## CNGA - 4 Edges



| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| CNGA120404-4S | 12.9 | 12.7 | 4.76 | 5.16 | 0.4 |
| CNGA120408-4S | 12.9 | 12.7 | 4.76 | 5.16 | 0.8 |
| CNGA120412-4S | 12.9 | 12.7 | 4.76 | 5.16 | 1.2 |
| CNGA120416-4S | 12.9 | 12.7 | 4.76 | 5.16 | 1.6 |

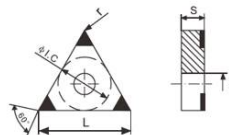
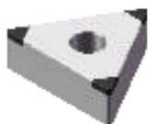
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TNGA - 3 Edges

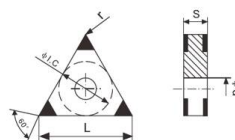
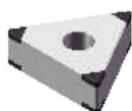


| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| TNGA160402-3S | 16.5 | 9.525 | 4.76 | 3.81 | 0.2 |
| TNGA160404-3S | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 |
| TNGA160408-3S | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 |
| TNGA160412-3S | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## TNGA - 6 Edges



| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| TNGA160402-6S | 16.5 | 9.525 | 4.76 | 3.81 | 0.2 |
| TNGA160404-6S | 16.5 | 9.525 | 4.76 | 3.81 | 0.4 |
| TNGA160408-6S | 16.5 | 9.525 | 4.76 | 3.81 | 0.8 |
| TNGA160412-6S | 16.5 | 9.525 | 4.76 | 3.81 | 1.2 |

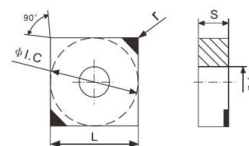
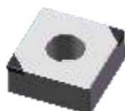
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNGA - 2 Edges

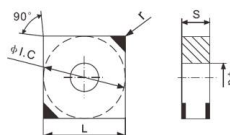


| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| SNGA120404-2S | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| SNGA120408-2S | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| SNGA120412-2S | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## SNGA - 4 Edges



| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| SNGA120404-4S | 12.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| SNGA120408-4S | 12.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| SNGA120412-4S | 12.7 | 12.7 | 4.76 | 5.16 | 1.2 |

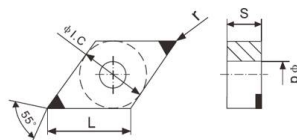
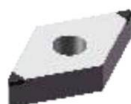
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## DNGA - 2 Edges



| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| DNGA150404-2S | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 |
| DNGA150408-2S | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 |
| DNGA150412-2S | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 |
| DNGA150604-2S | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 |
| DNGA150608-2S | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 |
| DNGA150612-2S | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 |

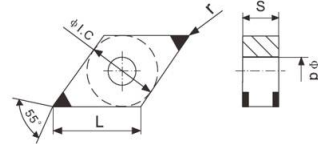
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## DNGA - 4 Edges

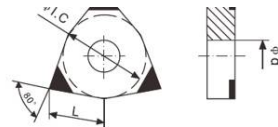


| Model         | L    | I.C. | S    | d    | r   |
|---------------|------|------|------|------|-----|
| DNGA150404-4S | 15.5 | 12.7 | 4.76 | 5.16 | 0.4 |
| DNGA150408-4S | 15.5 | 12.7 | 4.76 | 5.16 | 0.8 |
| DNGA150412-4S | 15.5 | 12.7 | 4.76 | 5.16 | 1.2 |
| DNGA150604-4S | 15.5 | 12.7 | 6.35 | 5.16 | 0.4 |
| DNGA150608-4S | 15.5 | 12.7 | 6.35 | 5.16 | 0.8 |
| DNGA150612-4S | 15.5 | 12.7 | 6.35 | 5.16 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## WNGA - 3 Edges



| Model         | L   | I.C. | S    | d    | r   |
|---------------|-----|------|------|------|-----|
| WNGA080404-3S | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| WNGA080408-3S | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| WNGA080412-3S | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 |

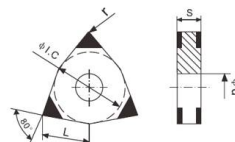
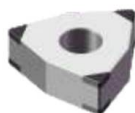
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## WNGA - 6 Edges

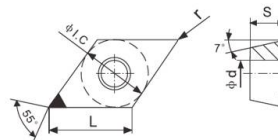


| Model         | L   | I.C. | S    | d    | r   |
|---------------|-----|------|------|------|-----|
| WNGA080404-6S | 8.7 | 12.7 | 4.76 | 5.16 | 0.4 |
| WNGA080408-6S | 8.7 | 12.7 | 4.76 | 5.16 | 0.8 |
| WNGA080412-6S | 8.7 | 12.7 | 4.76 | 5.16 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## DCGW - 1 Edge



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| DCGW070202-1S | 7.7  | 6.35  | 2.38 | 2.8 | 0.2 |
| DCGW070204-1S | 7.7  | 6.35  | 2.38 | 2.8 | 0.4 |
| DCGW070208-1S | 7.7  | 6.35  | 2.38 | 2.8 | 0.8 |
| DCGW11T302-1S | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 |
| DCGW11T304-1S | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 |
| DCGW11T308-1S | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 |

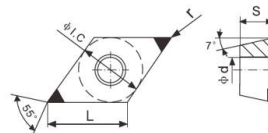
Reference grade options: MFH101 / MFH201 / MFH301 / MFH401 / MFH502

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## DCGW - 2 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| DCGW070202-2S | 7.7  | 6.35  | 2.38 | 2.8 | 0.2 |
| DCGW070204-2S | 7.7  | 6.35  | 2.38 | 2.8 | 0.4 |
| DCGW070208-2S | 7.7  | 6.35  | 2.38 | 2.8 | 0.8 |
| DCGW11T302-2S | 11.6 | 9.525 | 3.97 | 4.4 | 0.2 |
| DCGW11T304-2S | 11.6 | 9.525 | 3.97 | 4.4 | 0.4 |
| DCGW11T308-2S | 11.6 | 9.525 | 3.97 | 4.4 | 0.8 |

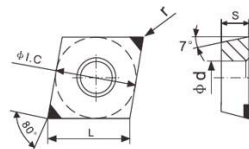
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source / MFH401

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CCGW - 2 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| CCGW060202-2S | 6.4  | 6.35  | 2.38 | 2.8 | 0.2 |
| CCGW060204-2S | 6.4  | 6.35  | 2.38 | 2.8 | 0.4 |
| CCGW060208-2S | 6.4  | 6.35  | 2.38 | 2.8 | 0.8 |
| CCGW09T302-2S | 9.7  | 9.525 | 3.97 | 4.4 | 0.2 |
| CCGW09T304-2S | 9.7  | 9.525 | 3.97 | 4.4 | 0.4 |
| CCGW09T308-2S | 9.7  | 9.525 | 3.97 | 4.4 | 0.8 |
| CCGW120404-2S | 12.9 | 12.7  | 4.76 | 5.5 | 0.4 |
| CCGW120408-2S | 12.9 | 12.7  | 4.76 | 5.5 | 0.8 |
| CCGW120412-2S | 12.9 | 12.7  | 4.76 | 5.5 | 1.2 |

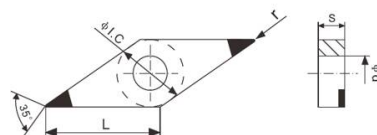
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## VNGA - 2 Edges

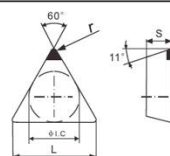


| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| VNGA160402-2S | 16.6 | 9.525 | 4.76 | 3.81 | 0.2 |
| VNGA160404-2S | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 |
| VNGA160408-2S | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 |
| VNGA160412-2S | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## TPGN - 1 Edge



| Model         | L    | I.C.  | S    | r   |
|---------------|------|-------|------|-----|
| TPGN110302-1S | 11   | 6.35  | 3.18 | 0.2 |
| TPGN110304-1S | 11   | 6.35  | 3.18 | 0.4 |
| TPGN110308-1S | 11   | 6.35  | 3.18 | 0.8 |
| TPGN160302-1S | 16.5 | 9.525 | 3.18 | 0.2 |
| TPGN160304-1S | 16.5 | 9.525 | 3.18 | 0.4 |
| TPGN160308-1S | 16.5 | 9.525 | 3.18 | 0.8 |
| TPGN160312-1S | 16.5 | 9.525 | 3.18 | 1.2 |

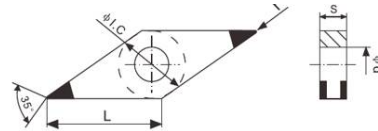
Reference grade options: MFH101 / MFH201 / MFH301

Reference edge preparation: S01015 / S01020 / S01025 / S02020 / S02025

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## VNGA - 4 Edges

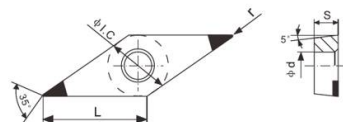


| Model         | L    | I.C.  | S    | d    | r   |
|---------------|------|-------|------|------|-----|
| VNGA160402-4S | 16.6 | 9.525 | 4.76 | 3.81 | 0.2 |
| VNGA160404-4S | 16.6 | 9.525 | 4.76 | 3.81 | 0.4 |
| VNGA160408-4S | 16.6 | 9.525 | 4.76 | 3.81 | 0.8 |
| VNGA160412-4S | 16.6 | 9.525 | 4.76 | 3.81 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

## VBGW - 2 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| VBGW110302-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.2 |
| VBGW110304-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.4 |
| VBGW110308-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.8 |
| VBGW160402-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.2 |
| VBGW160404-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.4 |
| VBGW160408-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.8 |

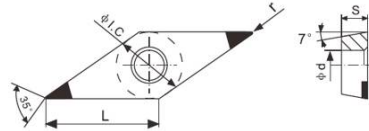
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## VCGW - 2 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| VCGW080202-2S | 8.3  | 4.76  | 2.38 | 2.3 | 0.2 |
| VCGW080204-2S | 8.3  | 4.76  | 2.38 | 2.3 | 0.4 |
| VCGW080208-2S | 8.3  | 4.76  | 2.38 | 2.3 | 0.8 |
| VCGW110302-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.2 |
| VCGW110304-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.4 |
| VCGW110308-2S | 11.1 | 6.35  | 3.18 | 2.8 | 0.8 |
| VCGW160404-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.4 |
| VCGW160408-2S | 16.6 | 9.525 | 4.76 | 4.4 | 0.8 |
| VCGW160412-2S | 16.6 | 9.525 | 4.76 | 4.4 | 1.2 |

Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TCGW - 3 Edges



| Model         | L    | I.C.  | S    | d   | r   |
|---------------|------|-------|------|-----|-----|
| TCGW090204-3S | 9.6  | 5.56  | 2.38 | 2.5 | 0.4 |
| TCGW090208-3S | 9.6  | 5.56  | 2.38 | 2.5 | 0.8 |
| TCGW110202-3S | 11   | 6.35  | 2.38 | 2.8 | 0.2 |
| TCGW110204-3S | 11   | 6.35  | 2.38 | 2.8 | 0.4 |
| TCGW110208-3S | 11   | 6.35  | 2.38 | 2.8 | 0.8 |
| TCGW16T304-3S | 16.5 | 9.525 | 3.97 | 4.4 | 0.4 |
| TCGW16T308-3S | 16.5 | 9.525 | 3.97 | 4.4 | 0.8 |

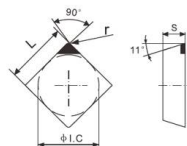
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SPGN - 1 Edge



| Model         | L     | I.C.  | S    | r   |
|---------------|-------|-------|------|-----|
| SPGN090304-1S | 9.525 | 9.525 | 3.18 | 0.4 |
| SPGN090308-1S | 9.525 | 9.525 | 3.18 | 0.8 |
| SPGN090312-1S | 9.525 | 9.525 | 3.18 | 1.2 |
| SPGN120304-1S | 12.7  | 12.7  | 3.18 | 0.4 |
| SPGN120308-1S | 12.7  | 12.7  | 3.18 | 0.8 |
| SPGN120312-1S | 12.7  | 12.7  | 3.18 | 1.2 |

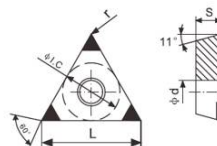
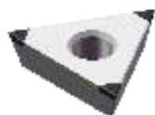
Reference grade options: MFH101 / MFH201 / MFH301

Reference edge preparation: S01015 / S01020 / S01025 / S02020 / S02025

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## TPGW - 3 Edges



| Model         | L    | I.C.  | S    | d         | r   |
|---------------|------|-------|------|-----------|-----|
| TPGW080202-3S | 8.2  | 4.76  | 2.38 | 2.4       | 0.2 |
| TPGW080204-3S | 8.2  | 4.76  | 2.38 | 2.4       | 0.4 |
| TPGW080208-3S | 8.2  | 4.76  | 2.38 | 2.4       | 0.8 |
| TPGW090202-3S | 9.6  | 5.56  | 2.38 | 2.5 / 2.8 | 0.2 |
| TPGW090204-3S | 9.6  | 5.56  | 2.38 | 2.5 / 2.8 | 0.4 |
| TPGW090208-3S | 9.6  | 5.56  | 2.38 | 2.5 / 2.8 | 0.8 |
| TPGW110202-3S | 11   | 6.35  | 2.38 | 2.8       | 0.2 |
| TPGW110204-3S | 11   | 6.35  | 2.38 | 2.8       | 0.4 |
| TPGW110208-3S | 11   | 6.35  | 2.38 | 2.8       | 0.8 |
| TPGW110302-3S | 11   | 6.35  | 3.18 | 3.4       | 0.2 |
| TPGW110304-3S | 11   | 6.35  | 3.18 | 3.4       | 0.4 |
| TPGW110308-3S | 11   | 6.35  | 3.18 | 3.4       | 0.8 |
| TPGW160302-3S | 16.5 | 9.525 | 3.18 | 4.4       | 0.2 |
| TPGW160304-3S | 16.5 | 9.525 | 3.18 | 4.4       | 0.4 |
| TPGW160308-3S | 16.5 | 9.525 | 3.18 | 4.4       | 0.8 |
| TPGW160402-3S | 16.5 | 9.525 | 4.76 | 4.8       | 0.2 |
| TPGW160404-3S | 16.5 | 9.525 | 4.76 | 4.8       | 0.4 |
| TPGW160408-3S | 16.5 | 9.525 | 4.76 | 4.8       | 0.8 |

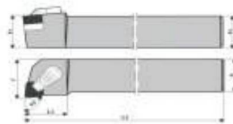
Reference grade options: MFH101 / MFH201 / MFH301 / MFH502; C02 options where shown in the source

Reference edge preparation: S01015 / S01020 / S01025 / S02020

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CCLNR/L



| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CCLNR/L2020M09 | 20      | 30 | 20 | 150 | CNMN09 |
| CCLNR/L2525M12 | 25      | 30 | 25 | 150 | CNMN12 |
| CCLNR/L3232P12 | 32      | 35 | 32 | 170 | CNMN12 |
| CCLNR/L4040S12 | 40      | 38 | 40 | 250 | CNMN12 |
| CCLNR/L5050T12 | 50      | 38 | 50 | 300 | CNMN12 |

Reference match: Right / left hand according to model

## CDLNR/L



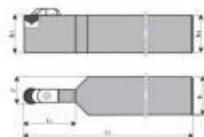
| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CDLNR/L2020M11 | 20      | 30 | 20 | 150 | DNMN11 |
| CDLNR/L2525M11 | 25      | 30 | 25 | 150 | DNMN11 |
| CDLNR/L3232P11 | 32      | 35 | 32 | 170 | DNMN11 |

Reference match: Right / left hand according to model

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

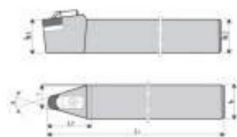
## CRDCN



| Model        | h1 = h2 | L2 | b  | L1  | Insert |
|--------------|---------|----|----|-----|--------|
| CRDCN2020M06 | 20      | 30 | 20 | 150 | RCMX06 |
| CRDCN2525M09 | 25      | 30 | 25 | 150 | RCMX09 |
| CRDCN3232P12 | 32      | 35 | 32 | 170 | RCMX12 |
| CRDCN4040S15 | 40      | 38 | 40 | 250 | RCMX15 |
| CRDCN5050T20 | 50      | 38 | 50 | 300 | RCMX20 |

Reference match: Right / left hand according to model

## CRDCN



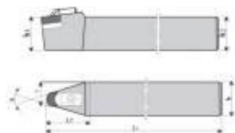
| Model        | h1 = h2 | L2 | b  | L1  | Insert |
|--------------|---------|----|----|-----|--------|
| CRDCN2020M06 | 20      | 30 | 20 | 150 | RCMX06 |
| CRDCN2525M09 | 25      | 30 | 25 | 150 | RCMX09 |
| CRDCN3232P12 | 32      | 35 | 32 | 170 | RCMX12 |
| CRDCN4040S15 | 40      | 38 | 40 | 250 | RCMX15 |
| CRDCN5050T19 | 50      | 38 | 50 | 300 | RCMX19 |

Reference match: Right / left hand according to model

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

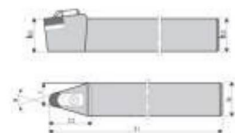
## CRDCN



| Model        | h1 = h2 | L2 | b  | L1  | Insert |
|--------------|---------|----|----|-----|--------|
| CRDCN2020M09 | 20      | 30 | 20 | 150 | RCMN09 |
| CRDCN2525M12 | 25      | 30 | 25 | 150 | RCMN12 |
| CRDCN3232P12 | 32      | 35 | 32 | 170 | RCMN12 |
| CRDCN4040S15 | 40      | 38 | 40 | 250 | RCMN15 |
| CRDCN5050T15 | 50      | 38 | 50 | 300 | RCMN15 |

Reference match: Right / left hand according to model

## CRDNN



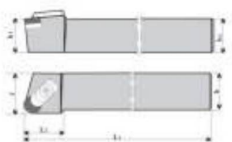
| Model        | h1 = h2 | L2 | b  | L1  | Insert |
|--------------|---------|----|----|-----|--------|
| CRDNN2020M09 | 20      | 30 | 20 | 150 | RNMN09 |
| CRDNN2525M12 | 25      | 30 | 25 | 150 | RNMN12 |
| CRDNN3232P15 | 32      | 35 | 32 | 170 | RNMN15 |
| CRDNN4040S20 | 40      | 38 | 40 | 250 | RNMN20 |
| CRDNN5050T25 | 50      | 38 | 50 | 300 | RNMN25 |

Reference match: Right / left hand according to model

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CRGNR/L



| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CRGNR/L2020M09 | 20      | 30 | 20 | 150 | RNMN09 |
| CRGNR/L2525M12 | 25      | 30 | 25 | 150 | RNMN12 |
| CRGNR/L3232P15 | 32      | 35 | 32 | 170 | RNMN15 |
| CRGNR/L4040S20 | 40      | 38 | 40 | 250 | RNMN20 |
| CRGNR/L5050T25 | 50      | 38 | 50 | 300 | RNMN25 |

Reference match: Right / left hand according to model

## CSDNN



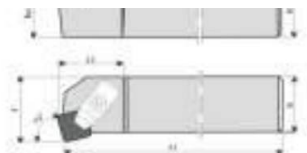
| Model        | h1 = h2 | L2 | b  | L1  | Insert |
|--------------|---------|----|----|-----|--------|
| CSDNN2020M09 | 20      | 30 | 20 | 150 | SNMN09 |
| CSDNN2525M12 | 25      | 30 | 25 | 150 | SNMN12 |
| CSDNN3232P12 | 32      | 35 | 32 | 170 | SNMN12 |
| CSDNN4040S15 | 40      | 38 | 40 | 250 | SNMN15 |
| CSDNN5050T20 | 50      | 38 | 50 | 300 | SNMN20 |

Reference match: Right / left hand according to model

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

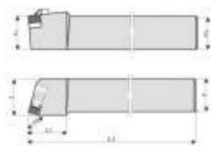
## CSKNR/L



| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CSKNR/L2020M09 | 20      | 30 | 20 | 150 | SNMN09 |
| CSKNR/L2525M12 | 25      | 30 | 25 | 150 | SNMN12 |
| CSKNR/L3232P12 | 32      | 35 | 32 | 170 | SNMN12 |
| CSKNR/L4040S15 | 40      | 38 | 40 | 250 | SNMN15 |
| CSKNR/L5050T20 | 50      | 38 | 50 | 300 | SNMN20 |

Reference match: Right / left hand according to model

## CSRNR/L



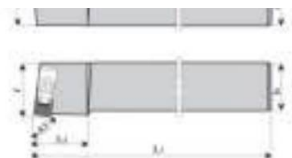
| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CSRNR/L2020M09 | 20      | 30 | 20 | 150 | SNMN09 |
| CSRNR/L2525M12 | 25      | 30 | 25 | 150 | SNMN12 |
| CSRNR/L3232P12 | 32      | 35 | 32 | 170 | SNMN12 |
| CSRNR/L4040S15 | 40      | 38 | 40 | 250 | SNMN15 |
| CSRNR/L5050T20 | 50      | 38 | 50 | 300 | SNMN20 |

Reference match: Right / left hand according to model

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

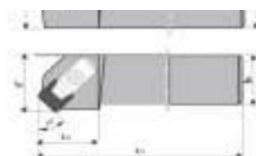
## CSXNR/L



| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CSXNR/L2020M09 | 20      | 30 | 20 | 150 | SNMN09 |
| CSXNR/L2525M12 | 25      | 30 | 25 | 150 | SNMN12 |
| CSXNR/L3232P12 | 32      | 35 | 32 | 170 | SNMN12 |
| CSXNR/L4040S15 | 40      | 38 | 40 | 250 | SNMN15 |
| CSXNR/L5050T20 | 50      | 38 | 50 | 300 | SNMN20 |

Reference match: Right / left hand according to model

## CSSNR/L



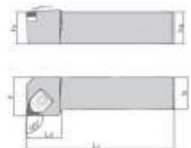
| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CSSNR/L2020M09 | 20      | 30 | 20 | 150 | SNMN09 |
| CSSNR/L2525M12 | 25      | 30 | 25 | 150 | SNMN12 |
| CSSNR/L3232P12 | 32      | 35 | 32 | 170 | SNMN12 |
| CSSNR/L4040S15 | 40      | 38 | 40 | 250 | SNMN15 |
| CSSNR/L5050T20 | 50      | 38 | 50 | 300 | SNMN20 |

Reference match: Right / left hand according to model

# Reference Specifications

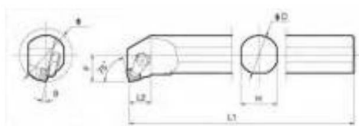
Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## CWLNr/L



| Model          | h1 = h2 | L2 | b  | L1  | Insert |
|----------------|---------|----|----|-----|--------|
| CWLNr/L2525M08 | 25      | 33 | 25 | 150 | WNMN08 |
| CWLNr/L3232P08 | 32      | 35 | 32 | 170 | WNMN08 |

## Boring Bars - CSKNr/L

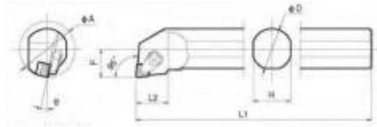


| Model           | H  | L2 | L1  | D  | Insert |
|-----------------|----|----|-----|----|--------|
| S25T-CSKNr/L-09 | 23 | 42 | 300 | 25 | SNMN09 |
| S32T-CSKNr/L-12 | 30 | 45 | 300 | 32 | SNMN12 |
| S40T-CSKNr/L-12 | 37 | 50 | 300 | 40 | SNMN12 |
| S32U-CSKNr/L-15 | 30 | 45 | 350 | 32 | SNMN15 |
| S40U-CSKNr/L-20 | 37 | 50 | 350 | 40 | SNMN20 |

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## Boring Bars - CCLNR/L

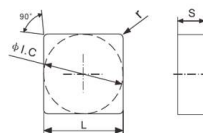


| Model           | H  | L2 | L1  | D  | Insert |
|-----------------|----|----|-----|----|--------|
| S25T-CCLNR/L-12 | 23 | 42 | 300 | 25 | CNMN12 |
| S32T-CCLNR/L-12 | 30 | 45 | 300 | 32 | CNMN12 |
| S40T-CCLNR/L-12 | 37 | 50 | 300 | 40 | CNMN12 |
| S32U-CCLNR/L-12 | 30 | 45 | 350 | 32 | CNMN12 |
| S40U-CCLNR/L-12 | 37 | 50 | 350 | 40 | CNMN12 |

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNFN

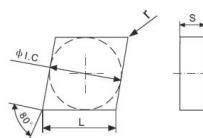


| Model      | L    | I.C. | S    | r   |
|------------|------|------|------|-----|
| SNFN120708 | 12.7 | 12.7 | 7.94 | 0.8 |
| SNFN120712 | 12.7 | 12.7 | 7.94 | 1.2 |
| SNFN120716 | 12.7 | 12.7 | 7.94 | 1.6 |
| SNFN120720 | 12.7 | 12.7 | 7.94 | 2   |

Reference grade options: MZT10 / MZT30 / MZT50

Reference match: TSM series

## CNFN



| Model      | L    | I.C. | S    | r   |
|------------|------|------|------|-----|
| CNFN120708 | 12.9 | 12.7 | 7.94 | 0.8 |
| CNFN120712 | 12.9 | 12.7 | 7.94 | 1.2 |
| CNFN120716 | 12.9 | 12.7 | 7.94 | 1.6 |
| CNFN120720 | 12.9 | 12.7 | 7.94 | 2   |

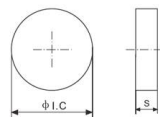
Reference grade options: MZT10 / MZT30 / MZT40

Reference match: TZM series

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## RNFN

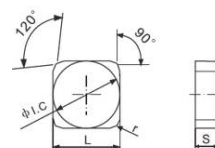


| Model      | I.C. | S    |
|------------|------|------|
| RNFN120600 | 12.7 | 6.35 |

Reference grade options: MZT10 / MZT30 / MZT40

Reference match: TRM series

## SNEN



| Model       | L     | I.C.  | S    | r   |
|-------------|-------|-------|------|-----|
| SNEN0903ENS | 9.525 | 9.525 | 3.18 | 0.8 |
| SNEN0904ENS | 9.525 | 9.525 | 4.76 | 0.8 |
| SNEN1204ENS | 12.7  | 12.7  | 4.76 | 1.2 |
| SNEN1207ENS | 12.7  | 12.7  | 7.94 | 1.2 |
| SNEN120712  | 12.7  | 12.7  | 7.94 | 1.2 |
| SNEN19T6ENS | 19.05 | 19.05 | 6.8  | 1.6 |

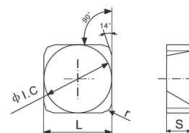
Reference grade options: MZT40 / MTH400; additional source grade outside the supplied range

Reference match: FME01 / FME02 / FME03 series

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

## SNEX - Wiper Inserts

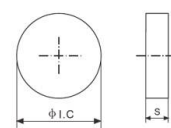


| Model      | L    | I.C. | S    | r   |
|------------|------|------|------|-----|
| SNEX1203ZZ | 12.7 | 12.7 | 3.18 | 1.2 |
| SNEX1204ZZ | 12.7 | 12.7 | 4.76 | 1.2 |

Reference grade options: MZT40 / MTH400; additional source grade outside the supplied range

Reference match: FME02 / FME03 series

## RNEN



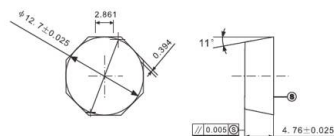
| Model      | L | I.C.  | S    | r |
|------------|---|-------|------|---|
| RNEN090300 | - | 9.525 | 3.18 | - |
| RNEN090400 | - | 9.525 | 4.76 | - |
| RNEN120700 | - | 12.7  | 7.94 | - |

Reference grade options: MZT40 / MTH400; additional source grade outside the supplied range

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

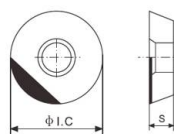
## OPHN / OPHX



| Model           | I.C. | S    |
|-----------------|------|------|
| OPHN0504ZZH-A57 | 12.7 | 4.76 |
| OPHX0504ZZH-A57 | 12.7 | 4.76 |

Reference grade options: MZT40 / MTH400; additional source grade outside the supplied range

## RDMW / RPMW



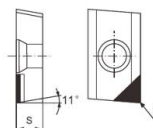
| Model      | I.C. | S    |
|------------|------|------|
| RDMW120400 | 12   | 4.76 |
| RDMW160400 | 16   | 4.76 |
| RPMW080200 | 8    | 2.38 |
| RPMW100300 | 10   | 3.18 |
| RPMW10T300 | 10   | 3.97 |
| RPMW120400 | 12   | 4.76 |

Reference grade options: MFH201 / MFH301 / MFH502

# Reference Specifications

Dimensions in mm. Models and family options remain subject to Huamin confirmation.

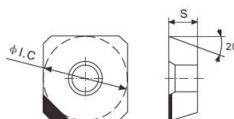
## APMT



| Model      | S    | r   |
|------------|------|-----|
| APMT160404 | 4.76 | 0.4 |
| APMT160408 | 4.76 | 0.8 |

Reference grade options: MFH201 / MFH301 / MFH502

## SEET / SEHT



| Model        | I.C. | S    |
|--------------|------|------|
| SEET12T3PF   | 12.7 | 3.97 |
| SEHT1204AFFN | 12.7 | 4.76 |

Reference grade options: MFH201 / MFH301 / MFH502

# Hardness Comparison

| HV  | HB 10/3000 | HRA  | HRC  | HR 15-N | HR 30-N | HS | Strength* |
|-----|------------|------|------|---------|---------|----|-----------|
| 940 | -          | 85.6 | 68.0 | 93.2    | 84.4    | 97 | -         |
| 920 | -          | 85.3 | 67.5 | 93.0    | 84.0    | 96 | -         |
| 900 | -          | 85.0 | 67.0 | 92.9    | 83.6    | 95 | -         |
| 880 | -          | 84.7 | 66.4 | 92.7    | 83.1    | 93 | -         |
| 860 | -          | 84.4 | 65.9 | 92.5    | 82.7    | 92 | -         |
| 840 | -          | 84.1 | 65.3 | 92.3    | 82.2    | 91 | -         |
| 820 | -          | 83.8 | 64.7 | 92.1    | 81.7    | 90 | -         |
| 800 | -          | 83.4 | 64.0 | 91.9    | 81.1    | 88 | -         |
| 780 | -          | 83.0 | 63.3 | 91.5    | 80.4    | 87 | -         |
| 760 | -          | 82.6 | 62.5 | 91.2    | 79.7    | 86 | -         |
| 740 | -          | 82.2 | 61.8 | 91.0    | 79.1    | 84 | -         |
| 720 | -          | 81.8 | 61.0 | 90.7    | 78.4    | 83 | -         |
| 700 | -          | 81.3 | 60.1 | 90.3    | 77.6    | 81 | -         |
| 690 | -          | 81.1 | 59.7 | 90.1    | 77.2    | -  | -         |
| 680 | -          | 80.8 | 59.2 | 89.8    | 76.8    | 80 | 232       |
| 670 | -          | 80.6 | 58.8 | 89.7    | 76.4    | -  | 228       |
| 660 | -          | 80.3 | 58.3 | 89.5    | 75.9    | 79 | 224       |
| 650 | -          | 80.0 | 57.8 | 89.2    | 75.5    | -  | 221       |
| 640 | -          | 79.8 | 57.3 | 89.0    | 75.1    | 77 | 217       |
| 630 | -          | 79.5 | 56.8 | 88.8    | 74.6    | -  | 214       |
| 620 | -          | 79.2 | 56.3 | 88.5    | 74.2    | 75 | 210       |
| 610 | -          | 78.9 | 55.7 | 88.2    | 73.6    | -  | 207       |
| 600 | -          | 78.6 | 55.2 | 88.0    | 73.2    | 74 | 203       |
| 590 | -          | 78.4 | 54.7 | 87.8    | 72.7    | -  | 200       |

HV: Vickers. HB: Brinell. HR: Rockwell. HS: Shore. \*Strength is the source tensile-strength reference in kgf/mm<sup>2</sup>. Blank source entries are shown as a dash. Values depend on material and test method.

# Hardness Comparison

| HV  | HB 10/3000 | HRA  | HRC  | HR 15-N | HR 30-N | HS | Strength* |
|-----|------------|------|------|---------|---------|----|-----------|
| 580 | -          | 78.0 | 54.1 | 87.5    | 72.1    | 72 | 196       |
| 570 | -          | 77.8 | 53.6 | 87.2    | 71.7    | -  | 193       |
| 560 | -          | 77.4 | 53.0 | 86.9    | 71.2    | 71 | 189       |
| 550 | 505        | 77.0 | 52.3 | 86.6    | 70.5    | -  | 186       |
| 540 | 496        | 76.7 | 51.7 | 86.3    | 70.0    | 69 | 183       |
| 530 | 488        | 76.4 | 51.1 | 86.0    | 69.5    | -  | 179       |
| 520 | 480        | 76.1 | 50.5 | 85.7    | 69.0    | 67 | 176       |
| 510 | 473        | 75.7 | 49.8 | 85.4    | 68.3    | -  | 173       |
| 500 | 465        | 75.3 | 49.1 | 85.0    | 67.7    | 66 | 169       |
| 490 | 456        | 74.9 | 48.4 | 84.7    | 67.1    | -  | 165       |
| 480 | 448        | 74.5 | 47.7 | 84.3    | 66.4    | 64 | 162       |
| 470 | 441        | 74.1 | 46.9 | 83.9    | 65.7    | -  | 158       |
| 460 | 433        | 73.6 | 46.1 | 83.6    | 64.9    | 62 | 155       |
| 450 | 425        | 73.3 | 45.3 | 83.2    | 64.3    | -  | 151       |
| 440 | 415        | 72.8 | 44.5 | 82.8    | 63.5    | 59 | 148       |
| 430 | 405        | 72.3 | 43.6 | 82.3    | 62.7    | -  | 144       |
| 420 | 397        | 71.8 | 42.7 | 81.8    | 61.9    | 57 | 141       |

HV: Vickers. HB: Brinell. HR: Rockwell. HS: Shore. \*Strength is the source tensile-strength reference in kgf/mm<sup>2</sup>. Blank source entries are shown as a dash. Values depend on material and test method.

# Hardness Comparison

| HV  | HB 10/3000 | HRA  | HRB   | HRC  | HR 15-N | HR 30-N | HS | Strength* |
|-----|------------|------|-------|------|---------|---------|----|-----------|
| 410 | 388        | 71.4 | -     | 41.8 | 81.4    | 61.1    | -  | 137       |
| 400 | 379        | 70.8 | -     | 40.8 | 81.0    | 60.2    | 55 | 134       |
| 390 | 369        | 70.3 | -     | 39.8 | 80.3    | 59.3    | -  | 130       |
| 380 | 360        | 69.8 | 110   | 38.8 | 79.8    | 58.4    | 52 | 127       |
| 370 | 350        | 69.2 | -     | 37.7 | 79.2    | 57.4    | -  | 123       |
| 360 | 341        | 68.7 | 109   | 36.6 | 78.6    | 56.4    | 50 | 120       |
| 350 | 331        | 68.1 | -     | 35.5 | 78.0    | 55.4    | -  | 117       |
| 340 | 322        | 67.6 | 108   | 34.4 | 77.4    | 54.4    | 47 | 113       |
| 330 | 313        | 67.0 | -     | 32.3 | 76.8    | 53.6    | -  | 110       |
| 320 | 303        | 66.4 | 107   | 32.2 | 76.2    | 52.3    | 45 | 106       |
| 310 | 294        | 65.8 | -     | 31.0 | 75.6    | 51.3    | -  | 103       |
| 300 | 284        | 65.2 | 105.5 | 29.8 | 74.9    | 50.2    | 42 | 99        |
| 295 | 280        | 64.8 | -     | 29.2 | 74.6    | 49.7    | -  | 98        |
| 290 | 275        | 64.5 | 104.5 | 28.5 | 74.2    | 49.0    | 41 | 96        |
| 285 | 270        | 64.2 | -     | 27.8 | 73.8    | 48.4    | -  | 94        |
| 280 | 265        | 63.8 | 103.5 | 27.1 | 73.4    | 47.8    | 40 | 92        |
| 275 | 261        | 63.5 | -     | 26.4 | 73.0    | 47.1    | -  | 91        |
| 270 | 256        | 63.1 | 102   | 25.6 | 72.6    | 46.4    | 38 | 89        |
| 265 | 252        | 62.7 | -     | 24.8 | 72.1    | 45.7    | -  | 87        |
| 260 | 247        | 62.4 | 101   | 24.0 | 71.6    | 45.0    | 37 | 85        |
| 255 | 243        | 62.0 | -     | 23.1 | 71.1    | 44.2    | -  | 84        |
| 250 | 238        | 61.6 | 99.5  | 22.2 | 70.6    | 43.4    | 36 | 82        |
| 245 | 233        | 61.2 | -     | 21.3 | 70.1    | 42.5    | -  | 80        |
| 240 | 228        | 60.7 | 98.1  | 20.3 | 69.6    | 41.7    | 34 | 78        |

HV: Vickers. HB: Brinell. HR: Rockwell. HS: Shore. \*Strength is the source tensile-strength reference in kgf/mm<sup>2</sup>. Blank source entries are shown as a dash. Values depend on material and test method.

# Hardness Comparison

| HV  | HB 10/3000 | HRA | HRB  | HRC  | HR 15-N | HR 30-N | HS | Strength* |
|-----|------------|-----|------|------|---------|---------|----|-----------|
| 230 | 219        | -   | 96.7 | 18.0 | -       | -       | 33 | 75        |
| 220 | 209        | -   | 95.0 | 15.7 | -       | -       | 32 | 71        |
| 210 | 200        | -   | 93.4 | 13.4 | -       | -       | 30 | 68        |
| 200 | 190        | -   | 91.4 | 11.0 | -       | -       | 29 | 65        |
| 190 | 181        | -   | 89.5 | 8.5  | -       | -       | 28 | 62        |
| 180 | 171        | -   | 87.1 | 6.0  | -       | -       | 26 | 59        |
| 170 | 162        | -   | 85.0 | 3.0  | -       | -       | 25 | 56        |
| 160 | 152        | -   | 81.7 | 0.0  | -       | -       | 24 | 53        |
| 150 | 143        | -   | 78.7 | -    | -       | -       | 22 | 50        |
| 140 | 133        | -   | 75.0 | -    | -       | -       | 21 | 45        |
| 130 | 124        | -   | 71.2 | -    | -       | -       | 20 | 44        |
| 120 | 114        | -   | 66.7 | -    | -       | -       | -  | 40        |
| 110 | 105        | -   | 62.3 | -    | -       | -       | -  | -         |
| 100 | 95         | -   | 56.2 | -    | -       | -       | -  | -         |
| 95  | 90         | -   | 52.0 | -    | -       | -       | -  | -         |
| 90  | 86         | -   | 48.0 | -    | -       | -       | -  | -         |
| 85  | 81         | -   | 41.0 | -    | -       | -       | -  | -         |

HV: Vickers. HB: Brinell. HR: Rockwell. HS: Shore. \*Strength is the source tensile-strength reference in kgf/mm<sup>2</sup>. Blank source entries are shown as a dash. Values depend on material and test method.



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# CBN

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